

1 of 6

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PRESIDENT'S COMMISSION ON THE  
ACCIDENT AT THREE MILE ISLAND

-----x

DEPOSITION of BABCOCK & WILCOX by EDGAR  
ALLEN WOMACK, JR., held at the offices of Babcock  
& Wilcox, Old Forest Road, Lynchburg, Virginia 24505  
on the 30th day of June 1979, commencing at 9:30 a.m.  
before Stanley Rudbarg, Certified Shorthand Reporter  
and Notary Public of the State of New York.

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BENJAMIN REPORTING SERVICE  
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PDR  
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BABCOCK & WILCOX:

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

BY: GEORGE L. EDGAR, ESQ.  
of Counsel

-and-

JOHN G. MULLIN, ESQ.  
House Counsel

FOR THE COMMISSION:

STANLEY M. GORINSON, ESQ.  
Chief Counsel

WINTHROP A. ROCKWELL, ESQ.  
Associate Chief Counsel

ALSO PRESENT:

RONALD M. EYTCHISON

MICHAEL E. STERN

CLAUDIA A. VELLETRI

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EDGAR ALLEN WOMACK, JR.

having been duly sworn by Mr. Rockwell, was  
called as a witness and testified as follows:

DIRECT EXAMINATION

BY MR. ROCKWELL:

Q Would you state your full name and would  
you spell it?

A My full name is Edgar Allen Womack, Jr.

Q And your current business address?

A Babcock & Wilcox Company, Old Forest Road,  
Lynchburg, Virginia.

Q And your current employer?

A Babcock & Wilcox Company.

Q And your present position?

A I am the manager of the Plant Design Section,  
Engineering Department, Nuclear Power Generation  
Division.

Q That is Plant Design Section?

A Yes, sir.

Q Nuclear Engineering Department?

A Excuse me -- Engineering Department.

Q Did you bring with you today a resume  
outlining your employment and educational history?

A Yes, I did.

MR. ROCKWELL: We will mark that as

1881 224

Exhibit 20

(Above-described document was marked  
Womack Deposition Exhibit 20 for identifica-  
tion, this date.

Q Mr. Womack, your resume, which is  
Deposition Exhibit 20, has been marked with the under-  
standing that you have already penciled in some changes,  
and it will be retyped, and we will substitute your  
revised version of this resume as an exhibit.

A Very good. I will correct any typos.

Q Is this resume which we have marked as  
Womack Deposition Exhibit 20 complete and up-to-date?

A Yes, I believe it to be. Of course, it is an  
abbreviated description of duties. I would be happy  
to supplement.

Q Could you describe for me what your respon-  
sibilities as manager of the Plant Design Section  
are here in the Nuclear Power Generating Division of  
B&W are?

A Yes, the Plant Design Section is a group of  
approximately 120 personnel, primarily engineers.  
We are responsible, as the title implies, for the  
design and overall analysis of the B&W nuclear steam  
system products, for the engineering of that design.

We have six units within the section. Four

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of these units perform engineering analysis work.  
One of them performs structural mechanical analyses,  
system mechanical analyses. Another performs what  
we call control analysis, which is the analysis of  
power plant behavior.

A third analysis unit is called the Safety  
Analysis Unit and performs primarily analyses for  
demonstration of the plant safety and for presentation  
of licensing documentation of the customer.

The fourth analytical unit is the ECCS, or  
Emergency Core Cooling System Unit, and that unit  
performs analyses related to loss of coolant-type  
events in reactor plants.

Two more units complete the section. One of  
them is called Plant Integration, and this unit has  
the responsibility to achieve a unit of design, both  
within the Plant Design Section and within the  
Engineering Department as a whole for our domestic  
NSS products.

The sixth unit is called International Program  
Engineering, and it performs a similar system inte-  
gration and project engineering type function for  
our international licensees.

(Document described below was marked  
Womack Deposition Exhibit 21 for identification,  
this date.)

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Q Mr. Womack, I am showing you what has been marked as Womack Deposition Exhibit 21. It appears to be a chart showing the structure of the Plant Design Section of Babcock & Wilcox, is that correct?

A Yes, sir, except it is not up to date.

Q Okay, I take it it is up to date with respect to the six sections you have just described?

A The six units are approximately up to date, yes, sir.

Q Is it up to date with respect to some of the personnel listed under those sections?

A That is correct.

Q But structurally it is accurate?

A Structurally it is accurate, at least to the unit level.

Q Can you tell me in more detail what Plant Integration does? You say it is responsible for the unity of design within your section?

A Within the department as a whole.

Q Within the department as a whole?

A Yes, sir.

Q And that would be the Department of Engineering?

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A Yes, sir.

Q Does the Plant Integration -- do we call that a unit?

A Yes, sir.

Q Does the Plant Integration Unit work with other portions of the B&W organization outside of the Department of Engineering?

A Yes, this does occur.

Q Which ones would those be?

A Well, they can, as required, work with the Service Group. They can work with any of our departments that may need -- with whom they may need to interface to discharge their jobs. They work very closely with the Project Management Department.

Q What kind of occasions would the Plant Integration Unit have to work with the Service Group?

A When called upon to assist in evaluation of an engineering problem or an engineering question that may have come through the Service Group, which performs our marketing function, or when called upon to perform an engineering evaluation of any site problem for a plant which may still be in startup, for example.

Q So Plant Integration works with the

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Service Group. Would this primarily be where Service comes to Plant Integration and says, "We have a problem, and can you help us solve it?"

A Yes.

Q Does Plant Integration initiate contact with the Service Group in any particular areas?

A They may do so if they see the need to interface through a function that the Service Group performs.

(Continued on Page 9.)

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Q Within your organization, plant design, is there a mechanism for translating the aspects of plant design which impact on operation into the training program, both run by the utilities and those training programs run by Babcock & Wilcox?

A No formal mechanism that comes to my mind. We supply occasionally on request instructors to the training program.

Q And that would be at the request of the Training Group?

A Yes. May I ask you to clarify. Let me clarify the question. As I understood your question, it was related directly to the training program of B&W?

Q That is correct, and training programs for the training requirements of your utilities that have NSS systems from B&W.

A That is right.

Q And would Norm Elliott be generally who would make the request for an instructor from within your department or within your section?

A Yes.

Q Is there any work between the Plant Design Section and the Norm Elliott Group, Training?

A From time to time Norm may conduct internal programs for our people to give them a view of the kind



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on simulator operator training that he performs for our customers.

Q When was the last time such a program was conducted?

A Well, there is one going on now.

Q Okay, and what is that devoted to?

A It is devoted at this particular time to a brief introductory session for some of the engineers to the simulator operation, to the control room operation.

Q Are these engineers which are now in your section or engineers who simply haven't been exposed to the simulator before?

A Both.

Q Before the one that is currently in session, that is currently going on now between your engineers and the Training Department, what was the last one before that?

A I would have to check my training records.

Q Can you give me your best estimate?

A I really can't. I'm sorry.

Q Do you think there has been one within the last, say, year?

A In all probability, but I can't say.

Q Would you have a record of that?

A I think that I would have to consult with Norm

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to get the record.

Q You have been at Babcock & Wilcox how long?

A Since 1975.

Q What is your estimate of how many meetings there have been between the Training Group and members of your department for this kind of an instruction session?

MR. EDGAR: For the record, he has been in the Engineering Department since August of '78.

Q Correction noted. Since August of '78, how many such sessions between training and your Engineering Group would you say there have been?

A I could not guess.

Q Do you have any idea?

A No, sir.

Q Does the Training Department ever pass on to your Plant Design Section proposed training materials for your review?

A I don't know that I can answer that question factually. I will be glad to find out the answer for you.

Q As of now you don't know?

A That is correct.

Q Does the Training Department have a contact person within your Plant Design Section for discussion

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of issues that arise in training which may relate to  
your Engineering Plant Design Section?

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A Not formally designated.

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Q Is there outside of your --

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A Excuse me. Let me explain that answer slightly.  
We have recently established a Power Systems and  
Controls, and I probably should go back (indicating  
chart).

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MR. EDGAR: What Exhibit?

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Q We are referring to Womack Deposition

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Exhibit 21.

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A We have recently established from this Control  
and Analysis Unit what we call a Power Systems and  
Controls Group. It embodies the functions of the  
Control Analysis Unit, as I described them to you  
earlier, and it also establishes a more direct connec-  
tion to operational and operating experience issues,  
and I would have to say that at this point in time I  
would expect that the Training Department would form  
a primary contact with the manager of that unit. That  
is a recent change.

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Q When was that change made?

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A About a month ago, but that is, of course, not  
an exclusive one.

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Q Was there to your knowledge in the Plant

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Design Section anyone whose responsibility it was, whether formal or informal, to review operating procedures being used at B&W plants to see if they were consistent with current thinking within the Plant Design Section?

A No, sir.

Q Do you know whether in any of the other engineering sections there have been people designated to review operating procedures to see if they are consistent?

A I do not.

Q Have you discussed the issue of interface between engineering and training at all since TMI 2?

A Certainly.

Q Can you tell me who you have had these discussions with?

A Discussions with Dr. Roy, Mr. Kosiba, Mr. Elliott, Mr. Carlton, and general discussion with many members of my staff. Those are the principals.

Q Can you tell me who Mr. Carlton is?

A Mr. Carlton is the manager of Power Systems and Controls.

Q Who initiated the discussions -- and I am referring now to the time period since TMI 2?

A Goodness, I suspect at various times almost any of

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us on the list would have had the initiative in these discussions.

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Q There have been meetings in which the people you indicated -- yourself, Kosiba, Roy, Elliott and Carlton -- have sat down where the primary subject of this was the interface between engineering and training?

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A I would describe these discussions as incidental to other meetings in which we were treating many TMI 2-follow-up matters.

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Q Can you tell me the substance of the discussions and also can you tell me when you first recall this subject being raised after TMI 2?

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A I can't tell you an exact date when I recall the subject being raised, but certainly we began discussing among ourselves the interfaces between the analyst, designer and operator shortly after it became clear what the sequence of events had been at TMI 2, and as soon as we had some time to devote to other than direct support of the TMI 2 site operation. I think I answered the second part of the question. Could you repeat the first part and I will try to answer that.

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(Previous question was read back.)  
A (Continuing) The substance of the discussions has been in general what can we do to improve the

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likelihood that, faced with any transient in an operating nuclear power plant, that the operator, as well as the systems we have designed, will properly recognize, respond and manage the transient safely.

Q Was there ever articulated in any of these discussions or meetings a specific problem or specific failure in the TMI 2 sequence that was a primary concern to you all?

A Certainly the concern over the operator's response to the low reactor coolant system pressure safeguard actuation has been articulated and discussed a number of times.

Q Has there been discussion of the operator's attention to the pressurizer level indicator in making decisions during the TMI 2 sequence?

A Yes.

Q And who has expressed -- among the group that you have identified -- a concern that there was a failure to recognize?

A I believe that has uniformly been discussed.

Q By all of the people you have mentioned specifically?

A Yes.

Q Was there discussion that or concern that knowledge which may have been available to Engineering

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Department with respect to the reliability of the pressurizer level indicator may not have been transmitted to operators at B&W Plants?

MR. EDGAR: Could you define "reliability"?

THE WITNESS: Yes, I need a definition of "reliability."

Q What I mean by "reliability" is the operators' understanding of when they could rely on the pressurizer level indicator as an indication of conditions in the core and when they should not rely on pressurizer level indicator as an indication of conditions in the core.

A We have certainly discussed the concern that the knowledge that is available within the Engineering Department was apparently not functionally used by the operator in his management of the high pressure injection system, yes, sir, in that sense.

Q Has there been any analysis here at B&W as to why that knowledge never reached the operators, at least at TMI 2?

A I am sure that there has.

Q And what has been the substance of that?

A Well, I don't think I can give you the best response to that, but simply to say that I, in attempting to answer the question which I gave you

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earlier as to the substance of our discussion, we have taken steps to attempt to reinforce the transmittal of that kind of information with the general objective of improving on offering to our customers such materials as might provide the operator with a better perhaps physical concept of the system, as one thrust of what we are trying to do, and to look in some instances that possibly, to look at some instances of degraded failures similar to the one we saw on March 28.

Q Would it be a fair statement that the Engineering Department had a clear understanding as early as January of 1978 that the pressurizer level indicator should not always be relied on by an operator as an indication of the conditions in the core?

A Well, I think it would not be fair to refer to the Engineering Department as a monolith with respect to any given opinion. I think it would be fair to say that I can't agree with that statement, no, sir.

Q Would it be fair to say that there were members of the Engineering Department, in particular at least some unit managers within the Engineering Department, who understood that?

A Okay. If you will repeat the question, then I will answer it again.

(Previous question was read back.)

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A In an effort to be precise, I would say that there was a knowledge in the Engineering Department by certain parts of the Engineering Department cognizant of, who would be knowledgeable in this general area, that pressurizer level alone was not a good indicator of reactor coolant system inventory and should not be relied upon for that purpose.

Q When that knowledge was first available -- and it may have been earlier than 1978, but let us assume it was available in early 1978 -- do you know whether any steps were taken at that time to transmit that knowledge out to the operating utilities and their control room operators?

A I cannot answer that question comprehensively. There were communications which did in fact transmit this knowledge from one part of the Engineering Department to other groups.

Q And to what other groups was the knowledge transmitted?

A Well, I believe that this information was transmitted originally to distributions which may have included the Servicing Department, the Licensing Section and parts of the Engineering Department and others.

Q So that would be within B&W?

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A Yes, sir.

Q Do you know whether any steps were taken to transmit that information outside B&W?

A I do not know, sir.

Q Do you know whether any consideration was given, whether or not in fact it was done, to transmitting that information outside of B&W?

A I do not. I would speculate affirmatively but do not know.

Q Before TMI 2, was there any recognized method to your knowledge in any of the departments of the Nuclear Power Generating Division of reviewing questions that arose that might have an impact on operator actions in your operating utilities, and reviewing whether that information was available to operators, and if it was not, seeing to it that it was transmitted to operators?

A Well, you have narrowed it with your question a great deal. Certainly methods exist for communicating to our operating groups site instructions, and those site instructions are not limited either to operations or to design.

Q What I am asking is was there any systematic method for culling out of the Nuclear Power Generating Division that information which ought to be known by

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operators and transmitting it to them in a timely  
fashion once it was known?

A A systematic method which would have come closest  
to responding to your question is a site problem report  
system, which is not exclusively aimed at that.

(Continued on following page.)

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Q The site problem report system, as I understand it -- and correct me if I am wrong -- this involves reports generated at sites of your operating utilities and sent back to Lynchburg?

A That is correct.

Q So that is not a communication generated by the Analytical or Engineering groups within the NPGD?

MR. EDGAR: You mean "originated" rather than "generated"?

MR. ROCKWELL: Originated, yes.

A That is correct.

Q What is the responsibility of the department at NPGD for analyzing those site problem reports and getting them back out to other operating utilities who might be interested in them?

A The responsibility for that analysis and follow-through lies with the Service Group, the Service Department.

Q Who particularly in the Services Department?

A Well, there are several people involved, and I would have to refer to organizational information to be able to give you the titles and names.

Q Well, presumably the head of the Services

Department would have some responsibility. You don't know beyond that? Who is head of the Services Department, Mr. Olds?

A Mr. Kosiba is head of that department.

Q But you don't know who of those working for Kosiba would have this responsibility, is that it?

A Well, I think that Mr. Spangler has had key responsibilities in this area.

Q What if information comes to the Nuclear Power Generating Division, which does not originate with a site problem report, but which originates simply in analysis by engineers, which may require transmittal of information to operators? What is the process there for getting information to operators?

A If there is a recognized need to do so, then the process would be to communicate it through the Services Department.

Q How do you recognize the need to do so?

A It depends really on the individual's analysis or engineers judgment of the question.

Q In other words, if I understand correctly, up until at least recently, there was essentially an ad hoc system, where if a particular person working on a particular problem felt that it involved information which ought to be transmitted to operating

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utilities, then it was that person's responsibility  
or that person's option to try to do so?

A Yes, that is right.

Q And would that be then run through the  
management structure here at NPGD to be cleared before  
it is sent out to the operating utilities?

MR. EDGAR: What do you mean by "management  
structure"?

Q Would the person making the determination  
that something ought to be done to get information  
to the operating utilities make the contact himself?

A To the operating utilities?

Q Call them up?

A No, sir.

Q How would the information get out?

A The information would be transmitted ultimately  
to the Service Group, and it would then be transmitted  
by a site instruction or information letter.

Q Was there a procedure within the NPGD  
that basically instructed people, "If you feel that  
you have information which changes current understanding  
of operating instructions or which ought to be trans-  
mitted to operating utilities, that you ought to  
report it to the Services Group?"

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A I am not aware of a specific procedure that would align itself with the definition you have given.

Q In other words, there was no specific procedure in that regard?

A That is right.

Q Again, it was a matter of individual decision-making as to whether a particular person thought that something ought to be done?

A Yes.

Q Was there any indication given by NPGD management to the engineering group staff as a whole that they ought to be alert to information which was important for the operating utilities to know with respect to the operation of their plants?

A I think that has always been a part of the general management guidance, yes, sir.

Q Was there ever any statement made that if new information becomes available which changes operating procedures or suggests a possible change in operating procedures, that it was a matter of some importance that it be transmitted immediately to Customer Service?

A I cannot recall such statements specifically. Certainly anything that would be of a safety concern could be processed through the safety concerns.

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Q Is there any document that you can

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point to which articulates the flow or the process

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for the flow of information from the Engineering

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Group through to the managing, to the operating

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utilities with respect to operating instructions?

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A With respect to operating instructions per

se?

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Q Yes.

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A I believe that would be covered as a part of

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the site instruction requirements. That would be

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the document I would look to to articulate.

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Q Site instruction procedures?

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A Yes.

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Q Can you describe what are the site

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instruction procedures?

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A I am answering the question or questions -- and

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I have answered the last ten or so questions -- pri-

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marily in connection with plants which have completed

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their startup process and essentially have gone

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into commercial operation, not in connection with

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the process by which a plant is originally designed

and brought into service.

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There are procedures by which the Service

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Department provides draft operating information to

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our customers, but this is done prior to startup,



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and this information is then used by the customers themselves to prepare their procedures.

I have assumed and, I hope, assumed correctly -- and if not, I want to review my answers -- that your last series of questions is really related to plants which have been in operation for some time.

Q I think that is correct.

A Okay. Fine. If that is understood, I think I have not given you an incorrect answer.

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Q You referred to site instruction procedures.

What are they? Is that something that is written and created by B&W?

A It is part of our administrative procedures for the Operational Division.

Q Do you have a set?

A Yes. I don't personally have a set, but a set is available.

Q If we were to get a set, would you be able to point out what you were referring to?

A I believe so.

Q Could we do that before the end of your deposition, or when we take a break, could you do that.

MR. EDGAR: Do you know where we could find these documents?

THE WITNESS: I think we should be able to.

MR. ROCKWELL: Perhaps, at a recess we can go back and pick that up rather than take time now.

MR. EDGAR: Off the record.

(Discussion held off the record.)

MR. EDGAR: We will make an attempt to locate the manual in question prior to the end of the deposition.

Q Tell me in more detail what specific

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mechanism has been set up in the discussion since TMI 2 for transmission of information from the Engineering Group to the operating utilities and to your own Training Department.

A We haven't formally changed the mechanism in the sense that the information would be transmitted as it always has been from engineers who have either been requested to perform evaluations of operating events at transients or who otherwise formulated information which they feel needs to be transmitted, and it would be transmitted to Mr. Hallman and Mr. Spangler within the Services Group and issued as site instructions.

You may be thinking of the Power Systems and Control Unit.

Q You indicated that the Control Analysis Unit --

A It had its name changed, and some expansion of responsibilities.

Q What is its name now?

A Power Systems and Controls.

Q I think you were referring to it as Control Analysis Unit.

A Yes, I did at the beginning, that's right.

Q And we can say that they are the same thing; that the Control Analysis Unit and the Power Systems

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and Controls are two different names for the same unit, but simply the name was changed?

A There was an expansion of responsibilities. The function of the Control Analysis Unit was incorporated into the responsibilities; the personnel were incorporated, and there has been an expansion of personnel.

Q Using the name, Power Systems and Controls, I understand that you said earlier that there had been established since TMI 2 a more direct connection between operating experience and engineering understanding and the operating utilities?

A Right, and I believe this is at that particular point in time. I was referring to a question you had asked about focal point within engineering for questions which might come up for service relating to operating experience in transients. The other aspect of the more direct connection is that we are formulating plans and discussing with our customers the implementation of a more systematic -- of a systematic analysis of plant transients and operating experience within their plants on a continuing basis for which this Power Systems and Control Unit would be the focal point for the collection of data. Those connections are still being formulated. We are working hard with our customers on them, and it has not really so far

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yielded or in my view necessitated a change in the method of communication and service although it may in the future.

Q Taking those two areas which you have described, first, the fact that the Power Systems and Controls has, in a sense, become a focal point for the transmission of information, and second that there is an effort to create a more systematic analysis of operating experience; is that a fair restatement?

A There is an intention to do that, to offer that service to our customers.

Q Let us take first the focal point question you described.

A Yes.

Q How will the Power Systems and Control Unit become more of a focal point? What will it do?

A It is too early for me to say exactly how our planning will shake out at this point in time. I am really looking to this unit to formulate, and the manager of this unit to formulate approaches -- to examine the present arrangements, to formulate approaches which he believes will lead to -- by the way, the manager that -- I notice you are writing down Mr. Davis' name -- the manager is J. D. Carlton. I am looking for him to formulate the means for doing this, and he has been in

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discussions with the training group here. He has been deeply involved in follow-up on failure mode and effects analysis experience data collection from all our utilities since TMI 2, communicating with our owners, and I would have to say that the initiatives that have been underway are still being formulated.

Q You indicated Mr. Carlton has met with Mr. Elliott to discuss these issues?

A Yes.

Q Have you asked Mr. Carlton for a plan which would describe how he would implement this focal point discussion?

A I have discussed with him, and I am looking for him to formulate such a plan.

Q Has he given you anything in writing with respect to how he intends to proceed, or his thoughts as to how the interface between engineering and the operating utilities can be improved?

A I don't believe he has.

Q Have you given him anything in terms of a memorandum describing what you think is necessary, or what you think he ought to be looking at?

A Well, I have formulated the outline of a plan which we are discussing internally here, which we have discussed in a very preliminary way with our customers

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for addressing transient operating guidelines and the follow up on those guidelines, making that connection between B&W and its customers on a continuing basis, and giving it more attention.

Q That is something you wrote?

A Yes, sir.

Q Is that a memorandum to Mr. Carlton?

A No. At the present time it is in the form of a kind of draft task description which we are working on here, which will be worked into a proposal, and it will involve others. It will involve Mr. Carlton and other people.

(Continued on following page.)

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Q That would be a task description of how to implement the functioning of the Power Systems and Control Group as a focal point?

A It is broader than the Power Systems and Control Group.

Q Can we please have a copy of the current draft.

A May we go off the record.

Q Yes.

(Discussion held off the record, following which a brief recess was taken.)

(Document described below herein marked Womack Deposition Exhibit 22 for identification, this date.)

Q Mr. Womack, showing you what has been marked as Womack Deposition Exhibit 22, would you please identify that.

A Yes, this is an excerpt from the Policies and Procedures Administrative Manual of the Nuclear Power Generation Division, entitled "Preparation and Processing of Site Instructions," and bearing the number NPG 0504-12 (Revision 4), and the date, 2/20/78.

Q Is this a current up-to-date version of the policy and procedure which you have referenced?

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A I believe it to be since it was obtained from a manual in use in the building.

Q I believe the subject of this site instruction came up when I asked if there was any general guideline in written form which would relate to the transmission of information from the engineering group to operating utilities, and you said that this would be the written basis for the transmission of that information, is that correct?

A Yes, I said that this would be an instruction which would apply, in answer to your question, yes.

Q Can you tell me what part of the instruction would apply to the transmission of information that operating utilities ought to have and operators ought to know about from the Engineering Group?

A As the instruction states, it is intended to define the actions and responsibilities necessary for processing this information which is defined within the instruction as information and/or action items transmitted from NPGD to the site in the form of a memo containing general information, measurements, data, plant operation information, recommended revisions to customer-prepared site support documents, et cetera.

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Q Is there anything in Womack Deposition Exhibit 22 which instructs the Engineering Group to see to it that information which is for operating utilities is transmitted?

A I don't see anything that goes directly to that point.

Q Would it be a fair statement that this is primarily a document which addresses itself to procedures --

A Yes.

Q -- rather than the underlying question of what ought to be transmitted, or the importance of the information transmitted?

A Yes.

Q While we were in recess, I believe you obtained a copy of a draft task description which you have authored, which is essentially a plan for implementing improved communication between the Engineering Group and operating utilities.

Is that a fair description?

A Improved communications is a part of this plan, yes. It also goes to an expansion of the examination of the basis for operational procedures, information which may be available to these customers.

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MR. EDGAR: Let me make a statement for the record.

We are furnishing to the Commission in confidence for their inspection, an information presented preliminarily which has commercial implications. The disclosure could compromise B&W's position in the marketplace. The information is such that the disclosure of that information may affect the ability of public agencies to obtain information of a similar kind in the future; and finally, to the extent that the information might be characterized as remedial in nature, there may be public policy considerations which would militate toward maintaining confidence of the information.

MR. ROCKWELL: The Commission reserves its rights to have an independent determination made as to the issues raised on behalf of Babcock & Wilcox by Mr. Edgar, but agrees that for the time being, the document would remain in the custody of Mr. Edgar, and that it will be the subject of continuing discussion between us.

MR. EDGAR: Let me add that Babcock & Wilcox has voluntarily made the information available in confidence for the Commission's

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the Commission.

MR. ROCKWELL: Off the record.

(Discussion held off the record.)

(Continued on Page 36.)

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MR. ROCKWELL: For the record, let me simply identify the document which we have been talking about, and that document is a document entitled "Response to TMI 2 Concerns, Task Description," dated 6-18-79, and it contains a three-page text at the beginning, and seven additional pages, one of which is the flow chart, and it is my understanding, Mr. Edgar, that we will have access to it through you?

MR. EDGAR: For inspection.

MR. ROCKWELL: Off the record.

(Discussion held off the record.)

Q Let me ask you, Mr. Womack, whether you have made an analysis yourself of the TMI 2 sequence of events, and whether you have reviewed the findings of other groups with respect to the TMI 2 sequence of events?

A Yes, I have, and of course that analysis is continuing because of the many investigations which are continuing.

Q I understand. In your own mind, at least at this point, have you distilled out what you think some of the major findings of those groups have been, and some of the major questions raised by the TMI 2 sequence?

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A Well, especially in the area of abnormal transient operation, I have done so, and have formed some preliminary conclusions aimed at answering the question which was in the record earlier concerning the Power Systems and Control Group which was, how could B&W assist in making this a more complete reliable process.

Q Before we get to specifically what B&W can do, can you tell me what you have distilled out in terms of major areas that you think out to be addressed.

A One area which has been addressed by a number of groups, that transients at TMI 2 and other transients involved multiple failures during the course of the transients, and these kinds of failures are not always explicitly addressed in the engineering design basis analysis which is done for licensing and done for the design of the engineering systems that go into the plant; having the designer address sequences which might go beyond the single failure event and go beyond single failures and include operators' failures, or operations actions when not called for, and which appears to many of the groups who have reviewed TMI 2 to be in order.

Q Are there other areas which you think need to be addressed?

A Yes. Having made this examination, it would be important to supply information which resulted from it

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in a manner which the operators who can use it to be furnished to the operators so they could take advantage of it to use the fullest capabilities of their nuclear plants to avoid and handle safely any transient that might be initiated, and that would involve supplying training materials which would relate to this.

In addition, it has seemed to a number of groups that have reviewed TMI 2 and have thought further about the whole sequence of events suggested by TMI 2 that additional emphasis should be given to training the operators and providing an understanding of the fundamental systems operational concepts with respect to how the system behaves in response to transients in certain events on a relatively fundamental conceptual basis.

Finally, a program, or an objective such as I have summarized for you would certainly be useful if performed in a once-through operation, but to maintain their utility through the years that nuclear plants are operated, it is important that the basis so formulated be continually upgraded as new operating experience is gained, or as information which may be developed in the engineering state of the art may indicate the need for changes in the area.

Q Could your last point be summarized by

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saying that what these groups have perceived to be needed, and I take it what you perceive to be needed, is to get the benefit of the experiences that you have and plug it back into the system so people can use it in practice, is that right?

A That would be a very valuable area, yes.

Q Having those issues in mind, which I take it you have distilled out, would you tell me what you think B&W can do to address them.

A Yes, sir. I think that we have to recognize that B&W's role in the design of the plant is limited to a portion of it, but by expanding its own engineering knowledge of what is called the balance of the plant and generally designed and supplied by others, and by addressing the plant as a whole in a systematic way with the specific objective of determining how the plant can best be managed to respond to the kind of transients we have discussed earlier, I think B&W has a substantial engineering design analytical experience which can be applied to that, and in the process the engineering basis for the plant will be expanded and will be created and documented in an expanded form and will be available for ready reference at a later time.

I would envision that such a program would involve systems analyses to assure that transients which

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might not have been addressed in the original licensing basis, such as the multiple transients we have mentioned before, are properly understood in terms of the system behavior that is predicted for those transients. Then I think through a close cooperation with the licensees, with the owners of our operating plants, a close coupling of these engineering basis findings needs to be made to the operating procedures that are formulated by the utilities and used by them to train the operators of their plants.

I would propose that that be done by providing, on the basis of the analysis that I have just discussed with you, operating guidelines which I would envision as outlines of strategies for operation, not explicit to the detail of instrument number or valve number, but defining the basic approach to operating the plant in response to these transients. These guidelines would then be utilized by the utilities to prepare the exact appropriate -- or the operating procedures appropriate for their specific plant, and B&W would serve a consultative and checking role in that interaction.

Having done that, then it would be important to assure that on a continuing basis operating experiences fit into those processes, and the guidelines are updated, and that the continuing training programs and

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and procedure revision programs, and indeed the occasional hardware component design changes which might be made, are fit in to keep the guidelines up-to-date, current and appropriate.

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Q Do you see also a role for B&W in terms of additional improved training of the operators as a result of all this?

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A I think that that is potentially a role which might be there. I haven't fully explored what might be done, but I feel that it could be done, yes.

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Q Is it fair to say that these problem areas that you have identified and the actions that you think B&W can take to address them arise out of a concern that they had not been adequately addressed before?

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A I would say that certain of the bases that I have mentioned to you at the beginning of the discussion are acknowledged not to have been explored to the fulness that I have just outlined to you, yes.

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Q In your analysis and the conclusions which you have arrived at and which you have just expressed, have you been in touch with others in the industry, either NSSS suppliers or utilities? I know you have reviewed analyses of the TMI

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accident, and I am not talking about that.

A You are talking about the kind of conclusions that I have personally just expressed?

Q Yes.

A I have not personally reviewed this with utilities. An outline, a very brief outline of these ideas, has been presented in a very preliminary way to Power Operating Utilities Owners Group.

Q Do you have in mind a mechanism for implementing what you think B&W can do to address these problems?

A Yes, sir. We will be formulating and presenting a proposal along these lines when we have completed our internal evaluation of these ideas to our operating plant owners group and recommending it for their adoption and support.

Q Do you have any understanding as to where the other NSSS operators stand with respect to the kind of program you envision?

A No, I don't.

Q Have you made any inquiry to find out whether they are already doing it or not doing it, or whether they have it under consideration?

A No, sir, I have not.

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Q You indicated to me that there have been discussions among yourself, Mr. Kasseba, Roy, Elliott and Carlton about the concerns that you all have that there had been essentially a gap in communication between engineering and training, is that correct?

A I don't think I used that word.

Q Is that an accurate description, however?

A There have been discussions between engineering and training, yes.

Q How have these men characterized the relationship between engineering and training in light of the TMI 2 sequence of events, and I will go through specifically:

Mr. Roy?

A That is a very difficult question for me to answer. I presume you will be talking with these individuals yourself.

Q Do you have any recollection of what Mr. Roy has said about the relationship between engineering and training in light of TMI 2?

A I believe that these gentlemen would unanimously agree that this relationship needs to be strengthened, and I believe that for the most part they would sympathize in principle with the points I have outlined to you.

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Q Do you recollect any specific discussions that have been had with you and/or any specific statements which have been made on this subject since TMI 2, and specifically Mr. Roy?

A I don't recollect specific quotes, but this plan certainly has been discussed with Dr. Roy, and my general impression is that he is in agreement with the principles.

MR. EDGAR: Referring to the recommendations and plan that you have outlined, I take it?

THE WITNESS: Yes.

Q I am not talking so much here about the prospective view in terms of what you are going to do, but what your perception of the communications between engineering and training is, pre-TMI 2.

Has Mr. Roy made any statement about his opinion as to the communications between engineering and training up to the time that TMI 2 occurred?

A Yes, I think I characterized that statement that it does need, and presumably did need to be strengthened, and internally, we certainly will take actions to do that by having more of our engineers spend more time just physically looking at the training program.

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Q Did Mr. Roy have any specific comments about the relationship between engineering and training? I understand that he said he felt it needed improvement, but specifically did he say we have got to look at this area, or we have got to look at that area?

A Yes, I think that one of the areas that we have especially discussed is the area of the interaction of the operator with the instrumentation and equipment in the control room.

Q Which instrumentation and which equipment?

A The general presentation of the instrumentation and equipment.

Q Do I understand you correctly to be referring generally to the control room design?

A The general control room design, yes, sir.

Q Has Mr. Roy focused more specifically on any of the other issues that arise out of the TMI 2 sequence of events?

A Yes, he has certainly focused on one that we have already discussed, and that is the feedback of operating experience from our plant to engineering.

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Q Did Mr. Roy ever ask whether the information from the Davis Besse September 24, 1977 accident got to the operating utilities, and if not, why not?

A He didn't explicitly ask me that question. I am sure he asked that question of others.

Q Have you ever heard him ask that question of others?

A I can't recall that I have.

(Document described below herein marked Womack Deposition Exhibit 23 for identification, this date.)

Q Let me show you what has been marked as Womack Deposition Exhibit 23, and for the record, let me identify it as a memorandum from Bert Dunn to Jim Taylor, dated February 9, 1978 and distributed to a number of people who are indicated on the second page of this two-page Exhibit.

Have you ever seen this document before?

A Yes, sir.

Q When?

A I saw it sometime in March.

Q Before the accident at TMI 2?

A No. I mean sometime in April, excuse me. The dates are fuzzy.

Q April of 1979?

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A Yes, after the accident at TMI 2.

Q Has there been any discussion of this memorandum since the TMI 2 sequence?

A Yes.

Q Have you ever discussed it with Mr. Roy?

A Yes, sir.

Q Let me read a couple of sections of it so that we focus on what we are talking about.

At the beginning of the first paragraph, it states:

"This memo addresses a serious concern with ECCS Analysis about the potential for operator action to terminate high pressure injection following the initial stage of a LOCA."

Is it fair to say that there was serious concern about the potential for operator action to terminate high pressure injection following the initial stage of a LOCA?

A I certainly think it was.

Q And the concern expressed was a prediction of the sequence of events, at least in that regard?

A Yes.

Q Has anyone, to your knowledge, in the B&W organization specifically asked what happened to this memorandum and why wasn't that information passed onto



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the operating utilities?

A Yes, I believe they have.

Q Have you been a participant in any of those discussions?

A Yes, I have participated in the -- in the extent that I have understood some of the findings in those discussions.

Q Could you tell me what they are.

A I believe this memorandum was preceded by another from Mr. Kelly that you have.

MR. ROCKWELL: Please mark that as Deposition Exhibit 24.

(Document described below herein marked Womack Deposition Exhibit 24 for identification, this date.)

Q We have now marked as Womack Deposition Exhibit 24, a November 1, 1977 memorandum to Distribution, and the distribution is identified on the memorandum from Mr. Kelly.

A Yes.

Q That is the memorandum that you had reference to a moment ago?

A Yes, sir.

Q I believe the question that was pending before we marked that was, had you been a participant

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in any discussion as to why the information, and we will now modify it, why the information in those two memoranda was not gotten out to the operating utilities before TMI 2?

A Yes, I think you had asked me to outline what my understanding was of the course of action with respect to these memoranda.

Q Would you proceed to answer the question.

A The original memorandum -- let me state in answering this question, that my knowledge of this is secondhand; that at the time that these memoranda were initiated, I had a different responsibility than my present responsibility and, therefore, I am giving you what may be an incomplete picture, but my understanding is that Mr. Kelly's memorandum, perhaps directly, or perhaps indirectly, led to Mr. Dunn's memorandum to Mr. Taylor, which I think you marked Exhibit 23.

Q Let me stop you for a moment for a point of clarification.

To your knowledge, were there any intervening memoranda --

A I am not aware of any.

Q So that the record is clear, the question was going to be, any intervening memoranda between Mr. Kelly's November 1, 1977 memorandum and Mr. Dunn's

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February 9, 1978 memorandum, and I think your answer was that you are not aware of any?

A I am not aware of any, but remember I prefaced my remarks, that this may be an incomplete recounting.

Then, as I understand it, discussions did -- ensued following Mr. Dunn's memorandum between, and I can't name the individuals, to tell you the truth, but between Engineering and Nuclear Services, and I now understand there was a memorandum written back from Services to Plant Integration about the beginning of August in 1978 concerning the subject, and thereafter I haven't detailed knowledge of the handling of the subject at this time.

Q Do you have any understanding of the discussion, and specifically the discussions that arose out of these memorand?

A I don't think my understanding is good, no.

Q Was there a meeting that arose out of Bert Dunn's February 9, 1978 memorandum?

A I can't confirm or deny that. I don't know the answer to that question.

(Continued on following page.)

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Q Has any explanation emerged, to your knowledge, as to why Mr. Kelly's and Mr. Dunn's memoranda did not go through the system to the point of reaching the operating utilities?

A The only explanation which has emerged, to my understanding, is that simply the matter was in the process of being reviewed by the various parties who had a concern and had an interest in the process of getting this information to the operating utilities.

Q And when you say the matter was being reviewed, I take it that from November 1, 1977 until March 28, 1979, was a matter of something in excess of 15 months, is that correct?

A Yes, I think it is correct.

Q Therefore, the matter apparently was under review for that period of time without any action having been taken to inform the operating utilities of what Bert Dunn described as "a very serious matter deserving of prompt attention and correction"?

A I cannot confirm that no action was taken to inform the operating utilities, but I can confirm I do not have knowledge of that action.

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Q Have you ever talked to Mr. Roy about whether he read the Bert Dunn February 9, 1978 memorandum, in light of the fact that he appears on distribution?

A I don't recall whether I have asked him whether he read it or not.

Q Have you ever talked with Mr. Norm Elliott, the head of your Training Department, about whether he read Kelly's November 1, 1977 memorandum, which was apparently the first flag about the problem arising out of the September 24, 1977 incident at Davis Besse?

A No, sir. I don't believe so.

Q You never talked to Mr. Norm Elliott about that?

A No, sir.

Q Do you know whether anyone asked Mr. Elliott whether he ever read that memorandum?

A No, sir. I don't know that.

Q We have been advised, Mr. Womack, that you prepared a memorandum to Mr. Byron Nelson, who is in-house counsel for Babcock & Wilcox, at Mr. Nelson's request, and that the memorandum was dated May 11, 1979. Did you prepare such a memorandum?

A Yes, sir.

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Q Was it prepared at Mr. Nelson's request?

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A Yes, sir.

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Q Was it given to anyone other than  
Mr. Nelson?

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A No, sir. I don't believe so.

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Q Were there any carbon copy distributions  
shown on that memorandum, to others?

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A No, sir, I don't believe so.

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Q Have you personally made it available  
to anyone else here at B&W?

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A No, sir. I don't believe so.

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Q Has Mr. Nelson requested the memorandum?

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A Yes, sir.

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Q Had he asked you to make an investigation  
of the handling of the so-called Michaelson Report  
within Babcock & Wilcox?

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A No, sir. He did not ask me personally to make  
such an investigation.

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Q Did someone else ask you to make that  
investigation?

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A Not in that way. I certainly in my present  
position have become aware of the Michaelson  
Report and had the interest and responsibility to  
assure that a followup on it from that point forward  
was certainly complete.

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Q It had become a matter of some public discussion. What was Nelson's request that you were responding to through this May 11, 1977 memorandum?

MR. EDGAR: Off the record.

(There was discussion off the record.)

Q Mr. Womack, do you have an understanding as to how the Michaelson Report was handled within B&W?

A Yes, I think I have a basic understanding of how it was handled.

Q Could you outline for me each step that you understand occurred?

A Okay.

My knowledge of the dates is approximate, and I would like to reserve the privilege of checking these for correctness in your transcript.

Basically, my understanding is that what has been called the Michaelson Report is a document of some length, probably on the order of 30 to 40 pages, prepared by a staff member of the Tennessee Valley Authority, and concerning the general subject of extremely small reactor coolant system breaks.

Q Let me just say I am generally familiar with what Michaelson addressed. To the extent that you need to outline in order to explain how it was

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handled, fine, but you don't need to educate me on the subject.

A All right, I will try not to be too didactic. This report was addressed to us under a cover letter in the normal project management communication chain.

The report is primarily addressed at our 205 Fuel Assembly Reactor System.

One such system -- or two such systems, actually-- are being provided by Babcock & Wilcox to TVA.

In the course of construction in Alabama-Belafonte, which is the name of the plant. It was under that contract that this Michaelson analysis was provided, and if I recollect the covering letter, it requested comments from B&W on the analysis.

The approximate time of that was the spring of 1978 -- was it May? I would have to check it. The time of receipt was in the spring of 1978.

My understanding was that it was quickly reviewed by the ECCS group here, and that they find no generally surprising concerns in that document, and it was then treated as an action item to be asked as time permitted in the course of other work.

I believe, and I have been told, that one or more telephone conversations between TVA representatives and our engineering people took place on the

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subject of that report or aspects of that report,  
between the time it was received here and the time  
that an initial written answer, a brief written  
answer, was prepared, which I think was about  
January 1979.

Q Were these telephone conversations  
between Paterson and someone in your group?

A Well, that I can't confirm about the TVA  
respondent. I believe that the person in our ECCS  
group would have been involved in those conversations,  
yes, sir.

Q Do you know who in your group?  
A No, I don't, but I would imagine Mr. Dunn or  
one of his staff.

Q So if I understand correctly, the  
Michaelson report was transmitted in the spring of  
1978 and was reviewed by ECCS group, and there were  
a number of telephone conversations between ECCS, you  
think, and TVA, and the first written response went  
from B&W to TVA in January 1979?

A Yes. I think the written response may have  
gone in February, but it was in that time frame,  
yes, sir. I was going to continue.

Q Yes.

A I believe there was a response back from TVA,

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which was in the spirit of "You have answered most of our questions, but there are a couple of items we don't understand. Please clarify these for us."

They had requested a response, I think, by the end of March, and we had not completed that response back to them by the end of March, and that work did get disrupted.

Then following the heightening of interest in this whole subject as the result of the TMI 2 event of March 28, that was the point in time at which I first became aware of this series of correspondence that I have just recounted to you, in that context.

I had been asked by the project manager of TVA to ask Mr. Dunn to participate in a conversation with some TVA people, which I did not then know applied to the Michaelson Report.

But I think in retrospect, I understand that it did. I was simply asked to ask the ECCS unit to support a conversation with TVA, which I did.

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Q When was that conversation?

A Probably in January or so of 1979, to my recollection.

Q Did you sit in on that conversation?

A No, I didn't, nor did I really get into the material which was to be discussed, but simply asked Mr. Dunn to support the project manager. Shall I continue?

Q If there is more in the understanding and the handling of the Michaelson report, I wish you would continue.

A Well, the action that was taken after that, as I said, with a heightening of interest and specific questions from the Nuclear Regulatory Commission was to prepare materials responding more copiously on a point-by-point basis to Mr. Michaelson's analysis.

That response was prepared by our ECCS unit. I participated in the review of the response, and it was submitted along with others to our customers and to the Nuclear Regulatory Commission about the 7th of May.

Q Is that the three-volume blue --

A At that time it was two volumes, but the third one was added later. This particular item is Appendix 5 I think of that volume. Further discussion on the technical points have been held, which have involved

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both us and Mr. Michaelson, primarily in the arena of meetings of the Advisory Committee on Reactor Safe-guards. Additional analytical information was prepared and was also submitted as a part of that May 7th compendium, dealing with transients, specifically addressing some of the concerns raised by Michaelson.

Q What was the occasion for the conversation in January that you described between your ECCS Group and TVA; was that an in-person meeting or was that a telephone conference call?

A That was a telephone conversation, and my recollection of it was that I don't remember who in the PM group, but one of the project managers called and said, "We need some support. We are being asked to give an update on the status of this unit, the ECCS Group has been discussing, and can you ask Mr. Dunn's group to support us," and I did.

Q How had that other group gotten involved in the Michaelson issue?

A Which other group?

Q My recollection fails me, but you indicated someone had come to you and said they needed support of ECCS.

A Our communication on contracts which are in the construction phase is through our Department of Project

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Management. All such correspondence and communications come through that group, at least initially.

Q I see. Had they been the original recipient of the Michaelson report?

A Yes, sir.

MR. EDGAR: Off the record.

(There was discussion off the record.)

Q You made a reference, Mr. Womack, to the Michaelson concerns having come up before the ACRS, is that correct?

A The technical issues in particular, yes.

Q Was that Mr. Ebersole?

A No, not in the meetings that I participated in, all of which have been after the 1st of April. In fact, I don't recall Mr. Ebersole as a participant at any of these meetings

Q The occasions on which it had come up as a subject in the ACRS have been since the accident, to your knowledge?

A The occasions in which I have participated, yes, that is right.

Q Do you know whether Mr. Ebersole's comments before the ACRS, in connection with the hearing concerning Pebble Beach, came to the attention of your department before the TMI 2 event?

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A I would have to say I don't know for sure.

Q You have recounted a sequence of events with respect to Michaelson. Did you acquire that information because you made a deliberate effort to investigate and learn what had happened?

A I acquired the information that I thought was important to deal with the technical issue, which was my primary responsibility, particularly after in April it came to my attention that it was a matter of considerable external public concern.

Q Did you go back and make a deliberate effort to reconstruct the handling of Michaelson in terms of understanding how it had occurred?

A Yes, I would have to say that I did. I didn't make that in the investigative depth which I think would be more satisfactory to you in the sense that I had looked for telecon records and dates of telephone calls, but the general sense of what was done.

Q In an effort to go back and reconstruct, did you also try to go back and reconstruct the handling of the concerns arising out of the Davis Besse incident on September 24, 1977?

A Not to that great an extent. I have certainly looked at some of those things since the TMI accident, but not to the extent.

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Q Well, tell me what you did do to reconstruct the handling of the concerns arising out of the September 24, 1977 incident at Davis Besse.

A Well, I have looked at the site problem report and noted who was involved.

As I have recounted to you earlier, I have become aware of these memoranda and the discussion that resulted from that.

MR. EDGAR: Which memoranda?

THE WITNESS: I think we identified them as Exhibits 23 and 24. I haven't really had time to go a great deal further than that. That is about the size of it.

Q I may have asked you this question, and if I have, excuse me, but had you ever seen either of the memoranda marked as Exhibit 23 or 24 before March 28, 1979?

A To the best of my knowledge, I had not.

Q Were you familiar with the fact that there had been a transient at Davis Besse in September 1977 in which there had been loss of pressurizer level indication high?

A Yes, I was familiar with the fact that this transient had occurred, familiar to some degree with the details, but not detailed analysis.

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Q Had Bert Dunn ever commented to you that he was concerned about the potential for operator error in light of his analysis?

MR. EDGAR: At what time?

MR. ROCKWELL: Before March 28, 1979.

A Not to my recollection, no, sir.

Q Mr. Womack, I take it you were aware of the meeting between the NRC, B&W and a number of operating utilities in February of 1979 in connection with the Davis Besse transient that occurred in November of 1977?

A Yes, I was aware of that meeting.

Q I take it you did not attend the meeting?

A No, I don't think I did. No, I'm pretty sure I did not.

Q Did you attend the planning session for that meeting?

A I did attend the planning session, yes, sir.

Q Did the question ever arise in the planning session as to whether attention ought to be given not only to the Davis Besse transient in November 1977, but also to the Davis Besse transient in September of that year?

A I can't recall whether it did or not, but it certainly would have been our attempt to use all the information we had, so I wouldn't be surprised if it did.

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Q You have no recollection?

A I just am not able to recall precisely enough to give you an absolutely verifiable answer, but please follow up if it is relevant.

Q I am showing you what has been previously marked as Willse Deposition Exhibit 5, which is Mr. Willse's summary of that February 14, 1979 meeting. You were shown on the distribution of that memorandum?

A Yes.

(Continued on following page.)

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Q Am I correct that no reference is made in the memorandum to any discussion of the September Davis Besse transient?

A You will have to permit me to read this memorandum.

Q Please do.

A Actually it is difficult to tell from this memorandum what transient might have been discussed by the Toledo representative. It mentions only one.

Q If I told you that Mr. Willse testified that there had been no discussion of the September Davis Besse transient at that meeting, would you have any basis for disagreeing with me?

A No, sir.

Q Would it be fair to say that the purpose of that meeting was to discuss concerns with respect to pressurizer level indication?

A I think the purpose of the meeting as stated in the memorandum was pretty much as I understood it, and that was that the representative of the NRC wished to investigate an allegation that B&W had not responded in timely manner to resolve the loss of pressurizer level indication concerning DB 1.

Q So the central issue was with respect to the loss of pressurizer level indication?

A Yes.

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Q The purpose of the meeting was to discuss whether B&W had responded adequately to that?

A Yes, sir. That is what I understood.

Q And four of the operating utilities using B&W plants were present at that meeting, is that correct?

A Yes, and responded themselves to the first four of the five questions that were of interest to the NRC visitor.

Q Do you have any explanation as to why a meeting devoted to the discussion of pressurizer level indication at Davis Besse didn't address the other Davis Besse incident, which also involved loss of pressurizer level indication?

MR. EDGAR: He didn't attend the meeting, and he also doesn't know whether they discussed the high incident.

Q You attended the planning meeting, is that correct?

A Yes, I think I attended the planning meeting.

Q Do you have any understanding, taking Mr. Willse's testimony at face value, which was that the September Davis Besse accident was never discussed in this February 14th meeting with the NRC, do you have any explanation as to why that

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wasn't brought out?

A Have we determined the pressurizer level was lost in that transient?

Q In which transient?

A September.

Q I believe the Site Problem Report indicates that.

A I would like to review that. That might be one response or reason. Again I am speculating. I assure you that it was not because of an intention on anybody's part not to discuss something that they thought was relevant, if that is where you are heading.

Q Well, have you ever asked anybody, or have you ever had any discussion with anybody, about whether that other Davis Besse transient was discussed at that meeting, and if not, why not?

A No, sir. I really haven't. I had not, until your line of questioning this morning made that connection.

(There was discussion off the record.)

Q I refer you to the second paragraph of Dunn's February 9, 1978 memorandum, first couple of sentences.

A To what point in particular are you referring, sir?

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Q Based on Bert Dunn's review of the September Davis Besse accident, would it be fair to say that there was an inadequate indication of pressurizer level indication in that it was higher than operators would normally expect?

A I think that the thrust of what you just stated can be a conclusion; that the paragraph really says that the operator might, if we looked only at pressurizer level in such an event, be misled by high level and might have been led in this event to throttle high pressure injection. That would appear to me to be a different concern than the matter of loss of pressurizer level indication, which was really aimed at low level, which was the central focus of this meeting we have been discussing which took place on the 14th of February.

Q Would it be fair to say that the underlying issue in each of the Davis Besse transients was a pressurizer level indication which was not what operators would normally expect, and which would not give an accurate indication of conditions in the core?

A No, I don't think so.

Q Why?

A Well, I think the issue in this particular

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meeting of February 14th was really in cases in which the secondary system might act in such a way as to lead to over-cooling of the reactor after a reactor trip, of primary system after a reactor trip, and shrinkage in the primary system occurs, due to decrease in the average temperature of the coolant

In such cases it has occurred that the pressurizer level has gone down below the indicating range of the instrumentation. This does not indicate that the pressurizer level indication is unreliable, or even, in that particular instance, up to a point, an inadequate indication of the system inventory.

The question originally was, is this a matter of very serious concern, or is it an operational inconvenience.

We had performed some analyses and supplied them to Toledo late in 1978, relative to how far the level might have gone down in the pressurizer after it was no longer within the indicating range. On the basis of that, they had some discussions, and the meeting on the 14th of February was to review these discussions with a visitor from NRC.

When the question, I believe, was interpreted generally by the participants at that meeting, and I believe that was the intent of the NRC, to discuss

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4 pressurizer level, that is, going low and outside  
5 the indication range, that particular set of circum-  
6 stances did not, I suspect, appear directly connected  
7 to the set of circumstances in the September 1977  
8 Toledo event, and it is not unreasonable to assume  
9 that that is the reason why it wasn't discussed.

10 Q Do you know whether it occurred to anyone,  
11 either in the planning meeting or in the February 14th  
12 meeting, that during a discussion of pressurizer  
13 level indication might be a good opportunity to advise  
14 the operating utilities present of information avail-  
15 able with respect to the September Davis Besse  
16 incident?

17 A If you mean in connection with the kind of  
18 information we have identified as Exhibits 23 and 24,  
19 it certainly did not occur to me, and to the best of  
20 my knowledge, it didn't occur to anyone else, either.

21 As I stated to you, I only became aware of  
22 this particular information since the 28th of March  
23 incident.

24 Q Do you know, referring to the final  
25 period before the Three Mile Island incident, whether  
26 any of the engineers in your Plant Design Section  
27 ever had any exposure to the simulator training being

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conducted here at B&W?

A I am confident that out of the engineers there that a number of them have, yes, sir.

Q Was there any systematic way or systematic approach to informing the engineers about what operators were being told by the B&W training people here in the simulator?

A The definition of the word "systematic" troubles me.

(Continued on Page 71.)

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Q I can restate the question.

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A Well, I be happy to try to answer the question in terms that I think I can.

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Certainly the conduct of such training would be a part of making such a connection at least to individual engineers. To state, however, that there was a focused, responsibility-defined program for having the Engineering Department review the simulator training program in that way, I'm not aware that there was one, no, sir.

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Q Did Norm Elliott ever attend on a regular basis any meetings within the Engineering Department to keep abreast of developments within the department?

A Again let me answer with the best precision I can. There are many dozens of meetings within the Engineering Department every day. I had no such generalized contact on a regular basis and wasn't aware of them.

Q Do you know whether Norm Elliott ever attended a meeting of the Engineering Department?

A I would be very surprised if Norm Elliott never attended a meeting in the Engineering Department.

Q In other words, you think he did?

A Oh, yes, certainly. But the subject of the meeting might have been anything from budgeting to personnel

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12.2 3 rotation to the operator training program.

4 Q Do you know if Norm Elliott was on any kind  
5 of distribution list for information generated in the  
6 Engineering Department?

7 A I am sure he is. Excuse me. Let me not be quite  
8 so certain. I would not be surprised that he is, but  
9 if you will ask me to identify what distribution list,  
10 I can't specifically.

11 But I would note that he was among the addressees  
12 of the memorandum we have identified as Exhibit 24.

13 Q Is there any requirement or practice in the  
14 Engineering Department to have a certain number of  
15 engineers licensed as operators?

16 A No, there is not such a requirement.

17 Q Do you have any licensee operators in the  
18 Engineering Department?

19 A Yes. We have some, either presently licensed  
20 operators or formerly licensed operators.

21 Q Do you know that there are presently  
22 licensed operators in the Engineering Department?

23 A I can't confirm that. I will be glad to do so  
24 later for you if you want.

25 MR. EDGAR: You don't know?

THE WITNESS: I don't know.

Q Is there any practice in the Engineering

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Department for your engineers to go out to operating plants and simply spend time there to inform themselves of what it is like to be at an operating plant and what it is like to be an operator in a control room?

A Yes, we try to achieve that primarily through the use of through the loan of engineers for field assignments, short-term, and through programs of rotation into longer term assignments through the Services Department.

Personally I believe it is very important, and it has been, of course, an objective of mine to make that happen to the extent that I could, since coming into the department.

Q At the time you arrived in the department, what proportion of your engineers would have had that kind of field experience?

A I don't know, sir.

Q Aside from field assignments, was there a practice or effort to have engineers simply visit operating plants to become familiar with and talk to operators and become familiar with the problems that they deal with on a day-to-day basis in the control room?

A Visitation of operating plants, yes. These kinds of discussions with operators, I am not at all sure.

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I would be inclined to a negative answer on that.

We have provided opportunities for engineers especially and people in general within NPGD to visit plants under construction.

It is frequently more educational for an engineer, who may never have seen a nuclear power plant within arm's length, to visit the plant before it is started up and before fuel is loaded because then he has access to the components in the system physically and can see them, which he designed; whereas after startup, the containment would be closed and his visit after startup as part of a field support assignment would allow him to get into the containment and witness re-fueling operation and participate in re-fueling and maintenance in the Service Department direction.

Q Do you think there would be value to engineers being exposed to operators and seeing how operators understand and deal with the system that the engineers design?

A Definitely.

Q How are you and the Engineering Design Department educated about what happens in the field? Where do you get your information?

A Primarily from site problem reports and summaries of field operation, plant operational status, which are

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prepared on a weekly basis by the Service Department.

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Q And is it the Service Department's function

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then to pull all of these together and to try to

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analyze them and then to circulate what appear to be

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important concerns through the Engineering Department?

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A That is something that they do. The Service

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Department is the conduit for this kind of information.

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Q How do they pass the information along?

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Do they simply pass along the site problem report,

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itself, or do they do some sort of analysis of what it

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means and what its significance may be, for instance,

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to the Engineering Group?

A They can go both.

15

Q Do they do both?

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A I expect we could find instances of both, yes,

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sir.

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Q Is there any regular forum or format for

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them doing that?

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A The site problem report is such a format, and

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then there is an abbreviated review of operations, as

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I said, on a weekly basis, which is about a page to a

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page and a half long, that indicates what the status

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and principal actions in the operating plant may have

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been for the past week.

Q Is there a function where some one person

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or group of persons has the responsibility of reviewing these site problem reports and then bringing specific questions to the attention of specific people. whether in Design or Engineering or any other department here at the Nuclear Power Generating Division, and say, "Look, this is something you ought to look at"?

A Yes, that function is discharged within the Services Department.

Q How is it discharged?

A Well, I think the best reference again for that would be to look at the site problem report procedure. Again it will be a procedural description similar to the one we looked at on site instructions.

Q What I am wondering is, is it merely a question of routing site problem reports to people or is there also an analytic function there?

A There is a closed loop, when it is requested, of engineering by the Service Department for analysis or evaluation of a component failure, and when that is requested, there will be an engineer completion closure, usually initialled off on the SPC.

MR. EDGAR: What do you mean by analysis in the context of service? Can we define the term "analysis"? That may help.

Q I guess what I am trying to get at is --

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and let me try to state a question which gets at it --  
are the site problem reports simply routed to people  
or is there a process by which they are looked at by  
the Operations Group and perhaps analyzed and passed  
along with comments on a regular basis that specific  
people or specific departments ought to pay attention  
to this, and that this, for instance, may require  
contact back to one operating utility or back to all  
operating utilities?

A Well, there is a process. I don't know what you  
mean by "the Operations Group."

(Continued on following page.)

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Q Service Group operator.

A There is a process by which the Service Department makes such assessments, and that process does frequently involve consultation at their request in the engineering groups. They will similarly decide what kind of assessment is needed from Engineering, and they will go to the group that they think can provide that assessment, and that will then be done and fed back to them.

Then once the site problem reports are "cleared" or completed, action within B&W is completed, a distribution is made, and we, I think, routinely get copies of those in Plant Design and Plant Integration groups.

Q Whose responsibility is it for processing information that may come to you from sources other than site problem reports?

A The individual who -- well, there are a lot of answers to that question. A lot of people handle information, depending on where it comes from. We talked about Michaelson a few minutes ago, and a conduit to information coming into the company was the project management group. It was again processed by the Project Management Department to the engineering unit that the project manager felt was appropriate

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to deal with the question at issue, and the processing was handled in that way.

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Q Have you ever observed, yourself, an

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operating reactor when it is critical?

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A Yes.

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Q How recently?

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A I think the last critical operating reactor I visited was TM-1.

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Q When would that have been?

11

A Last year. It would have been before I took the job as manager of Plant Design.

12

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Q Have you ever observed any other operating

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reactors critical?

15

A The answer is yes, and I will just have to reach back in my memory to see which one. I visited Toledo before they were critical, Davis Besse No. 1 unit, that is. I visited TVA-Belafonte in the Construction stage. I'm sure that during the period of time that I was at the Atomic Energy Commission, I probably visited Fort Belvoir and other locations which had nuclear reactors in the process, ranging from zero power units to power plants.

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Q Of those that you mentioned, Toledo is

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a B&W plant, is that correct?

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A Would you like to know what B&W plants I have seen?

Q Yes.

A I have seen TVA-Belafonte in construction. I have seen TM-1 in operation and TM-2 in construction, or it was ready for startup at the time I was there, in the early stages.

I have mentioned that I have seen Davis Besse 1 again during final stages of construction.

Q It would be fair to say that basically you have only visited one B&W reactor while it was in operation and critical?

A Yes, sir.

Q What about your unit managers; do you know whether any of them have observed B&W plants during critical operation?

A Yes, sir. I am sure they have, but I can't give you the details.

Q Is there a regular effort? Do you know whether Bert Dunn has ever gone out to visit an operating critical B&W reactor and talked to the control room operators and tried to find out what they understand about ECCS?

A No, I don't.

Q Has there ever been any suggestion that the unit group managers ought to do that kind of thing from time to time?

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3 A Well, I'm sure there was. If not before, I'm  
4 sure I have suggested that we do that in the past  
5 month or six weeks.

6 Q Is there in-house here any safety review  
7 group that an engineer can take a problem that he  
8 is concerned about and present it to the group and  
9 say, "Take a look at this problem. I think it is  
something of concern"?

10 A Not a group per se, no. There is a Licensing  
11 Section in the Engineering Department that handles  
12 this, that is generally -- that handles such problems.

13 Q Licensing Section?

14 A Yes, sir.

15 Q Why would the Licensing Section handle it?

16 A Well, that is just the way in which we have set  
17 it up to handle safety problems generally. That is  
18 not to say that other groups aren't concerned about  
19 safety, but generally I would think that the focal  
20 point, insofar as the group, would be in the Licensing  
Section for a separated safety problem.

21 Do you know, I have a unit called Safety Analysis.  
22 Needless to say, they concern themselves very much  
23 with the design basis for the safety systems.

24 Q I take it, though, that then there is no  
25 central clearing house for safety concerns within  
the organization?

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MR. EDGAR: A person?

Q Or a group.

MR. EDGAR: Like an ombudsman?

Q Or a group which would be available to review and to comment on specific concerns that engineers may raise in their particular areas.

I take it, rather, that it goes up essentially through the command structure?

A No, I think the Licensing Section is viewed as such a clearing house, and I so used that.

Q Who in the Licensing Section?

A I think that Ed Kane, manager, has delegated responsibility for Mr. Taylor, but I should confirm that with Mr. Taylor.

Q It is generally known within the Nuclear Power Generating Division that Mr. Kane is a person to whom you can go with a concern like this?

A I believe so, yes, sir.

Q How is that made known?

A Well, it is made known by management guidance relative to identification of safety concerns.

Q What kind of management guidance?

A We have a procedural approach for identification of safety concerns which individuals within the organization may feel are important.

Q Is that a part of the policies and procedures?

A Yes, sir.

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Q Do you know what the name of the particular policy or procedure would be?

A No, I would not be able to quote it with precision, but it is the identification of preliminary safety concerns and potential safety concerns.

Q Could we have a copy of that procedure or policy?

A I can see no reason why not.

(Mr. Rockwell left the hearing room briefly and then returned.)

Q Is there any group within B&W which is composed of representatives of various departments or various sections or units within the Nuclear Power Generating Division specifically and, for instance, thermohydraulics, core analysis, structures, control, ECCS, training, to which safety concerns can be referred and which can give an overview of the impact of the particular safety concern which is raised with respect to all of these areas?

A There is no such standing group, no, sir.

Q Has there been any critical analysis of the B&W structure and organization with reference to how it may have contributed to or permitted the TMI sequence of events to occur that you know of, since the accident?

MR. EDGAR: What do you mean by "analysis"?

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MR. ROCKWELL: Somebody sitting down and saying, "We are trying to point out what within B&W in terms of structure or in terms of function or the failure to perform certain specific functions may have contributed to the circumstances which permitted TMI to occur."

MR. EDGAR: By analysis you mean a formal document?

MR. ROCKWELL: I mean any memorandum, letter, anything reduced to writing.

Q Maybe I can put it another way. Has there been any self-evaluation by anyone in B&W in the light of the TMI 2 sequence of events to say, "We know what happened, and is there something in our organization which contributed to it"?

A Well, I think that there certainly has been self-analysis to the extent of asking ourselves the question how could we have contributed or could we contribute in the future to the avoidance of such events, and those kinds of analyses have not -- used the word?

Q Self-examinations.

A Self-examinations have not explicitly ruled out structural considerations as it affects the formation of the Power Systems and Control Unit.

That expansion of responsibility I discussed with

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3 you -- to answer your narrower question -- I can't  
4 think offhand of anything that has so far been reduced  
5 to writing pertaining explicitly to the structure of  
6 B&W. I have tried to answer both the spirit and the  
7 letter of your question.

8 Q Well, let me state it again. Has there  
9 been any self-analysis, whether including structure or  
10 addressing the question of structure or not, as to what  
11 role B&W may have had in the circumstances which  
12 permitted events like TMI 2 to occur?

13 A I would infer that such analyses have been made.  
14 B&W's recommendations have been discussed by Mr.  
15 MacMillan, particularly with a number of different  
16 groups, and I'm sure this question has been addressed  
17 by him.

18 So certainly I could not answer that question  
19 negatively.

20 Q But are you aware of whether any of that  
21 self-evaluation has been reduced to writing?

22 A Certainly in the form of testimony of Mr.  
23 MacMillan, I'm sure it has.

24 Q Other than that?

25 A Other than that, going to the point of B&W's role  
in TMI 2, as distinguished from examining TMI 2 as an  
indicator of what B&W might do in the future, nothing

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comes to mind.

Q Has there been any request from any level of management for analysis of B&W's role, a written analysis of B&W's role in TMI 2?

A Prior to the event or after the event?

Q Since the event.

A Excuse me. The point I am clarifying is the role after the accident?

Q The role before the event.

A Yes, I feel confident that there has been. I don't feel confident to produce references.

Q Let me make sure I understand the answer. You are saying you are confident that there has been a management request at some level for a written analysis of B&W's role in the TMI 2 event?

A I'm not confident that there has been a request for written analysis. I liked your phrasing earlier, which was "self-evaluation." I suspect that has been explored.

Q My question again goes to whether there has been a request for a written self-evaluation.

A Well, let me state, as Mr. MacMillan has stated to the ACRS, that he had set up a Technical Review Committee for the incident, and this committee has as its charter the review of a number of areas.

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14. 1 I cannot recall the charter explicitly right now,  
2 and I don't want to align whether that is going to line  
3 up -- I don't want to attempt to speculate as to whether  
4 that lines up precisely with your question.  
5

6 Q Is it the intention of the Technical  
7 Review Committee to provide a report?

8 A I believe Mr. MacMillan has called for such a  
9 report.

10 Q Is there a deadline for the production of  
11 that report?

12 A I think so, yes.

13 Q Do you know what it is?

14 A I think it is targeted for the middle of July.  
15 I don't know whether that is a deadline or a target.

16 Q Are you aware of any self-evaluation or  
17 analysis prepared by any member of management that has  
18 been reduced to writing with reference to the TMI 2  
19 accident?

20 A Well, I am a member of that Technical Review  
21 Committee, and certainly we have made evaluations of  
22 the accident. Insofar as they touch on B&W's role and  
23 what B&W did, they were self-evaluations in that  
24 regard.

25 You started the line of questioning with regard  
to the structural element, and I am frankly pressed to  
remember to what extent structural elements have been

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examined.

Q I am not confining my question to structural elements.

A I understand. I must confess it is an unfortunate personal feeling that with the demands that have been made on me since March 28, 1979 I haven't participated as fully in the Review Committee as I would like.

(Continued on following page.)

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Q Well, I think we are wandering somewhat off the question.

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MR. EDGAR: I am having a little trouble with the definition of the question.

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Q I understand that there is a technical review committee that is evaluating the TMI-2 accident, and that it intends to produce a report which may come out in mid-July.

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A Yes.

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Q Is that correct?

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A Yes.

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Q And I understand there is ongoing evaluation and analysis within that group?

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A Within that group, and certainly elsewhere in the broadest possible sense.

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Q Do you have any specific knowledge of anything that has been reduced to writing outside of the confines of that group, which relates to an analysis or self-evaluation of B&W's role in the TMI-2 event?

20

A Excuse me for a second.

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(Witness conferred with counsel.)

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Q Have you had other requests to prepare materials from lawyers, either within B&W or outside but representing B&W, other than this memorandum relating to the Michaelson Report?

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A No, I don't believe I have.

Q Let me ask you another question. Are you aware of requests by counsel to other members of the staff here to prepare reports about the TMI-2 accident?

A I don't believe I am, no, sir.

Q There has only been one to you, and you are not aware of any other requests to any other member of the staff from counsel to prepare reports or analyses or self-evaluations?

A I don't have first-hand knowledge of that, no, sir.

Q So we can confine the question, then, as excluding --

A Reports to counsel?

Q Reports to counsel. Are you aware, specifically aware, of anything that has been reduced to writing which is in the nature of an analysis or self-evaluation of B&W's role in the TMI-2 sequence of events?

A Yes. I am certainly aware that we have reduced to writing and testified to in ACRS hearings B&W's role following the TMI-2 event.

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Q Okay.

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In addition to testimony before the ACRS, are you familiar with anything else?

A I have already mentioned material prepared for Mr. McMillan's testimony, which I think would have to go to this issue. Let me see what else I have mentioned. There is the technical review committee work. To the best of my knowledge, no material has been reduced to writing. We have focused, and certainly I have personally focused on followup from lessons learned and that sort of thing. I don't think that is what you are trying to get at. I understand the thrust of your question to be assessment of defects or problems like that, assessment of problems, if that is the thrust of your question.

(Continued on Page 91.)

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Q The assessment of B&W's role, whether good

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or bad, in the TMI 2 sequence of events?

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A Well, I would expand my remark about ACRS

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testimony. We prepared and made testimony to the ACRS

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relative to our role in construction of the TMI 2

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plant, and answered questions in that area, and that

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just about covers it.

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Q Excluding ACRS testimony, and excluding

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MacMillan's public statements, are you aware of anything

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else that has been reduced to writing in the nature of

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this evaluation, whether good or bad, of B&W's role in

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the TMI 2 sequence of events?

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A I am not aware of anything that has been reduced

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to writing that hasn't been, in essence, used in either

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preparation of or presentation of the areas that you

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just excluded.

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Q Do I understand from that, that there are

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background materials prepared from which the public

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testimony was then written?

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A I suspect it is safe to say that there were.

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Q Do you know who prepared those background

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materials?

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A The individuals who testified by and large, yes.

Q Did Mr. MacMillan ask for memoranda

addressing certain issues in an effort to prepare for

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his testimony?

A I don't recall that he did, no; not that I am aware of, you know. It is an organization of some size.

MR. EDGAR: Let us go off the record.

(Discussion held off the record.)

Q Are you aware of any system that was used on the 28th of March here for taping discussions either over the phone or in the simulator or elsewhere within the Nuclear Power Generating Division, discussions relating to TMI 2's accident?

A We tried, when it was helpful, and I don't remember whether we started this on the 28th, but my recollection is that we didn't, but we tried to assist with ad hoc dictation-type pickup of telephone calls and technical discussions where we thought those would be useful during the course of the TMI 2 event. There was no "systematic" type of taping of conversations that I know of. Logs were kept. I think, Mr. Wandling's memorandum of -- a sort of diary of that first day was one such log that has been provided, but there was, not so far as I know, there was no generalized system.

Q There was a central filing system for organizing all of the notes and memoranda and telephone conversations?

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A When we got our organization, which was put together rather quickly and rather ad hoc for assisting Met Ed, and then ultimately the NRC in the follow-up of the incident together, we designated an engineering operations assistant, and we tried from that point forward -- he was a shift man, and we tried from that point forward to make all requests that we received, to transmit those in writing through him, and transmit technical responses back through him, and I would expect that all that material is filed.

There may be additional material that was put in those files relative to the conversations that generated the request.

Conceive, if you will, a communications system in which we have several open telephone lines to various parts of the Metropolitan Edison and NRC organization in various groups, and we have an operations manager and an engineering operations manager working that arrangement, and conversations take place continually, and the best records are probably in the operations manager's notes, which I am sure have been kept, and the issuance and discharge of specific work requests through that operations assistant's collection in a file.

Q Do you know who the operations assistant was?

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A It was not a single person. We were on a 24-hour shift basis, and that duty was assigned around-the-clock.

MR. EDGAR: Mr. Womack would not be aware of this, but we have produced the logs, and you have a substantial amount of documentation on incoming and outgoing transmittals. There is a sequence log which you have.

MR. ROCKWELL: Does that include the dictated memoranda?

MR. EDGAR: I have no idea.

A I dictated most of mine. It was the only way we could keep up; whether it includes recorded telephone conversations which might have been recorded just to review to make sure we understood everything, and then pitched away -- that would be a hit or miss proposition.

Q Would your recorded memoranda have been funneled through this central communications system?

A Yes, once it was set up, that's right.

Q Do I understand correctly that the Technical Review Committee which has been set up to review the TMI 2 accident has been set up at the request of Mr. MacMillan?

A Yes.

Q And other members of management?

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A Mr. MacMillan.

Q Specifically, Mr. MacMillan?

A Yes.

Q Was there a memorandum or a written directive defining its structure and its purpose and its goals?

A It was started, yes.

Q Is it fair to say that the Technical Review Committee, as far as you know, Mr. Womack, was not set up at the request of counsel?

A I don't believe it was set up at the request of counsel.

MR. EDGAR: Off the record.

(Discussion held off the record.)

MR. ROCKWELL: Would the reporter please mark these documents as Womack Deposition Exhibits 25 through 33.

(Memorandum dated November 13, 1978 from Mr. Shah to Mr. Swanson was marked Womack Deposition Exhibit 25 for identification, this date;

(Memorandum dated November 29, 1978 from Mr. Cartin to Mr. Karrasch was marked Womack Deposition Exhibit 26 for identification, this date;

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(Memorandum dated November 30, 1978 from Mr. Wanderling to Mr. Faist was marked Womack Deposition Exhibit 27 for identification, this date;

(Memorandum dated December 11, 1978 from Jones to Cartin was marked Womack Deposition Exhibit 28 for identification, this date;

(Memorandum dated December 19, 1978 from Cartin to Jones was marked Womack Deposition Exhibit 29 for identification, this date;

(Memorandum dated December 22, 1978 from Swanson to Dunn was marked Womack Deposition Exhibit 30 for identification, this date;

(February 19, 1979 document, Release Notice released by Shah, was marked Womack Deposition Exhibit 31 for identification, this date;

(Memorandum dated May 17, 1979 from Cartin to Luken was marked Womack Deposition Exhibit 32 for identification, this date; and

(Letter dated May 18, 1979 from Mr. Roe to Mr. Reid was marked Womack Deposition Exhibit 33 for identification, this date.)

Q Mr. Womack, showing you what has been marked as Deposition Exhibits 25 through 33, could you review them first and tell me whether you received them at or

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about the dates indicated on the documents.

Off the record.

(Discussion held off the record.)

A Let me state all of them show me as information copy addressees except Exhibit No. 30, and I do happen to have seen No. 30; the others I may not be intimately familiar with them, but they do show me as addressees.

Q To the best of your knowledge, did you receive them at or about the time indicated on the documents?

A I would expect so, yes.

Q Did you become personally involved in an analysis of the Davis Besse November 1977 transient other than your participation in the preparation meeting which prepared for the NRC meeting?

A Yes, I was involved in the work which led up to the Exhibit I think you have labelled No. 30, which was Steam Generator Level Effects on Plant Operation prepared by Mr. Swanson and Mr. Dunn. I tried to stay in touch with that activity and helped to get it done.

Q At that time, were you in the international program?

A No. I haven't checked all the dates, but I believe all of these transmittals occurred during the period of time in which I was manager.

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Q That is correct, they start right after  
you became manager.

A Yes.

Q At any time in your involvement in the  
analysis of the November 1977 Davis Besse transient,  
did you become aware of the September 1977 transient  
at Davis Besse?

A I was aware of the September 1977 transient before  
coming to Plant Design. I had some awareness of that  
transient back in IPM when I was a budget manager in  
the international program, so I would answer the ques-  
tion that way.

Q Did you ever become aware of the concern  
that arose out of that September 1977 transient at  
Davis Besse about the potential for incorrect operator  
response?

A I believe I already answered that question in  
the negative.

Q That is all I have now.

1881 323

Mr. Womack, at this time we will recess  
your deposition so that you will be subject to further  
recall if further testimony is required. We do not  
have any plan to recall you, and we do not know that we  
will recall you, but we are recessing it with that  
understanding.

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Womack

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A We can recess with that understanding, but I  
would like to ask you a question off the record.

MR. ROCKWELL: Off the record.

(Discussion held off the record.)

(Whereupon, at 1:25 p.m., the within  
deposition was adjourned.)

-----  
EDGAR ALLEN WOMACK, JR

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

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Notary Public

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Edgar Allen Womack, Jr.   3

E X H I B I T S

WOMACK DEPOSITION  
FOR IDENTIFICATION                      PAGE

20	Resume of Edgar Allen Womack, Jr.	4
21	Chart showing structure of Plant Design Section of Babcock & Wilcox	5
22	Excerpt from Policies and Procedures Administrative Manual of Nuclear Power Generation Division entitled "Preparation and Processing of Site Instructions." numbered NPG 0504-12 (Rev.4) dated 2/20/78.	32
23	Memorandum from Bert Dunn to Jim Taylor dated February 9, 1978	46
24	Memorandum from Mr. Kelly to "Distribution" dated November 1, 1977	48
25	Memorandum dated November 13, 1978 from Mr. Shah to Mr. Swanson	95
26	Memorandum dated November 29, 1978 from Mr. Cartin to Mr. Karrasch	95
27	Memorandum dated November 30, 1978 from Mr. Wanderling to Mr. Faist	96
28	Memorandum dated December 11, 1978 from Jones to Cartin	96

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E X H I B I T S  
(Continued)

WOMACK DEPOSITION  
FOR IDENTIFICATION

PAGE

29	Memorandum dated December 19, 1978 from Cartin to Jones	96
30	Memorandum dated December 22, 1978 from Swanson to Dunn	96
31	February 19, 1979 document, "Release Notice," released by Shah	96
32	Memorandum dated May 17, 1979 from CARTIN to Luken	96
33	Letter dated May 18, 1979 from Mr. Roe to Mr. Reid	96

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STATE OF NEW YORK )

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: ss.:

COUNTY OF NEW YORK )

We, STANLEY RUDBARG, Certified Shorthand Reporter and Notary Public, and ROBERT ZERKIN, Notary Public, of the State of New York, do hereby certify that the foregoing deposition of BABCOCK & WILCOX COMPANY by EDGAR ALLEN WOMACK, JR., was taken before us on the 30th day of June 1979.

The said witness was duly sworn before the commencement of his testimony. The said testimony was taken stenographically by ourselves and then transcribed. -

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

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

IN WITNESS WHEREOF we have hereunto set our hands this 30th day of June 1979.

1881 327

-----  
STANLEY RUDBARG, CSR.  
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ROBERT ZERKIN  
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-----x

PRESIDENT'S COMMISSION ON THE  
ACCIDENT AT THREE MILE ISLAND

-----x

WALTERS

DEPOSITION of BABCOCK & WILCOX by  
JAMES FRANKLIN WALTERS, held at the offices of  
Babcock & Wilcox, Old Forest Road, Lynchburg,  
Virginia 24505, on the 6th day of July, 1979,  
commencing at 12:25 p.m., before Stanley Rudbarg,  
Certified Shorthand Reporter and Notary Public of  
the State of New York.

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

[212] 374-1138

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

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1881 329

*FOR Y*

**BENJAMIN REPORTING SERVICE**  
CERTIFIED SHORTHAND REPORTERS  
FIVE BEEKMAN STREET  
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[212] 374-1138

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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.  
-and-  
KEVIN GALLEN, ESQ.  
of Counsel

FOR THE COMMISSION:

WINTHROP A. ROCKWELL, ESQ.  
Associate Chief Counsel

ALSO PRESENT:

RONALD M. EYCHISON

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J A M E S      F R A N K L I N      W A L T E R S ,

having been duly sworn by Winthrop A. Rockwell,  
Esq. was called as a witness and testified as  
follows:

DIRECT EXAMINATION

BY MR. ROCKWELL:

Q            What is your current employer?

A            Babcock & Wilcox.

Q            What is your business address?

A            Old Forest Road.

Q            What is your present position with Babcock  
& Wilcox?

A            I am supervisory engineer in the Plant Performance  
Services, Operating Reactor Group.

Q            Is that in the Customer Service Department  
of B&W?

A            Yes.

Q            Formerly known as Nuclear Service?

A            That is correct.

Q            Have you prepared and brought with you  
today a resume which we have marked as Walters  
Deposition Exhibit 104?

A            Yes, I have:

(Resume of James Franklin Walters was  
marked Walters Deposition Exhibit 104 for

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Walters

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identification, this date.)

Q Did you prepare that?

A Yes, sir.

Q Is it accurate and complete?

A To the best of my knowledge.

Q Mr. Walters, showing you what has  
previously been marked as Womack Deposition Exhibit 24,  
can you tell me whether you recognize that document?

A Yes, I recognize it.

Q When did you first see it?

A I am uncertain as to when I first saw it.

Q Give me your best estimate.

A Well, depending on the documents you have got  
laying there, it has to be before the 10th.

Q But did you see it in the fall of '77?

A Yes.

Q How did it come to your attention?

A It arrived in my in-basket evidently from  
Mr. Hallman. He is my present bossman, immediate  
bossman.

Q And was he your bossman at the time this  
memo came out in roughly November 1977?

A Yes.

Q Did he, when he sent that memo to you, make  
any suggestions as to what you should do?

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A I am not sure. I believe he put on there, "Take action on this" or something of that order; "What do you think about it," something like that. I'm not sure about that.

Q Did the copy of that memo which came to you from Hallman end up in your files?

A Yes.

Q Is it still there?

A Yes.

Q Could we have a copy of it?

A Sure.

Q And your recollection is that the handwritten note on the memorandum had something to do with requesting you to take action?

A Or requesting me to look into it further, something like that.

Q Is it your recollection that Mr. Hallman's note was written right on the copy of the memo?

A Yes, sir.

Q Showing you what has been marked as Dunn Deposition Exhibit 35, do you recognize that document?

A Yes, sir.

Q Is that a memorandum from you to Mr. Kelly?

A It certainly is.

Q Did you draft that memorandum following

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Walters

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your receipt of Kelly's memorandum through Hallman?

A Yes, I did.

Q Did you consult with anyone in drafting that memorandum, Exhibit 35?

A Yes, I did.

Q Who did you consult with?

A I consulted with certain people in Customer Service about their opinions on this particular subject.

Q Who?

A As I state in the first line, I said, "In talking with training personnel". I reckon we should make clear at this time that I should have said "ex-training personnel that are presently employed within the rest of Customer Service."

Q Can you give me names?

A Yes, Cal Goslow, Herb Smith and Bill Street.

Q Did you talk to anyone else in your department?

A I do not remember at this time. I may have.

MR. GALLEN: Could you clarify one thing. You said they were ex-training personnel. Ex-training personnel at the time you talked to them or ex-training personnel now?

THE WITNESS: They were ex-training personnel at the time I talked with them.

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Walters

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Q Let us take them one at a time. Mr. Goslow, what was his position at that time that you talked to him?

A He is an engineer in the Startup Reactor Group.

Q Was he one of the ex-training people?

A Yes.

Q Where and when had he been involved in training before that?

A He was involved in B&W simulator training of the plant operators.

Q When?

A I don't know exactly when. He came sometime in '72, I reckon. I don't know. Something in that area. I don't know when he asked to come in Service. I reckon about early '77.

Q To the best of your knowledge he had been in the Training Department from '72 to '77?

A No, he was actually in the BBR Group before he came to Service, I think about a year or so. Maybe it was '76 when he actually got out of Training.

Q What is the BBR Group?

A That is a group that is assigned to work on the Mannheim project in Germany.

Q The Brown Boveri Reactor?

A That is correct.

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Walters

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Q I am still not clear as to what Mr. Goslow's involvement in Training was.

A Okay. At one time when he was in Training, I believe he was chief or senior instructor down there.

Q Down where?

A In B&W's training for the operators.

Q So he was in the Training Department?

A Yes.

Q And you indicated dates of '72 to either late '76 or early '77?

A That is correct.

Q Was that the time period when you believe he was in the Training?

A Yes.

Q Full-time?

A Yes.

Q And then he either came directly to Nuclear Service or came by way of some other department briefly?

A That is correct.

Q Do you know what Mr. Goslow's specialization was with respect to training? Did he focus on any particular area?

A I do not know that. I am not familiar with what his specialization is.

Q But he is an engineer, is that what you

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3 said?

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A He has the title with B&W as engineer. I do not know if he is a formal college graduate, if that is what your question asks.

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Q Why did you consult Mr. Goslow?

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A Because of his past training and experience with the operators here at B&W.

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Q When you consulted with him, did you show him the Kelly memorandum?

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A Yes.

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Q And then did you show him the draft of your response, or were you formulating your response at that point?

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A I was formulating my response at that time.

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Q What was his reaction when you showed him the Kelly memorandum?

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A I don't remember at this time. We discussed, you know, the general context of what the statements were and what they would lead to in our opinion, but the specifics I don't remember.

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Q Did he end up making any suggestions to you?

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A I don't remember.

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Q You just draw a blank as to the substance of your conversation with him, is that what you are saying?

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A That is true today, yes.

Q Have you ever made any notes as to what the substance of your conversation with him was? Have you ever written anything down that you remember?

A Nothing more than this memo to Kelly.

Q After you wrote your memo to Kelly, did you send Goslow a copy?

A No, I did not.

Q To the best of your recollection, did you talk to Goslow once or more than once?

A More than once.

Q That was your idea to talk to him because of his background in Training?

A Right.

Q Mr. Herb Smith was another person that you indicated you talked to?

A Yes, sir.

Q What was Mr. Smith's position at the time you talked to him?

A I don't know his exact position. He is employed in the Mechanical Equipment Section of Customer Service. What his title is, I don't know.

Q Is he still there?

A Yes.

Q And how about Mr. Goslow; is he still in his position?

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A Yes.

Q Was Mr. Smith one of the persons who was an ex-trainer?

A Yes.

Q What was his background in training?

A His background, as far as I know, is he is ex-Navy, and he had also been a senior instructor in the B&W Training Group.

Q And during what years, to the best of your knowledge, had he been senior instructor in the B&W Training Group?

A I am not sure exactly when he arrived as senior instructor. He was in the Training Group from '71 to '76, too, I reckon; in that area.

Q Did you show him Kelly's memorandum when you spoke with him?

A Yes, I did.

Q And do you recall what his response or reaction was?

A I believe his response was that there was too many "and's" in the instructions from Kelly.

Q Yes. What does that mean?

A Well, the scenario here was that we were trying to understand what was being said, and how could we break it down in simple and straightforward instructions to the operators?

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We thought that there was too much for him to remember in the particular instructions that Mr. Kelly had written about it. We were trying to find a simpler way of passing it on to the operators.

Q Did Mr. Smith question the underlying assumption or concern of the Kelly memorandum, or did he accept it as being valid?

A I think he accepted it as being valid.

Q Did it appear to you to be valid?

A The concern, yes.

Q How about Mr. Goslow; did he appear to accept the concern as valid, to your recollection?

A I think so, to the best of my recollection.

Q Were the substance of your conversations with Goslow and Smith addressed to the instruction that Mr. Kelly had formulated and its appropriateness?

A Would you repeat that.

Q Yes. Was the substance of your conversation with Goslow and Smith addressed more to the instruction, to what should be told to the operators?

A Yes.

Q And you consulted Goslow and Smith because of their contacts with operators in the past?

A Because of their past training and experience, yes.

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Q You thought they would be able to help you formulate that instruction in terms which might be clearer?

A Yes. Mr. Kelly was asking for comments on this subject, and we were trying to draw together something that we thought would be very easily remembered by the operators, something that we could give to them, in effect.

Q How about Street? What was his position at the time you talked to him?

A I'm not sure what his position was, but I knew he was in the New Equipment Section of Customer Service.

Q Was he a former instructor?  
A Yes.

Q In the B&W Training Section?  
A That is correct.

Q And to the best of your knowledge, when had he been an instructor in the Training Section, what years?

A About the same time as the other two, the same area. I don't know exactly when he came.

Q Do you have any understanding as to why Goslow, Smith and Street had moved from the Training Section to the section where they were when you talked

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to them?

A I did not know their reasons for moving, no.

Q Did you show Street the Kelly memorandum as well?

A My best recollection would be yes, but I am not sure.

Q Do you remember what his reaction was to what you told him and what you may have showed him in the form of the Kelly memorandum?

A No.

Q Taking all three of the conversations that you had with Goslow, Smith and Street together, what is your recollection of their collective advice or wisdom on the subject?

A I think our total input from them was essentially that there should be an investigation made as to whether or not this -- we should go ahead and pass this along. I don't remember exactly what we talked about.

What I did was think over what they had told me and then draft my letter to Kelly, but trying to take back and remember specifics from what each one of them told, I can't remember at this time.

Q When you say there was a sense that an investigation should be made before you passed it

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Walters

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along, what do you mean by that?

A I meant that we should follow up and pass along  
to them, to Kelly or to Plant Integration, our  
thoughts on what he was asking, as an instruction to  
give the operator.

(Continued on Page 15.)

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Q Did you talk to Hallman at all before you

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forwarded your memorandum, which is marked as Exhibit

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35, to Kelly?

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A I don't remember.

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Q Do you remember whether you talked to

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Hallman at all from the time you received Kelly's

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memorandum through Hallman up until the time of, say,

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January 1, 1978, about this subject?

11

A I don't remember, but I would say yes, I had to

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talk to him sometime, but I don't remember the details

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or the time.

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Q Why do you think you would have had to

talk to him?

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A Well --

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Q Would you normally send out a memorandum

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such as you sent to Kelly without Hallman's reviewing

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it?

A Yes, I could have.

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Q Is there some other standard procedures

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within your group which lead you to believe you would

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have talked to Hallman?

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A No, not really. On this particular memo, that

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Kelly memo, I'm not sure that I talked with Hallman at

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all on it.

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Q After you sent your comment to Kelly,

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Walters

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I see that you sent a carbon copy to Finnin?

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A Yes.

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Q Is Finnin in your Nuclear Service Department?

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A At the time of the memo?

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Q Yes.

8

A Yes.

9

Q Why did you send a copy to him? Had you

10 consulted with him?

11

A No, I had not.

12

Q Do you recall why you sent him a copy?

13

A Because he has the same position I did, except with some startup reactors, instead of operating reactor group. I became aware that the subject, since he had not seen this memo -- yes, he must have seen this memo.

16

Q When you say "this memo" you are referring

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to Exhibit No. 24?

18

A Right. I must have copied him on it because he

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was copied on this one.

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Q But you didn't copy any of the other people

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on the distribution of the Kelly memorandum. I just wonder why you sent it to Finnin. What did you have in mind, if you can remember?

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A Because he is essentially in the same position I am within Service, except he has two startup plants.

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3.3 So for his information, my comments on this particular letter.

MR. EDGAR: He was your counterpart for startup?

THE WITNESS: Yes, for startup plants.

Q Why would he need to see your memorandum any more than any of the other people that received the Kelly memorandum?

A I reckon the answer to that is he didn't.

Q It was just that he was in your mind particularly?

A Yes, he sits right beside me.

Q Did you ever talk with Mr. Finnin about either the Kelly memorandum or about your response to it?

A I don't recall.

Q I mean did you ever talk to him about it?

A I don't recall. I may have.

Q Did Kelly get back to you after he received your memorandum?

A I don't remember whether he did or not on this particular item. It is a little confusing in my own mind, going back this far, versus the next round of memos that came out.

Q We will get to those in a minute. By "the next round of memos", I take it you mean the first and

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second Dunn memos?

A That is correct.

Q Up to the point of the first Dunn memorandum, which was on February 9th of 1978, do you recall any other discussion or any other questions raised about the Kelly memorandum or your response to it or the issue in general?

A No, I do not.

Q I am showing you now what is marked as Womack Deposition Exhibit 23, identified as the first Dunn memorandum, dated February 9, 1978.

A Yes.

Q Did you receive a copy of it or read it on or about the date it was put out?

A Yes, I did.

Q And once again you are not shown on the distribution, are you?

A That is correct.

Q How did you receive it?

A I think Bill Street brought it over to me, and we conversed, and the area of the procedures was probably more in my area than in his particular area.

Q How did Street get a copy of it?

A He received it from Mr. R. F. Pittman, who was on the carbon copy.

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Q Pittman is in your department as well?

A He is in the Customer Service Department.

Q Did Hallman get a copy of the Dunn memorandum?

A To the best of my knowledge, he did not.

Q Once it came to your attention, did you in turn bring it to Hallman's attention?

A Yes, I did.

Q Did there follow a series of discussions with Bert Dunn about the prescription which he offered on Page 2 of his memorandum?

A Yes. There were ensuing discussions about those.

Q Who was involved in these discussions?

A I think mainly Cal Goslow and Bill Street were.

Q How about yourself?

A No, I never talked to Bert Dunn about that particular memo.

Q How about Hallman?

A I don't believe that at the present time, but later on, within two or three weeks of that, I did.

Q No, the question is whether Hallman talked to Dunn and was involved in the discussions with Dunn.

A I am not aware of any.

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Q After Street showed you the Dunn memo, did you do anything in particular?

A Yes, I asked Cal Goslow and Mr. Street, "What shall we do about this?" because it did raise a couple of questions in our minds, and Mr. Street and Mr. Goslow went down and talked to Mr. Dunn about his particular suggestions on Page 2.

Q Did they tell you what the result of their discussion with Dunn was?

A The best I remember, they came back and said they agreed upon changing his present suggestions in his February 9th memo, and there was still some uncertainty as to how we should actually phrase it, if we send it out to the operating plants.

Q Did they then work with you in terms of an effort to rephrase it?

A Not as I remember.

Q To your understanding, did Goslow and Street continue to work, either among themselves or back with Dunn, to work out the final wording?

A I think the best I remember is that that brought it to a halt until Mr. Dunn produced a second memo.

Q And would that be the February 16th memorandum from Dunn to Taylor, which we have marked

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as Exhibit 36?

A Yes, it is.

Q Did that document come to your attention on or about the date that it was distributed?

A I am not sure when it came to my attention, but it was in that area, yes.

Q Within a few days or a few weeks?

A I can't recall, but I'm sure it must have, yes.

Q What was the next thing you understood to have happened?

A Well, I think Mr. Goslow and I talked about the situation. We still -- I had reservations about a couple of things that this would get us into.

Q I want to make sure I understand where you are. You are now talking about it in the light of Dunn's second memorandum?

A That is correct.

Q Okay. You still have a couple of reservations?

A Yes. I reckon I still had reservations that they didn't like the two recommendations as worded, as Dunn had worded it in the second memo. We discussed this, and I told them--I think I instructed Mr. Goslow to see if we couldn't get agreement between Services and Integration and ECCS Analysis on my concerns and

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see if we could come to an agreement on some solution.

Q Did Goslow proceed to do that?

A To the best of my knowledge he did.

Q What did he do?

A That I'm not sure. All I can say is that he did have conversations with someone in Integration and with Bert Dunn. I am not sure at what time or the details of conversations he went into. This is like occurring over the next, I don't know, two, three, four months.

Q You say there were more discussions with Bert Dunn in two to four months following Dunn's second memorandum?

A To the best of my knowledge.

Q Were you ever a participant in these discussions?

A No, I wasn't.

Q Once the first Dunn memorandum came into the Nuclear Services Department, who in the department was in charge of coordinating the response to it?

A I reckon the answer is really, no one was.

Q Who was taking the lead?

A I reckon once Mr. Pittman gave the letter to Bill Street, he came over and talked with me, and I accepted responsibility for acting on it.

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Q Pittman talked to Street? Would you say that again?

A Bill Street at that time worked for Roger Pittman. Therefore, he gave the memo to Bill Street. Bill Street looked it over and talked to Pittman and said, "This is more in the area of Plant Performance Section." He therefore brought the memo over to me. We discussed and I told him I would take action on it or respond to it.

Q Then after that point, you went to Goslow and instructed Goslow to follow up with Dunn to resolve the concerns you had still remaining, even after Dunn's second memorandum, about the recommendation to the operators, is that accurate?

A Yes. I instructed Mr. Goslow to talk with Bert Dunn and Integration, I think, to discuss these concerns, yes.

Q Did Goslow report back to you from time to time?

A Yes.

Q What did he tell you was happening?

A I remember very little of what he told me, to tell you the truth.

Q Do you remember anything of what he told you?

A Mainly it was that he came back to me and said,

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"I have talked with certain people, Integration people, or with Bert, and we finally came to the conclusion that Integration is the best area to reconcile the concerns I had had and the concerns that Bert Dunn had."

As I remember it, he said he then took over with people in the Integration, Plant Integration, to try to resolve this problem. Goslow said that.

Q At what point did he start having discussions with people at Plant Integration? After February?

A The specifics I don't remember.

Q Referring to Deposition Exhibit 37, I think that Hallman came back onto the scene with respect to their discussion at some point, is that correct?

A Yes.

(Continued on Page 25.)

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Q How did Hallman get brought in?

A Well, I had discussed before August 3rd, when this memo was written, I discussed with Mr. Hallman, I don't know how many times, but a few times, concerning the Bert Dunn memos and the reactions we were getting from Plant Integration.

Q What did you tell him?

A I told him that I thought we were getting little response and that we needed to take more action on them.

Q Then what happened when you told him you were getting little response? What was his reaction?

A I am not sure, but I think it was along the lines of "What should we do to see if we can hurry it up and get a response to it," and evidently the answer was, "Let's try writing a letter to Karrasch, manager of Plant Integration."

Q Was that your suggestion?

A Yes.

Q Actually it was a memo to Karrasch?

A Yes.

Q Who had you been dealing with up to the time the memorandum went from Hallman to Karrasch on August 3rd? Who had you or Goslow been dealing with in Integration?

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A I am not sure. You have to ask Goslow that.  
I believe it was a guy named Lou Cartin, I believe,  
in Integration. Somebody had been in contact.

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Q I take it Goslow had had a number of  
conversations with Cartin?

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A As far as I know, yes.

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Q What was Cartin's position?

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A That I don't know.

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Q Mr. Hallman's memorandum to Karrasch was

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sent to Mr. Karrasch because Mr. Karrasch is head of  
Integration?

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A Manager, Plant Integration.

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Q Is it fair to say that the memorandum was  
sent to shake some action out of Plant Integration?

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A The memo was written to express two concerns  
that we had over the suggestions or instructions from  
the Bert Dunn memos and ask Integration to let's try  
to reconcile these so we could establish either a  
change in our policy or a change in the procedures to  
our operating plants if they were indeed needed.

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Q I take it the original reason for sending  
the memorandum, although the memorandum addressed  
certain technical issues, was to prompt some action?

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A Yes.

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Q The technical issues addressed in the

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memorandum had already been raised in discussion between Mr. Goslow and Mr. Cartin, to the best of your knowledge?

A That is true.

Q Then what happened after this August 3rd memorandum went out?

A Very little. Nothing is written down. Mr. Hallman told me that he had contacted Bruce Karrasch a couple of times on the memo. I, in turn, talked to Joe Kelly once or twice about the memo and later it turned out that Joe Kelly had no previous knowledge of this particular memo, but I didn't know it at that time.

Q Of the August 3rd memo, you mean?

A That's correct.

Q What did Mr. Hallman say his conversations with Mr. Karrasch covered?

A He never said anything of any particular nature. He said I contacted him, and that was about it.

Q Contacted him in what regard?

A We were going to supply a resolution or answer the particular memo.

Q Did you ever go to Plant Integration and talk to someone and say, "Hey, are we going to get a response"?

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A Like I said a moment ago, the only person I was going to was Joe Kelly, and at that time he was not aware of the memo I was talking about.

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Q When did you speak to him?

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A Sometime during the summer. I said, "Hey, Joe, when are you going to respond to that memo," and he didn't know what I was talking about.

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Q Had Joe Kelly told you that he was continuing to be involved in the issues raised by the Dunn memorandum?

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A No, he had not.

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Q You just addressed this comment to Kelly because you knew he had been involved in the previous fall?

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A I assumed that he wrote the November 1, 1977 memo, that he was still involved, which was erroneous.

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Q He was never involved after that, is that what you learned since?

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A That is what I thought it was, but I didn't say he was never involved; I do not know.

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Q Do you know if anything else happened other than what you have told me, between the time of the August 3, 1978 memo and March 28, 1979, and when I refer to "anything else happening," I am speaking in terms of advancing the resolution of the issues

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outlined in the August 3rd memo?

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A I am not aware of anything else that followed up on this or preceded the August 3 memo.

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Q To the best of your knowledge, when this issue came up again following the TMI 2 accident, as of that moment had Plant Integration done anything toward resolving the issues?

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A I can only speak to what I am aware of, and as far as I know, no. I can't speak for the whole company.

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Q Did you talk to anyone in Plant Integration on the day or two or three after the Three Mile Island accident about this subject?

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A To the best of my knowledge, no.

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Q Have you ever talked since the accident with anyone from Plant Integration?

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A Yes, I have.

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Q Tell me who you have talked to?

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A Joe Kelly. Joe Kelly is the only one.

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Q What was the occasion for your conversation with Joe Kelly?

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A General discussion of the TMI 2 accident.

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Q Who brought up the question of the Dunn memorandum, you or Mr. Kelly?

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A I think I did.

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Q What did you say, or what did you ask him?

A I don't remember what I asked him in particular.  
It had to do with pressurizer level and the ensuing  
scenario from TMI 2; the specifics I do not know.

Q Were you relating the Dunn memorandum to  
the TMI accident? Was that the substance of your  
discussion?

A No, really I wasn't.

My two concerns are really not LOCA concerns as  
Bruce Dunn's memo's addressed. My two concerns were  
straight hot and normal operation with some minor  
transient that did not result in a LOCA such as an  
overcooling transient getting us into a more serious  
problem because of the Bert Dunn recommendation, so my  
memo, the August 3rd memo, really does not intend to  
address a LOCA as such. It really is trying to ask  
the question, could we cause a small break or LOCA  
through the Bert Dunn recommendation during normal  
operation cause a trip of the plant and overcooling  
transient ensuing and therefore get ourselves into a  
bigger problem than would be necessary.

Q Has your concern been resolved as of today?

A I think I have been on the periphery of the  
subject of the TMI 2 analysis only but I think the  
concerns have essentially been resolved now, yes.

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Q Are they resolved insofar as there is a prescription in Bulletin 79-05? Are you satisfied with that prescription? Are you familiar with that?

A I am not sure I know what is in 79-05.

Q Let me refer you to a supplementary operating instruction which was sent from Babcock & Wilcos to the operating utilities approximately a week after the accident. (Handing.)

Were you involved at all in reviewing and approving the operating instructions set out in that document which is Olds Deposition Exhibit 102?

A I was not involved in the review of this.

Q Those recommendations reflect substantially the recommendations that Bert Dunn had arrived at back in February 1978, is that correct?

A I think that is correct.

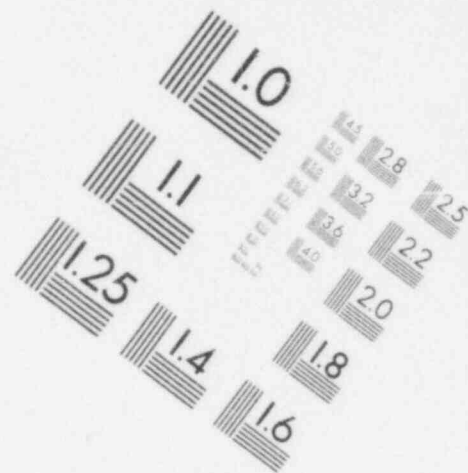
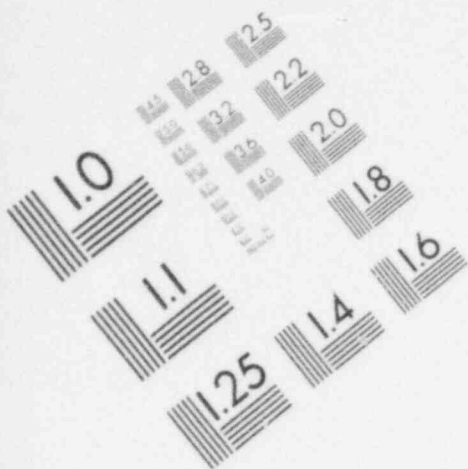
Q Do you know whether those recommendations, as they are set forth in Olds Deposition Exhibit 102, are acceptable to you or resolve the concerns that you had during 1978?

A No, they do not resolve my specific concern.

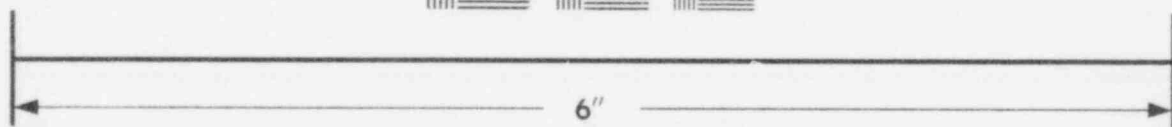
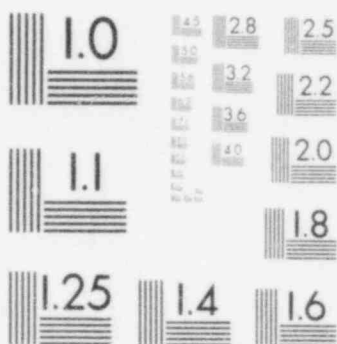
MR. EDGAR: Have you read that completely?  
Take your time.

A Well, the one particular item in it, the leaving of HPI pumps on for 20 minutes, is the question I was

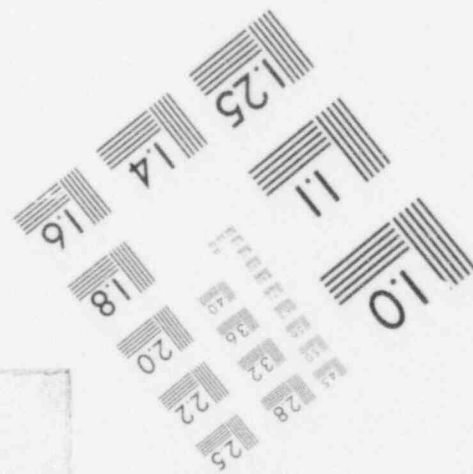
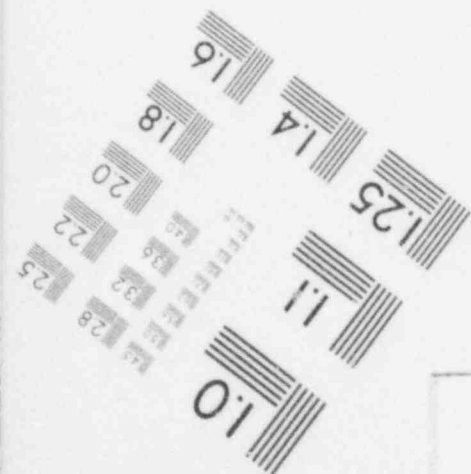
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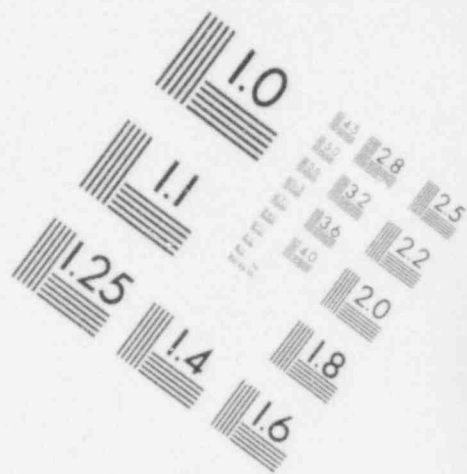
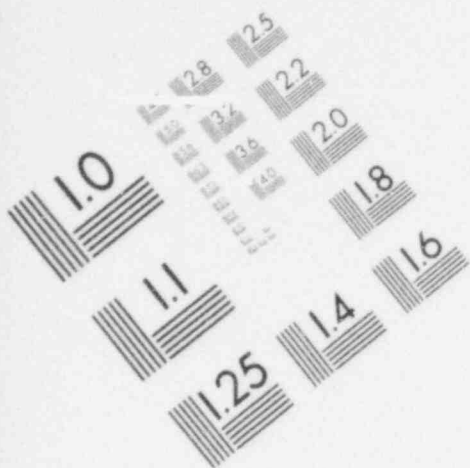


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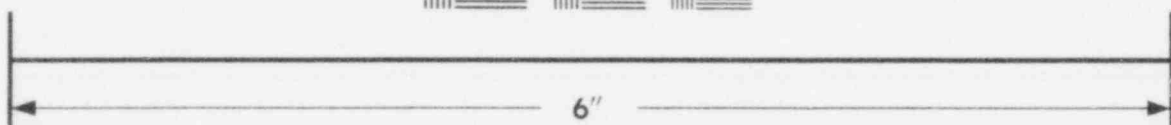
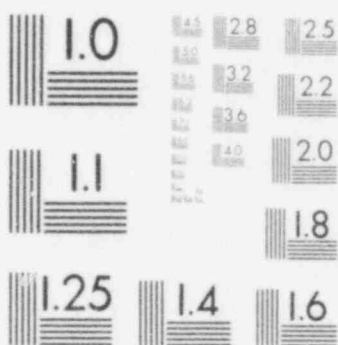


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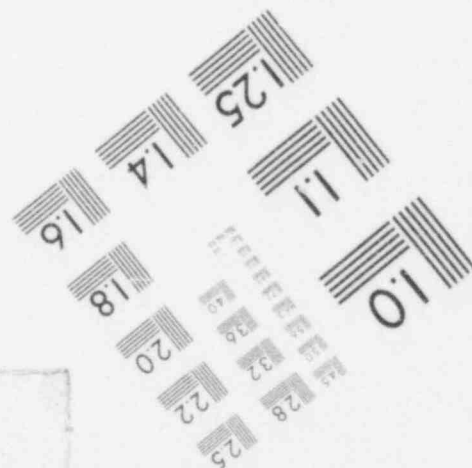
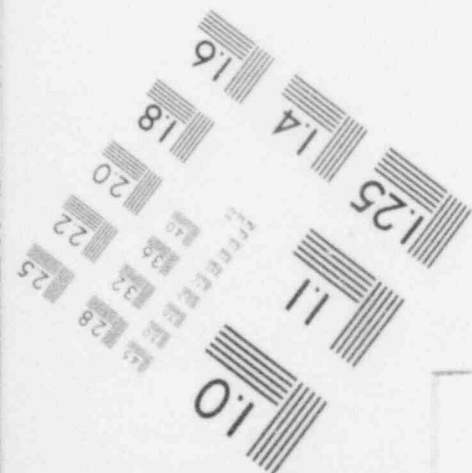


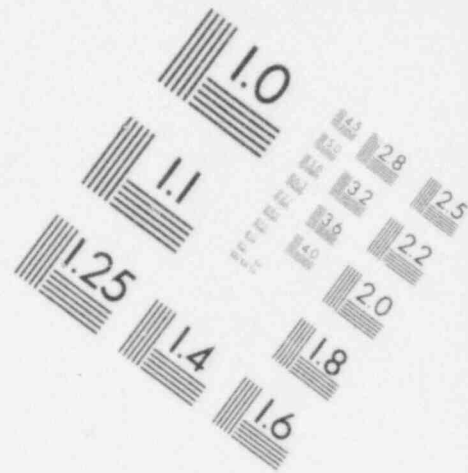
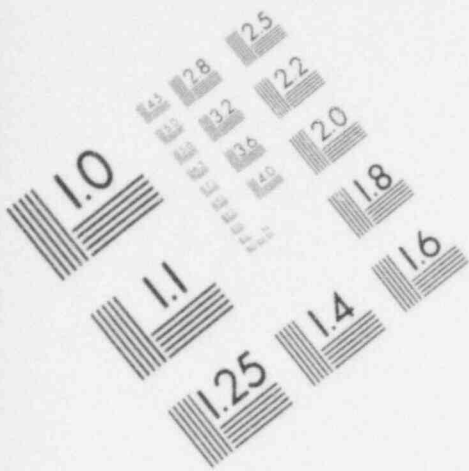


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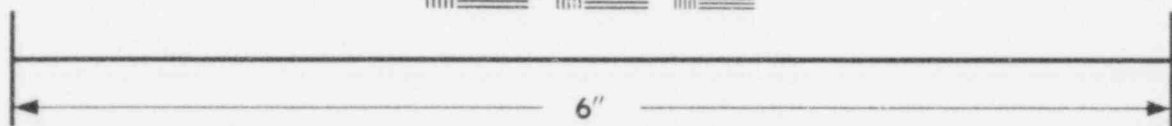


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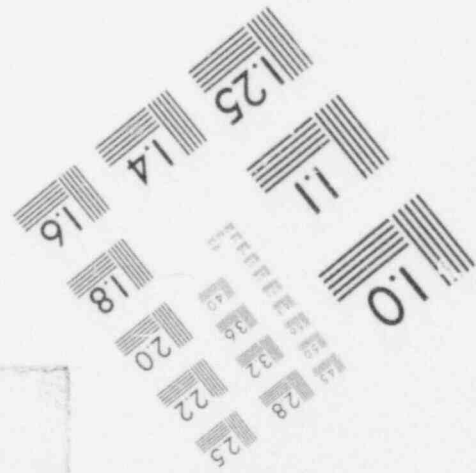
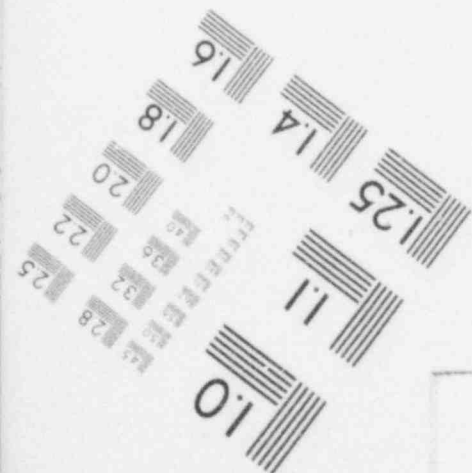


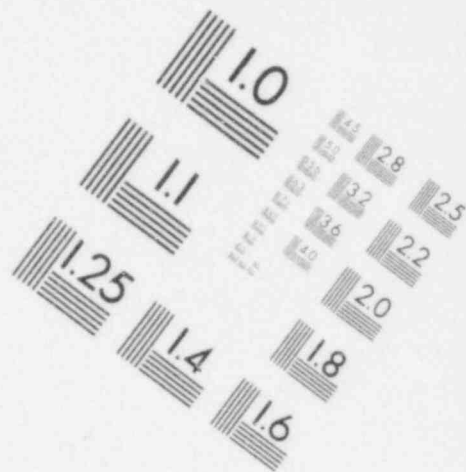
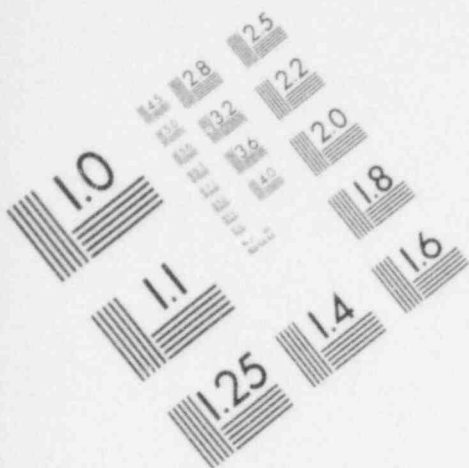


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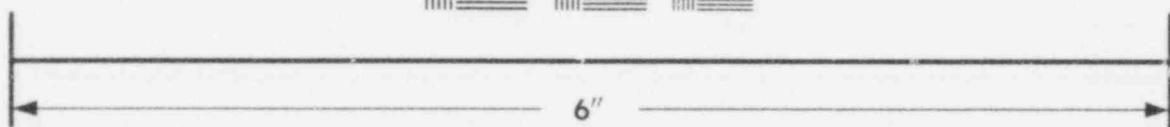
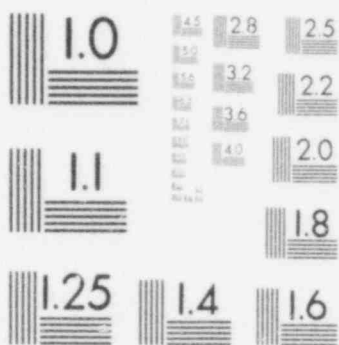


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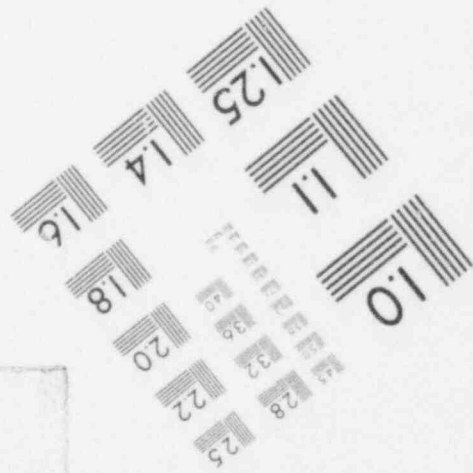
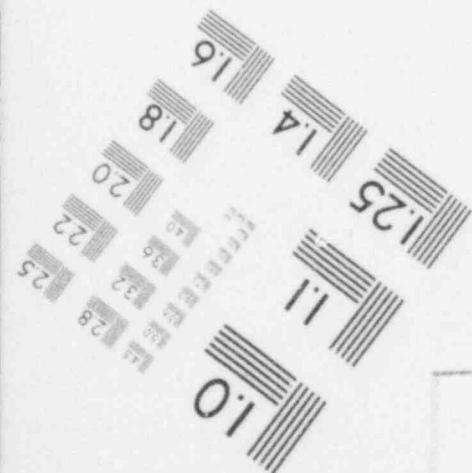




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asking essentially in my August 3rd memo, and that has not been resolved.

Q So if I understand correctly, your concern remains, although the instruction has gone out to the operating plants?

A Yes.

MR. EDGAR: On the basis of that instruction and that instruction alone?

THE WITNESS: Yes.

Q Now, referring you to Olds Deposition Exhibit 103 which is a revision in the operating instruction would you take a moment to review that Exhibit if you are not familiar with it. (Handing.)

A All right.

Q Do the changes reflected in Olds Deposition Exhibit 103 address your concern?

A I think they do address my concerns, yes.

Q Do they resolve it?

A Yes.

Q Were you involved in the revision in the procedure from the form it took in the April 4th distribution to the form it took in the April 17th distribution, referring respectively to Olds Deposition Exhibits 102 and 103?

A To the best of my knowledge, I wasn't.

1882 001

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Q You were not?

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A I was not.

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Q Did you ever talk to Bert Dunn after the

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August 3, 1978 memorandum from Hallman to Karrasch

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about the subject of his memorandum and before March

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28, 1999?

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A If I remember correctly, I have never talked to

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Bert Dunn about his memorandum or the August 3rd

memorandum.

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Q Would that be true up to and including

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today?

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A Oh, about the specific memos, that is true, I

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have not talked.

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Q Have you talked with Bert Dunn about the

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general subject matter addressed by the memos?

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A I have talked with Bert about the general subject

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matter of TMI 2 when we were rewriting procedures or

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right after the event up there. Now, whether or not

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these particular memos or the subject came up, I

don't know.

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(Continued on following page.)

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Q To the best of your knowledge, had the subject of the concerns raised by the Kelly memoranda and the two Dunn memoranda, and the information reflected, ever been transmitted to any of the operating utilities before March 28, 1979?

A To the best of my knowledge, it wasn't.

Q It was not?

A It was not.

Q You referred to Exhibit 37 as "my memorandum." Did you write it?

A Yes, I did.

Q And it went out over Mr. Hallman's signature?

A Yes.

Q After that memorandum went out, did you talk to anybody again between August 3, 1978 and March 28, 1979 about the subject that you had been addressing through the Kelly memorandum, the Dunn memoranda and the August 3rd memoranda?

A The only person I remember talking to after this was asking Hallman had he gotten a reply from Karrasch.

Q And Mr. Hallman said that he hadn't?

A He had contacted him verbally, and no, he had not gotten a written reply from him.

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Q You made that one comment to Mr. Kelly

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which apparently Mr. Kelly did not understand because

4

he had never seen the memorandum, is that right?

5

A That is correct.

6

Q Do you remember any other actions that

7

you took in that time period from August 3, 1978 to

8

March 28, 1979?

8

A No, I did not take any.

9

Q Do you know whether Mr. Hallman took any

10

actions during that time period other than his conver-

11

sations with Karrason to which you have already

12

referred?

13

A I am not aware of any. He may have.

14

Q Do you have any other knowledge of any

15

other facts which would shed any light on the

16

handling of the Dunn memoranda other than what we

17

have already covered, and I am talking about your

18

own knowledge, obviously?

19

A Would you repeat the question.

20

(Last pending question read.)

21

A I do not have any other information concerning

22

what Mr. Dunn might have done. My own knowledge is

23

as I have already stated.

24

Q Has anybody told you anything which we

25

have not covered which would shed any light on the

handling of the Dunn memoranda?

1882 004

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A No.

Q In other words, the picture we have drawn in the deposition up to now is a complete picture?

A As far as I know.

Q As far as you know, that is right?

A Yes.

Q Mr. Walters, since the accident at Three Mile Island, have you made any statements concerning your knowledge of any of the events surrounding the Three Mile Island accident and including the whole sequence of events involving the Kelly memorandum and Dunn memoranda and on through, and by "a statement," I am referring to anything you have written down which is a recounting of your own knowledge or an interview which you may have given which may have been recorded or transcribed?

A No, I haven't.

Q Mr. Walters, we are going to recess your deposition at this time, leaving you subject to further recall for testimony, should the need arise. We will let your lawyer know if the need arises.

MR. EDGAR: Off the record.

(Discussion held off the record.)

Q If there is a question in your mind as to what I am referring to, for instance, have you

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been interviewed by the NRC?

A No.

Q Do you wish to add to your answer in any way?

MR. EDGAR: Do you understand the question?

THE WITNESS: Yes, I understand the question.

A I have not had any deposition taken, nor have I talked to anyone on the subject of TMI outside of B&W, nor have I talked to anyone about all these memos we have talked about here.

Q Have you written down anything regarding the history of the handling of these memos, or given any of your superiors a recounting of how the memos were handled, or what anybody's actions were in regard to the handling of the Dunn memoranda?

A I have written nothing down, nor gave to anybody anything on the scenario of these memos.

Q How about the TMI 2 accident generally?

A Have I written anything down? I have produced a sequence of events for the TMI 2 accident scenario, is all.

Q How detailed is that sequence of events?

A It is a compilation of what came off the plant computer during the incident, trying to explain, because of a lot of excess information in there,

1882 006

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exactly what happened, at least as far as what the alarm signals that came on the plant computer was.

MR. ROCKWELL: Was this the sequence that was produced to us, Mr. Edgar?

MR. EDGAR: No.  
Off the record.

(Discussion held off the record.)

Q Mr. Walters, in constructing the sequence of events which you constructed, did you find anything which you thought was significantly new or different from what you may have been exposed to in other sequences of events?

A No -- no, I have not.

Q Have you had a chance to review other sequences of events in putting yours together?

A I have seen them all, I think.

Q With that, we will recess your deposition with the qualifications already stated.

(The deposition was adjourned at 1:30 p.m.)

-----  
James Franklin Walters

Subscribed and sworn to  
before me this \_\_\_\_ day  
of \_\_\_\_\_ 1979.

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Notary Public

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I-N-D-E-X

Witness

Direct

James Franklin Walters

3

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

WALTERS DEPOSITION  
FOR IDENTIFICATION

PAGE

104 Resume of James Franklin Walters 3

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1882 008





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5 PRESIDENT'S COMMISSION ON THE  
6 ACCIDENT AT THREE MILE ISLAND  
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12 DEPOSITION OF JAMES FRANKLIN WALTERS, by  
13 WINTHROP A. ROCKWELL, COUNSEL ON BEHALF OF THE COMMISSION,  
14 held at the offices of Morgan, Lewis & Bockius, 1800 M Street,  
15 N.W., Washington, D.C. 20036 on the 13th day of July, 1979,  
16 commencing at 1:00 p.m. before Simon Banks, Jr., a Notary  
17 Public of the District of Columbia.  
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WALTERS  
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5 PRESIDENT'S COMMISSION ON THE  
6 ACCIDENT AT THREE MILE ISLAND  
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17 Public of the District of Columbia.  
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1882 011

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DUPE

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of Counsel

-and-

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House Counsel

FOR THE COMMISSION:

STANLEY M. GORINSON, ESQ.  
Chief Counsel

WINTHROP A. ROCKWELL, ESQ.  
Associate Chief Counsel

ALSO PRESENT:

JOSEPH JOHN KELLY, JR.

1882 012

INDEXWITNESS

James Franklin Walters

DIRECT

3

1882 013

## DIRECT EXAMINATION CONTINUED

3

1 MR. ROCKWELL: Is Mr. Walters ready to go?

2 MR. MULLING: Yes he is.

3 MR. ROCKWELL: Okay. At this time we are re-  
4 conveneing the deposition of James Franklin Walters, which  
5 was originally begun on July 6, 1979, and recessed at 1:30 p.m.  
6 on that date.

7 Mr. Walters, because we are taking this deposition  
8 over the telephone, it is particularly important that you wait  
9 until I finish asking my question until you begin to respond  
10 and if you do not hear my question, will you please tell me  
11 so that I can repeat it. Is that agreeable?

12 THE WITNESS: Yes.

13 MR. ROCKWELL: For purposes of having the proper  
14 appearances, am I correct in understanding that John Mullin  
15 is on the other end at this point as counsel for B&W and that  
16 Mr. Walters is the only one in the room?

17 MR. MULLINS: Mr. Kelly is also present.

18 MR. ROCKWELL: Is Mr. Kelly staying for this  
19 deposition?

20 MR. MULLINS: Yes he is.

21 MR. ROCKWELL: The appearances should reflect  
22 that fact.

23 Whereupon,

24 JAMES FRANKLIN WALTERS,

25 Having been iously sworn, resumed the stand and testified

1882 014

as follows:

By Mr. Rockwell:

Q. Mr. Walters, do you recognize that you are still under oath?

A. Yes, I do.

Q. Mr. Walters, do you have before you, deposition Exhibit 35, which is a November memorandum from you to Kelly?

A. Yes, I have a copy, yes.

Q. Mr. Walters, there has been some confusion in the date of your memorandum. I had thought that it was November 18, others had thought that it was November 10. There is a little difficulty in interpreting your handwriting. Can you resolve the conflict.

A. I am sure that it is November 10.

Q. November 10? Okay.

Referring you to Exhibit 35, the first paragraph, let me quote it. "In talking with training personnel and in the opinion of this writer, the operators at Toledo responded in the correct manner considering who they had been trained and the reasons behind the training?"

How have you determined, Mr. Walters, how the operators had been trained?

A. As I have testified before, I had talked with X-trained personnel about a particular subject that was addressed to Mr. Kelly's letter. We discussed certain things,

1882 015

1 not all inclusive of which was how their training of the  
2 operators when here for training; our discussions ran essen-  
3 tially along the line, as I remember it, of my concerns as  
4 are addressed drafted in that particular memo. What I, at  
5 this point remember, as I came to the conclusion, since I  
6 was not; I had done no direct analysis of the Toledo tran-  
7 sients that were in Jim Kelly's memo, that they had, indeed,  
8 responded to the situation that they were in, maybe not in  
9 the correct order, but they had found that they had a, either  
10 stuck-open release valve or a small LOCA, had closed the  
11 release valve, and then had throttle back on their HPI.

12 Q. Okay.

13 Referring again to your phrase in the first para-  
14 graph, "considering how they had been trained," what did you  
15 determine before you wrote that memorandum, as to how they  
16 had been trained? What specifically did you understand with  
17 respect to their training when you wrote that memorandum?

18 A. I am not sure at this time what I had in mind at  
19 that time. What I actually obtained from the training people  
20 I can list as point XYZ. That is what they had trained.

21 Q. Mr. Walters, the court reporter is not clear on  
22 your answer, would you please repeat it?

23 A. I said that I was not sure at this time, what  
24 information that I can quantify to you that they gave me. It  
25 was a general conversation, and when I went back and drafted

1882 016

2 this memo, I so stated the words that were in question, but  
3 to try to go back and pull out what actually we talked about  
4 in detail, I cannot do that.

5 Q. Did you have an understanding when you wrote the  
6 memo as to how the operators were trained with regard to the  
7 subject of your memo, the subject matter covered by your  
8 memo?

9 A. I must have, but like I say I can't go back and  
10 give you details of it.

11 Q. Are you saying that all you know about how they  
12 had been trained is reflected in the memo?

13 A. And with my previous statement just a few moments  
14 ago.

15 Q. So, am I correct in understanding that, in fact,  
16 as you are seated here now, you don't know, you don't know  
17 how they had been trained, at least at that time, specifically.

18 A. I reckon the answer to that is I do not know  
19 exactly what was taught to them in their training classes  
20 here within the training department. Most of my information  
21 that I probably used in referring to -- writing this memo.  
22 was obtained from contacts in talking with people, were they  
23 operators, or from our training personnel or other engineer-  
24 ing people. I was never present, that I know of, during  
25 actual training sessions involving our training personnel and  
customer operators.

1882 017



1  
2 Q. Well, is it then fair to say that the first para-  
3 graph of your memorandum is simply a repetition of what some-  
4 body else told you?

5 A. No, I don't think so. I think it's truly, my  
6 opinion, as I said in the first line, the genera' conversa-  
7 tions that I have had over a period of years with quite a  
8 few different people.

9 Q. Let me go back to my first question. In reference  
10 to the phrase you used, "considering how they had been train-  
11 ed", did you have any specifics in mind when you used that  
12 phrase?

13 A. Well, I think that my conversations with many  
14 people over many years, led me to believe that operators had  
15 the idea that they followed pressurizer level doing quite a  
16 few transients. That was the information that I remember it  
17 from the many years of talking with different people. I know  
18 that not to be the correct reaction, but I do have that  
19 information. At least I see, over a period of years, that's  
20 my sum of what I have heard.

21 Q. You said you know that not to be the correct  
22 reaction. You mean not to be the correct reaction by opera-  
23 tors when faced with certain loca circumstances?

24 A. Well, I can also state that I know other things  
25 within the, what I do know to be the cases of training. We  
are picking out a specific point here. We are talking about

1882 018



1  
2 a specific case, whether we are talking now of normal opera-  
3 tions or of abnormal transients, how much have the operators  
4 been trained or taught to. I know that they have been taught,  
5 at least from my own training and assumptions for quite a few  
6 years, that they should not, in all cases, depend upon one  
7 single piece of instrumentation.

8 Q. Well, let's go back to that first paragraph. You  
9 indicated in that first paragraph that they, "the operators  
10 responded correctly in light of their training", correct?

11 A. As I previously stated that the Toledo operators  
12 found that they had a leak, they did find it, they shut it  
13 off and then they throttled back on HPI when they saw pres-  
14 surizer level recovering.

15 Q. What specifically in their training, led them to  
16 do that, to your knowledge?

17 A. I can't testify as what specific knowledge they  
18 have had from the training department, only by my assumptions  
19 in talking, in general conversations.

20 Q. What specifically did you rely on other than  
21 assumptions and general conversations in making the statement  
22 that "the Davis Besse operators responded correctly in light  
23 of their training?" Can you give me any specifics?

24 A. I think the sum of my response was essentially  
25 like I said. My training, my understanding with conversations  
with people, whether it be operators, or people within the

1882 019

1  
2 B&W organization, and the brief exposure to, I reckon, it was  
3 the first Toledo transients, at which I saw the variations in  
4 pressurizer level, and had only walked away with the idea  
5 that once the operator found his leak, once the pressurizer  
6 level and pressure was recovered, or at least pressurizer  
7 level was recovering, that he then, his response was to take  
8 the HPI off. That's all at this time I know I used in making  
9 that paragraph.

10 Q. You said that you had a general understanding  
11 based on your own training, understanding and conversations,  
12 that the response of the Davis Besse operators to the Septem-  
13 ber 24 transient was correct in light of their training,  
14 Okay.

15 What, in your own training, your own personal  
16 training, led you to beleive that they were responsive and  
17 correct in light of their training?

18 A. I reckon my assumption is that I had thought and  
19 had been convinced by conversations that operators would rely  
20 on pressurizer level as indication, as an indication during  
21 certain conditions.

22 Q. Was there an operating instruction or procedure  
23 that would have led them to rely on pressurizer level?

24 A. I know of no procedure that states that they  
25 should only rely on pressurizer level, no.

Q. Were you taught, in your own training, to rely

1882 020

1  
2 on pressurizer level in throttling HPI?

3 A. No, the, I can only respond to that in that the  
4 procedures and all that we have written do not entail an  
5 instruction that should be considered that the inventory at  
6 RCS is dependent only on pressurizer level. The emergency  
7 procedures do state that the -- both pressurizer level and  
8 RCS pressure should be used.

9 Q. But, that's not what you say in the first para-  
10 graph of your memorandum? Is it?

11 A. I reckon that can be said.

12 Q. You reckon what can be said?

13 A. That my paragraph, my first paragraph contradicts  
14 known documents.

15 Q. Let me come back to the question that I have been  
16 asking. Can you give me any specifics on which you based the  
17 conclusion in the first paragraph that the Toledo operators  
18 had responded correctly in light of their training?

19 A. The only specific that I can testify to is that,  
20 as I have already stated, that I assumed that the operator  
21 was responding correctly as he did in taking HPI off after  
22 the pressurizer level had started to recover and he found  
23 his system leak.

24 Q. Okay, and when you make that assumption, what do  
25 you rely on?

26 A. I reckon the inadequate training or conversations

1882 021

1 that I have had throughout the number of years.

2 Q. What conversations, specifically?

3 A. Conversations with most anybody within this  
4 industry that I have been in contact with that we may have  
5 developed a discussion over some subject along this line.  
6 I don't know generally, who with, engineers, operators.

7 Q. Can you name one person that you have had these  
8 conversations with?

9 A. What conversation?

10 Q. You just referred to the fact that you relied on  
11 conversations with people in coming to the conclusion that  
12 the operators at Davis Besse responded correctly in light of  
13 their training. Now I want to know who you had those conver-  
14 sations with?

15 A. I don't know that I had conversations with any-  
16 body that I went away with the idea that the operators at  
17 Davis Besse had responded correctly. As I said, that was my  
18 opinion.

19 Q. What did you base your opinion on?

20 A. I reckon my lack of understanding of the particu-  
21 lar information that we were talking about.

22 Q. I will say the question again. What did you base  
23 your opinion on?

24 A. Well, as I have already stated, it's just my  
25 general understanding of the, what I felt to be the training

1882 022

1  
2 the operators had received.

3 Q. And where did you get your general understanding,  
4 from conversations?

5 A. Yes, more or less.

6 Q. Okay, conversations with whom?

7 A. That's a very difficult question to answer. In  
8 fact, I can't answer it. I've been to two or three different  
9 sites, was there for years at a time, I've been employed  
10 with B&W for 10 years, and I've talked to probably a thousand  
11 people in that time. I am not saying, and have not said that  
12 any one person gave me information that I wrote in this memo.  
13 This memo is my opinion. It would be very difficult for me  
14 to try to give you one person's name at this point in time.

15 Q. I am not asking for only one person's name, I am  
16 asking you if you can remember any names?

17 A. Asking me of one name of the discussion that  
18 occurred on what subject?

19 Q. I am asking you if you can remember any person  
20 with whom you had a conversation which led you to believe and  
21 contributed to your general assumption that the operators at  
22 Davis Besse responded correctly in light of the training they  
23 received?

24 A. I can't give you any name on that.

25 Q. Okay.

Would it be fair to say that the first paragraph

1882 023

1  
2 of your memorandum is based on the sum total of your experi-  
3 ence, conversations and training while you have been at B&W,  
4 and that the sum total of those experiences, conversations  
5 and training, is that, in your mind, the operators at Davis  
6 Besse responded correctly in light of the circumstances they  
7 were faced with?

8 A. Well, I reckon I'll have to answer yes to that.

9 Q. Okay.

10 A. My reaction in November, '77, was, once he had  
11 found the leak, he closed it, the pressurizer level had  
12 recovered, that I thought he had acted in a correct manner.

13 Q. Would it be fair to say that the throttling back  
14 of HPI in those circumstances, to the best of your knowledge  
15 and understanding at that time, was based on pressurizer  
16 level?

17 A. That is true.

18 Q. And that it should be based on pressurizer level?

19 A. My knowledge says that it could be based on  
20 pressurizer level.

21 Q. That is right, your knowledge back in the fall of  
22 1977? Is that correct?

23 A. I reckon that is correct. I think so, yes.

24 Q. And, is it correct that to the best of your  
25 knowledge and understanding, based on your experience and  
training in the Fall of 1977, was that HPI could be terminated

1882 024



1  
2 based on pressurizer level alone?

3 A. Well, I can't answer that. That is what I said,  
4 but I know that is not the case.

5 Q. I am asking you about your knowledge in the Fall  
6 of 1977, not what you know.

7 A. No. Like I said previously, the operators had  
8 had more training, I have more training. And just to relieve  
9 pressurizer level -- but when you ask me the question I have  
10 to say yes.

11 Q. You have to say yes, that determination at HPI on  
12 the basis of pressurizer level alone was appropriate in terms  
13 of your knowledge in the Fall of 1977, is that correct?

14 A. Yes.

15 Q. Referring you now to paragraph two of your memo-  
16 randum, first sentence:

17 "My assumption in the training assumes first that  
18 RC pressure and pressurizer level will trend in the same  
19 direction under LOCA".

20 Is that an accurate reading of the first sentence  
21 of the second paragraph?

22 A. Yes.

23 Q. And that was your understanding in the Fall of  
24 1977, correct?

25 A. That is correct.

Q. And to the best of your knowledge at that time

1882 025

1  
2 the training assumed that as well, correct?

3 A. You said the training assumed that as well. You  
4 mean the B&W training department?

5 Q. Well, I refer you to the sentence: "You said my  
6 assumption and the training assumed that RC pressure and  
7 pressurizer level were trend in the same direction under LOCA",  
correct?

8 A. Right. That sentence should read: "My assumption  
9 and training". I am referring to my own training, and that  
10 is correct.

11 Q. You were referring to your own training?

12 A. That is correct.

13 Q. What training?

14 A. Since I have never been qualified as an operator,  
15 I have never had formal operator training from B&W instructors.

16 Q. Well, you just indicated that you were referring  
to your training.

17 A. That is correct. My training comes from what  
18 knowledge I had gleamed in the period of time working within  
19 the B&W, conversations I have had with different people within  
20 mainly service organizations, I reckon.

21 Q. In preparing this memorandum you did confer with  
22 three former training instructors in the B&W training depart-  
ment, is that correct?

1882 026

23 A. I did, yes.  
24  
25



1  
2 Q. In referring to the first sentence of the second  
3 paragraph, you say in part, "the training assumes that,  
4 pressure and pressurizer level would trend in the same direc-  
5 tion". Was that based on your conversations with those three  
6 former instructors?

7 A. No, I would say not. That is my assumption and  
8 my assumption alone.

9 Q. Did you ask those former training instructors  
10 what the training did assume?

11 A. I can't remember, but I do not believe I did.

12 Q. When you refer to "the" training in the first  
13 sentence of your second paragraph, you were referring to B&W  
14 training, is that correct?

15 A. As I stated a minute ago, the sentence should read,  
16 "my assumption and training", the training I have had.

17 Q. But that is not it says, is it?

18 A. That is correct.

19 Q. It says my assumption and "the" training.

20 A. That is correct.

21 Q. Were not you referring to B&W training?

22 A. I am referring to my training received as the  
23 sole experience by working here for the numbers of years.

24 Q. Were you referring to the utility training when  
25 you used the term "the" training?

A. You mean the B&W training of the utility operators?

1882 027

1  
2 Q. I mean the training given by utilities to their  
3 own operators.

4 A. No, I am not.

5 MR. ROCKWELL: Off the record.

6 (Discussion off the record).

7 By Mr. Rockwell:

8 Q. Referring you to the third and fourth paragraphs  
9 of your memorandum, what did you mean "hydroing?"

10 A. Okay. There is about three words left that I am  
11 using synonymously here, the word "solid", the word "hydroing",  
12 and I can also inject loss of indicated pressurizer level.  
13 To me in the context or in the concerns I had mean essentially  
14 the same thing. This is that we would have enough water to put  
15 into the RCS, reactor coolant system, such that we would go  
16 up against the code release valve, essentially a solid  
17 water system.

18 Q. All right. And you indicated in the first  
19 sentence of your fourth paragraph, the fourth paragraph is the  
20 last paragraph:

21 "If you intend to go solid what about problems  
22 with vessel mechanics".

23 What problems in reference to vessel mechanics  
24 were you concerned about?

25 A. I was concerned about the problem of availability,  
if you want to so-call it as such, in the scenario that we

1882 028

1  
2 are talking about, when we go against the code's you are going  
3 2500 pounds or above it. The instrumentation is ranged only  
4 zero to 2500 pounds. When you do this I was asking the question  
5 "What would we have to do to get the RCS back available to  
6 produce power, would it be a simple reanalysis of the vessel  
7 mechanics", meaning what stress had we put the RCS itself and  
8 the core under through doing this, and secondly was it  
9 possible for us to do any damage to the RCS by putting it  
10 through this transient.

11 Q. Did you have any knowledge at that time of what  
12 damage might be done by going solid to the RCS and the core?

13 A. The only thing that I had in my mind, that I can  
14 think of is, if we do do this we would go up against the code  
15 release valve or the electrostatic release valve and whether  
16 or not they opened and whether they would be damaged so that  
17 it wouldn't receive -- so you would have cool down and repair  
18 them. That was first and foremost, I reckon, in my mind.

19 Secondly, I reckoned the fuel itself.

20 Q. Were you concerned that the PORV or the code  
21 safety might not open if you went solid?

22 A. No, I wasn't concerned that they would not open.  
23 I was concerned that they would open and then not receive and  
24 therefore you would have a loss of coolant.

25 Q. But referring you again to the first paragraph,  
the first sentence of your fourth paragraph, you were

1882 029

1  
2 referring to a problem with vessel mechanics. Do you in-  
3 clude the problem of receding of the valves as a problem of  
4 vessel mechanics?

5 A. Well, the only thing I had in mind, the only  
6 thing was that I did not know whether or not this code release  
7 valve could release the quantity of water that the HPI pumps  
8 could pump into the RCS. If they could not then yes, it  
9 might cause some problems. I don't know, I have no idea.  
10 That is the reason why I asked the question, could it cause  
11 a problem in damaging the RCS.

12 Q. Am I correct then, that the problem you foresaw  
13 is that if your HPI is shoving more water into the system  
14 than can be discharged through the PORV and the two code  
15 safeties, that you might potentially face a situation where  
16 the reactor and the pressurizer vessels would be over-  
17 pressurized above 2500 pounds which might stress them and  
18 do damage?

19 A. That is correct.

20 Q. And the specific damage that you were concerned  
21 about was damage to the core, is that correct?

22 A. Yes, in that I do not think we would cause any  
23 physical damage but it is probably outside of what the plan  
24 is licensed by the technical specification requirement, there-  
25 fore it might be that the plant would have to shut down and  
stay down long enough for us to rectify the problem paperwise.

1882 030

1  
2 Q. And if the system was pressurized above the  
3 acceptable levels, whatever they are, the shutdowns would be  
4 a lengthy one, is that correct, because all parts of the  
5 system would have to be examined to make sure that there had  
6 not been any overstressing which might lead to failure down  
the road?

7 A. Essentially, yes, that is what I had in my mind,  
8 yes.

9 Q. Okay. How long does that kind of analysis, to  
10 the best of your understanding, take?

11 A. I can't really say. I would say at least, you  
12 know, my own experience would be that it would be greater  
than a couple of weeks.

13 Q. Could it be a matter of months?

14 A. I think with NRC involvement it possibly could be.

15 Q. Did you check to see whether the rated flow,  
16 maximum flow of HPI would exceed the rated maximum discharge  
17 of the three valves in question, the PORV and the two safeties,  
18 the two codes safeties?

19 A. Yes, I did check with certain people, probably  
20 not the correct people, but I did talk with certain people.

21 Q. Who?

22 A. My answers were --

1882 031

23 Q. Who?

24 A. I don't remember who, but I suspect it was the  
25

1  
2 same three guys that I talked about in this memo, the  
3 X-training personnel, Cal Goslow, Herb Smith and Bill Street.

4 Q. And what did they tell you?

5 A. I think the result of the conversation was that  
6 if the release isn't steamed. Engineering had told us we had  
7 no problem, but we were never sure whether or not we could  
8 pass the amount of water through these valves, solid water  
9 that is.

10 Q. Was this analysis based upon the assumption that  
11 there was no main feed, no aux feed?

12 A. I have no idea. I do not know.

13 Q. Okay. And the subject we just have been talking  
14 about is the subject addressed in the last sentence of your  
15 memorandum, is that correct?

16 A. That is true.

17 Q. Going to the last sentence of the first paragraph  
18 which is on page two of your memorandum:

19 "If this is the intent of your letter and the  
20 thoughts behind it, the operators are not taught to hydro  
21 the RCS every time the HPI pump is initiated."

22 Were the operators taught to hydro the RCS at any  
23 time?

24 A. No, the operators are not taught to hydro the  
25 RCS at any time.

1882 032

Q. In fact, would it be fair to say that they were



1  
2 never taught to hydro the RCS?

3 A. I think that is a fair statement.

4 Q. Under any condition?

5 A. That is true.

6 Q. That is your best knowledge and understanding  
7 based upon some ten years at B&W?

8 A. That is true.

9 Q. Why do you think, or what do you think the reasons  
10 were that operators were taught never to hydro the RCS?

11 A. The first thing that comes to my mind is essen-  
12 tially you have two situations, one would be when your reactor  
13 is critical and at one point is not. Both problems gel  
14 together most of the time. Mainly, you do not want to go  
15 solid because you have no pressure control.

16 Q. Any other reasons?

17 A. There is no reason for it during normal operations.

18 Q. What about non-normal operations?

19 A. Well, my memo was addressing this type of thing.

20 Q. What type of thing?

21 A. A overcooling transient at which time you loose  
22 pressurizer level or close to loosing pressurizer level and  
23 the recommendation that, if you do get low pressure in  
24 energize -- you might leave the HPIs off for some long period  
25 of time. In a case like this I expect you would wind up going  
solid in the RCS and it is not something that you want to do.

1882 033

1  
2 Q. So that is another reason why operators were  
3 taught never to hydro the RCS because of the danger that might  
4 arise from hydroing the RCS in an overcooling transient,  
5 correct?

6 A. Again, I can't address that they were trained not  
7 to do that. To me as a engineer, that is something that you  
8 would not want to do. That is true.

9 Q. And you believe in your own mind that that would  
10 be one of the reasons why the operators were taught never to  
11 hydro the RCS?

12 A. In my own mind that is true.

13 Q. Is it your impression or understanding, Mr. Walters,  
14 that your own training and understanding, that you should  
15 never hydro the RCS is a reflection of training and under-  
16 standing of operators in the field at the various utilities?

17 A. Would you repeat that?

18 (Whereupon, the pending question was read by the  
19 reporter.)

20 MR. ROCKWELL: Did you understand that or do you  
21 want it read back again?

22 THE WITNESS: Please read it back again.

23 (Whereupon, the pending question was again read  
24 by the reporter.)

25 THE WITNESS: That is true.

By Mr. Rockwell:

1882 034



1  
2 Q. Mr. Walters, directing your attention from the  
3 time period from February 16 to August 3, 1978, do you have  
4 any direct knowledge that Mr. Dunn was ever informed that you  
5 were not satisfied personally with the prescription outlined  
6 in his February 16, 1978 memorandum?

7 A. I cannot. I did not know personally that he was  
8 instructed as to my concern. I assumed that Goslow conversed  
9 with him on the matters of these concerns.

10 Q. Have you ever checked with Mr. Goslow and asked  
11 him whether he ever did advise Mr. Dunn that you all were not  
12 yet satisfied with the prescription as outlined in Dunn's  
13 February 16 memorandum?

14 A. To the best of my knowledge, I did talk with  
15 Kal and Kal did converse with Mr. Dunn about these concerns.

16 Q. When? When did Goslow indicate he conversed  
17 with Dunn?

18 A. It must have been early '78. I cannot give an  
19 exact date.

20 Q. But has Goslow told you he conversed with Dunn  
21 after February 16?

22 A. To the best of my recollection he said he did,  
23 yes.

24 Q. You specifically asked him that?

25 A. I think I probably asked him about had he talked  
with the people in engineering in that context.

1882 035

1  
2 Q. I think we have established that Mr. Goslow may  
3 have talked with Mr. Dunn between February 9 and February 16  
4 in arriving at a realized instruction, is that correct?

5 A. That is correct.

6 Q. And now specifically my question is, has Mr.  
7 Goslow told you whether he talked to Dunn after February 16?

8 A. To the best of my recollection he says he has,  
9 he had talked to Mr. Dunn and Mr. Cartin at plant integration.  
10 But I only knew of Mr. Cartin in the last month.

11 Q. When did Goslow say he talked to Dunn after  
12 February 16?

13 A. I didn't get the first word.

14 Q. When did Mr. Goslow say he talked to -- strike  
15 that. Let me rephrase the question.

16 Did Mr. Goslow say at what time after February 16  
17 of 1978, he talked to Dunn?

18 A. It is certainly possible that he did tell me such,  
19 but I do not remember at this time.

20 Q. Did he tell you how many times as of February 16,  
21 1978, he talked to Dunn?

22 A. I testified already that at least once or twice.  
23 More than once.

24 Q. And what did he say that he told Mr. Dunn in those  
25 conversations after the 16th?

A. I don't remember the specifics of his conversations

1882 036

1  
2 or any of the conversations. All I remember is that he did  
3 say he talked with him about the concerns and essentially,  
4 that is it. He talked to him about the concerns.

5 Q. What specifically were your concerns about the  
6 prescription as set forth in the February 16, 1978 memorandum?  
7 Do you have that available to you now?

8 A. Yes.

9 My specific problem was related to what we have  
10 just been talking about a few minutes ago and that was  
11 Mr. Dunn recommended that once HPI had been put on that it  
12 be left on for some period of time. And I think here he says  
13 10 minutes.

14 Now, we have got to realize that Mr. Dunn is  
15 referring to a LOCA incident.

16 I have never, and I'm not, addressed a LOCA. I  
17 talked about an overcooling transient. And in that case, I  
18 was concerned that if I left the HPI pump on for some period  
19 of time as that I would then get into my scenario of a few  
20 minutes ago, of going solid in the RCS and the ensuing  
21 problems there.

22 At no time did we ever disagree with his scenario  
23 on the LOCA. We were simply addressing a problem where we  
24 did not have a LOCA, a normal transient, overcooling transient.

25 Q. Let us assume, Mr. Walters, your concern about  
going solid with an overcooling transient, is there any way

1882 037

1  
2 that an operator could know, during the course of the  
3 transient, whether he was faced with the danger of an over-  
4 cooling transient and therefore know that going solid should  
5 be avoided in those circumstances?

6 A. I think it depends mainly on what time period we  
7 are talking about. If we are talking about, say, less than  
8 two minutes, maybe not, say, in a period of five to ten  
9 minutes, certainly, yes.

10 Q. Is there any instruction or operating procedure  
11 that distinguishes, and I am referring now to the Fall of  
12 1977, that distinguishes between those situations where an  
13 overcooling transient is possible, and therefore, those  
14 situations where going solid is to be avoided from those  
15 situations where an overcooling transient is not a concern?

16 A. I think there are. But, I'm not familiar with  
17 very little information. I believe the main-steam line  
18 break scenario and a few other ones are covered, but I'm not  
19 familiar with any of the details.

20 Q. Am I correct in understanding that to the best  
21 of your knowledge, because of the danger of going solid during  
22 an overcooling transient, and because of the concern that  
23 going solid leaves you without pressurizer control, that the  
24 operators were instructed that you should not go solid at  
25 all?

A. Would you repeat the question?

1882 038

(Whereupon, the pending question was read by the reporter.)

MR. EDGAR: In those cases or ever?

THE WITNESS: Well, --

MR. ROCKWELL: Ever, at all is the question.

THE WITNESS: Well, I can only speak as an engineer. I do not know that was or was not addressed within the training department. To me, as an engineer, no, I would not.

MR. EDGAR: Mr. Walters, there is at least some confusion in my mind at this point as to where we are and I wonder if you could explain the basis of your concern?

Am I correct that the basis of your concern is that if the Dunn prescription were applied literally without regard for a class of initiating events, such as undercooling, that that prescription could lead to overpressurization. Is that what your concerns consist of?

THE WITNESS: Yes, George, that is essentially it. My problem was, at no time had we brought into the situation a LOCA. That is Bert Dunn's area. We were saying if you do bring this prescription, can we indeed get into a problem with an overcooling transient where we still have the inventory in the RCS and we know as soon as you can stop the overcooling transient that the pressurizer level, as well as the fluid in there is going to expand and you are

1882 039

1  
2 going solid in the RCS.

3 By Mr. Rockwell:

4 Q. Mr. Walters, you stated earlier in this deposi-  
5 tion, that to the best of your knowledge and understanding,  
6 operators understood that they were never to go solid and  
7 you cited a couple of reasons for why they were never to go  
8 solid.

9 And my question now is, those reasons were,  
10 number one, the loss of pressure control and number two, the  
11 possibility of going solid during an overcooling transient,  
12 is that correct?

13 A. Yes.

14 Q. And for those reasons the operators have a  
15 general understanding, although they may not understand those  
16 reasons, they do have a general understanding that they are  
17 never to go solid, correct?

18 A. I do not know that the operators have an under-  
19 standing that they are never to go solid.

20 Q. But you said you thought that was your under-  
21 standing, correct?

22 A. Yes, that is my own assumption.

23 Q. Okay.

24 Assuming that is true, assuming that the opera-  
25 tors believe, based upon their training and instructions and  
26 so forth, that they are never to go solid, would it be

1882 040



possible to create instructions which distinguish for them those circumstances where going solid is a danger, and therefore, it should be avoided and/or distinguish those situations where going solid is not a danger?

A. Yes, I think that procedures and instructions can be worked out if it is not a problem.

Q. To your knowledge, has that every been done before March 28, 1979?

A. To my knowledge, no.

Q. During the time period from February 16 to August 3, what specific efforts did you make to get a response from plant integration to your concerns, your continuing concerns about the Dunn prescription contained in this February 16th memorandum?

A. The only contracts I had were with Goslow through integration.

Q. What efforts did Goslow make?

A. As I repeated earlier, he says, as far as I remember, that he contacted Mr. Cartin in plant integration and talked about the subject. Later on this was interrupted by times when he was sent out of town to different sites for work, came back and so it was interspaced with maybe three or four weeks from time to time. We would go back and ask again. We were not getting what we considered resolution on the subject. Then I went to Mr. Hollman and said that we

1882 041

1  
2 should maybe draft a memo and send it out to Mr. Karrasch to  
3 see if we could get some, a response to it and we did, and  
4 that was in the August 3 memo as a result of that.

5 Q. Did you ever take any steps personally to get  
6 plant integration or Mr. Cartin specifically to respond before  
7 the August 3 memo?

8 A. No, I took no personal conversations, had no  
9 personal conversation with Mr. Cartin.

10 Q. Following the August 3 memo, did you personally  
11 take any steps to followup on it, to see that plant integra-  
12 tional finally did respond?

13 A. I think as I have already testified before, I  
14 talked to Mr. Kelly a couple of time about whether they were  
15 going to respond to that particular memo which I now --

16 Q. Right. Other than your conversation with  
17 Mr. Kelly?

18 A. No, I did not talk with anybody else.

19 Q. And I think you indicated before that Mr. Hollman  
20 may have contacted Mr. Karrasch a couple of times, is that  
21 correct, after the August 3 memo?

22 A. That is correct.

23 Q. And that he mentioned that he wanted a response  
24 from Mr. Karrasch, is that correct?

25 A. That is correct.

Q. And, what was Mr. Karrasch's response as best you

1882 042



1  
2 understand it?

3 A. I'm sorry, I missed the first word.

4 Q. What was Mr. Karrasch's response to Mr. Hollman's  
5 contacting him to the best of your knowledge?

6 A. To the best of my knowledge, I don't believe  
7 Mr. Hollman ever conveyed to me any conversation with  
8 Mr. Karrasch other than to say he had contacted him on the  
9 subject.

10 Q. You were present during the deposition of  
11 Mr. Kelly this morning, correct?

12 A. That is correct.

13 Q. Did you hear the exchange in which Mr. Kelly  
14 indicated that Karrasch had called Hollman around the turn  
15 of the year, Christmas time, of '78, and told Mr. Hollman  
16 that he, Karrasch, had no problems with the Dunn prescription?

17 A. Yes, I heard him testify as to such.

18 Q. Do you have any independent knowledge of that  
19 communication from Karrasch to Hollman at around Christmas  
20 time of 1978?

21 A. I have no independent knowledge of what the con-  
22 versation was about and I don't know the exact date that he  
23 may have talked. That may have been one of the conversations  
24 where he had talked with Mr. Karrasch.

25 Q. Did Mr. Hollman ever tell you that Karrasch had  
gotten back to him and said no problem, go ahead?

1882 043

1  
2 A. That is correct.

3 Q. Mr. Hollman did tell you that?

4 A. He did not. At no time did he tell me that  
5 Mr. Karrasch had said that.

6 Q. At any time before March 8, 1979, did you under-  
7 stand that plant integration through Mr. Karrasch had  
8 essentially cleared the Dunn memorandum, the Dunn prescrip-  
9 tion?

10 A. No, I have no information that that ever occurred.

11 Q. Have you ever asked Mr. Hollman about that?

12 A. I only asked Mr. Hollman, had we got any informa-  
13 tion back from Mr. Karrasch on the August 3 memo.

14 Q. And what was Mr. Hollman's response?

15 A. The only response that I can remember is that he  
16 said he had not received anything definitive from Mr. Karrasch.

17 Q. That is up to March 28, of '79?

18 A. That is true.

19 Q. Do you know whether operators at any of the B&W  
20 operating utilities were ever instructed before March 28, 1979,  
21 to ignore pressurizer level in those situations where reactor  
22 coolant pressure was dropping?

23 A. I have no personal knowledge they were every  
24 told so.

25 Q. To the best of your knowledge, they were not told  
so, is that correct?

1882 044

1  
2 A. That is correct.

3 Q. Mr. Walters, I am going to recess your deposition  
4 at this time as we have in the past, leaving the subject to  
5 further recall should we need additional testimony from you,  
6 in that event, we would contact your counsel and let you  
7 know what that means.

8 Thank you for being available this morning.

9 (Whereupon, at 1:45 p.m., the deposition was  
10 recessed, as above noted.)  
11

12 -----  
James Franklin Walters

13  
14 Subscribed and sworn to  
15 before me this ---- day  
16 of ----- 1979.

17 -----  
18 Notary Public  
19  
20  
21  
22  
23  
24  
25

1882 045

## CERTIFICATE OF REPORTER

I, Simon Banks, J.D., Certified Court Reporter,  
do hereby certify that I reported the testimony of the witness  
herein, over speaker phone, in stenotypy, and that the  
testimony was reduced to typewritten form pursuant to my  
direction.

I further certify that the testimony herein con-  
stitutes an accurate record of the proceedings had.

-----  
Simon Banks, Jr.

1882 046

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5 PRESIDENT'S COMMISSION ON THE  
6 ACCIDENT AT THREE MILE ISLAND  
7  
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11

12 DEPOSITION OF JOSEPH JOHN KELLY, JR. by  
13 WINTHROP A. ROCKWELL, COUNSEL ON BEHALF OF THE COMMISSION,  
14 held at the offices of Morgan, Lewis & Bockius, 1800 M Street,  
15 N.W., Washington, D.C. 20036 on the 13th day of July, 1979,  
16 commencing at 12:20 p.m. before Simon Banks, Jr., a Notary  
17 Public of the District of Columbia.  
18  
19  
20  
21  
22  
23  
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25

KELLY  
(phone)

PDR  
4

DUPE

7908160242

047

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WINTHROP A. ROCKWELL, ESQ.  
Associate Chief Counsel

ALSO PRESENT:

JAMES FRANKLIN WALTERS

1882 048

INDEXWITNESS

Joseph John Kelly, Jr.

DIRECT

3

1882 049

## DIRECT EXAMINATION CONTINUED

3

MR. ROCKWELL: The records should reflect that at this time we are resuming the deposition of Joseph John Kelly, Jr., which was recessed at 12:30 p.m. on July 7, 1979.

Mr. Kelly, are you able to hear me?

THE WITNESS: Yes, I can hear you.

MR. ROCKWELL: Because we are taking this deposition over a conference call, it is particularly important that I finish the question before you begin to answer and that I will try to let you finish the answer before I start another question, Okay?

THE WITNESS: Okay, I understand.

MR. ROCKWELL: If you do not understand the question, please tell me and I will be glad to read it back or repeat it so you will have the question clearly in mind when you respond, Okay?

THE WITNESS: Okay.

MR. ROCKWELL: The appearances for this deposition would be the same here in Washington.

Are the appearances still the same, John, in Lynchburg, namely, are the people in the room the same?

MR. MULLIN: Mr. Dunn has left. Mr. Walters and I are present with Mr. Kelly.  
Whereupon,

JOSEPH JOHN KELLY, JR.,  
having been previously sworn, resumed the stand and testified

1882 050



1  
2 as follows:

3 By Mr. Rockwell:

4 Q. Mr. Kelly, you understand you are still under the  
5 oath administered to you at the beginning of your deposition  
6 on July 7?

7 A. Yes, I understand.

8 MR. ROCKWELL: I guess the record should also  
9 reflect that the continuation of Mr. Dunn's deposition and  
10 Mr. Kelly's deposition and Mr. Walter's deposition, is pro-  
ceeding under agreement of counsel.

11 Is that correct, George?

12 MR. EDGAR: Yes.

13 By Mr. Rockwell:

14 Q. Mr. Kelly, referring you to deposition Exhibit 24,  
15 which is your memorandum of November 1, 1977, to distribution.  
Do you have that exhibit before you?

16 A. Yes, I do.

17 Q. You refer in that exhibit to, primarily to a  
18 September 24, 1977 transient at Davis Besse, but you also  
19 refer to a transient which occurred on October 23, 1977.

20 Do you have any more details on that October 23rd  
21 transient since your last deposition?

22 A. No. I don't know anything else about it since  
23 my last deposition.

24 Q. I believe we have covered this ground, but let  
25

1882 051

me just cover it again, quickly.

Do you know whether it involved a fail-to-open PORV?

A. No, I do not.

Q. Do you know whether it involved the loss of all feed?

A. I seem to recall that the incident started on a loss of feed water. I don't remember any details about "all" feed. If you mean by "all" feed you are including emergency feed water also, I don't remember hearing anything about emergency feed water.

Q. By "all" feed, I do mean main feed and auxiliary feed.

Would your answer still be correct assuming that?

A. If I understand your question, I will repeat my answer. I seem to remember that the incident started with a loss of their normal feed water, I don't remember specifics, any specifics about what happened to emergency feed water.

Q. Okay.

Do you know whether that transient reflected a pressurizer level high and a reactor coolant system inventory low?

A. No, I was never told any of those details.

Q. Is it your understanding that there was, however, premature termination of HPI in that transient?

1882 052

1  
2 A. My understanding is that it was bypassed  
3 and never allowed to initiate in the October 23rd transient.

4 Q. That was a concern of yours in making the decision  
5 to put out your November 1 memorandum, is that correct?

6 A. Yes, that is correct.

7 Q. Did you make, at that time, an investigation as  
8 to why HPI had been by-passed?

9 A. No, I did not. As I stated in my earlier testi-  
10 mony, someone else would have been assigned to investigate  
11 that transient. I would not. My only interest was that here  
12 was a second relatively close together incident of what I was  
13 concerned about, the operator reaction of high pressure  
14 injection.

15 Q. Do you know whether at the time that you heard  
16 about the October 23rd transient, you went to the licensee  
17 event report or site problem report for information on that?

18 A. No, I did not.

19 Q. Did you do any reactimeter data?

20 A. No, I did not.

21 Q. Did you go to any source to flush out your under-  
22 standing of that transient?

23 A. No. My only interest in it again was when I  
24 heard that they by-passed high pressure injection. I was not  
25 concerned about any more details of that incident.

Q. Referring to Exhibit 24, which is your

1882 053

1  
2 November 1, 1977 memorandum, you state, I believe in the third  
3 sentence, the operator stopped HPI when pressurizer level began  
4 to recover without regard to primary pressure.

5 Was that an inference on your part, or was that a  
6 matter of direct knowledge of what was in the mind of the  
7 operator?

8 A. That was an inference on my part.

9 Q. How did you draw the inference?

10 A. Now, we are talking about the September 24th  
11 incident?

12 Q. That is correct.

13 A. Having reviewed that in some detail at the time,  
14 I knew that they had resaturation in the, saturation condi-  
15 tions in the reactor coolant system loops when they had turned  
16 high pressure injection on. So, I was inferring from that  
17 that they could not have recognized the relationship between  
18 saturation temperature and saturation pressure in the primary  
19 loop when they turned high pressure injection on.

20 Q. Did you attempt to confirm the inference which  
21 you have advised me that you drew, by calling or contacting  
22 the people at Davis Besse in an attempt to find out what had  
23 been in the operators minds at the time they made the decision  
24 to terminate HPI in the September 24th transient?

25 A. No, I did not.

Q. Did anybody else make any contact with Davis Besse

1882 054

1  
2 in order to determine what, in fact, the operators had been  
3 looking at and relying on, to your knowledge?

4 A. Not to my knowledge.

5 Q. At the time, did you make any review of operator  
6 procedures to see what they might have been relying on?

7 A. No.

8 Q. Would it be fair to say that you did not take  
9 any of those steps, either with respect to the October 23,  
10 1977 transient?

11 A. After the October 23rd transient, I did go down as  
12 I previously stated, to the nuclear service area where the  
13 simulator instructors work and talked to them about what  
14 they were teaching operators on when to secure high pressure  
15 injection.

16 Q. And that was your conversation which you already  
17 told us about with Mr. Lind?

18 A. Yes, that is correct.

19 Q. Did you ask Mr. Lind or anyone in the training  
20 department, to simulate on the B&W simulator, either the  
21 September 24th or the October 23rd transients?

22 A. No, no I did not.

23 Q. Do you know whether anybody else did?

24 A. I don't know.

25 Q. Did you know Mr. Lind before you went down and  
talked to him that day?

1882 055

1 A. I'm sorry, I missed the first word of the question.

2 Q. Did you know Mr. Lind before you went down and  
3 talked to him in reference to the transient?  
4

5 A. Yes, John Lind worked with me at Crystal River,  
6 Unit 3 start-up for a period of time.

7 Q. How long have you known John?

8 A. Excuse me. Did you say how long did I know him?

9 Q. Yes.

10 A. It's in the order of magnitude of months as  
11 opposed to years. I would think he was down there, to my  
12 knowledge, maybe six months at the same time I was.

13 Q. Had you had much contact with him during that  
14 period of time?

15 A. I saw him from time to time during the week, yes.

16 Q. In what regards? What kind of dealings did you  
17 have with him?

18 A. John Lind was a shift supervisor augmentor in  
19 Crystal River Unit 3, and he was in those responsibilities  
20 in the control room, often providing advice and consultation  
21 to the Florida Power Corporation shift supervisors on watch.  
22 In that respect, and my duties as technical superintendent  
23 during that period, placed me in the control room quite often  
24 monitoring the progress of various tests. So, in that con-  
25 text, I ran into John, as I said, several times a week,  
normally.

1882 056



1  
2 Q. You had occasions to talk to him and discuss  
3 things with him?

4 A. Yes.

5 Q. Have you ever known John to express any doubt about  
6 a position he held?

7 A. Can you rephrase the question? I'm not sure I  
8 understand what you are asking?

9 Q. Sure.

10 Had you ever known John Lind to express any doubts  
11 about his opinion on a subject, or his knowledge or under-  
12 standing of a subject?

13 A. I can't recall any incidences. John normally  
14 spoke positively.

15 Q. When you had the conversation with him at Lynch-  
16 burg in reference to the two September and October transients,  
17 did you ask him specifically how the operators were instructed  
18 with regards to termination of HPI?

19 A. I asked John what instruction they gave to the  
20 operators, if that is your question.

21 Q. Yes, it is.

22 A. That is what I asked him, what instructions did  
23 we teach operators on when to secure high pressure injections.

24 Q. And he gave you an answer that indicated what  
25 the instruction was that they were to look at pressurizer  
level and reactor system pressure, is that correct?

1882 057

1  
2 A. Essentially, that was correct. I don't remember  
3 the exact words.

4 Q. Did you ask him to show you where in the materials  
5 used in the training program that instruction appeared?

6 A. No, I did not.

7 Q. Did you ask him to show you where in operator proce-  
8 dures that instruction appeared?

9 A. No, I don't remember asking that either.

10 Q. Did you ask him whether sufficient emphasis, in  
11 his opinion -- I think I misstated my question. Let me start  
12 again.

13 Did you ask him whether sufficient emphasis, in  
14 his opinion, was being given to that instruction so that the  
15 operators, in fact, understood it?

16 A. Didn't ask that specific question, but I was  
17 after that type of answer and John said that he was convinced  
18 that they taught reliance on both pressurizer level and pressure,  
19 and that they taught that enough or sufficiently so that the  
20 operators should have known what was happening during that  
21 transient.

22 Q. Did you tell John Lind, that in your view, some-  
23 body wasn't telling the operators about that procedure with  
24 sufficient clarity to prevent at least two incidents where  
25 high pressure injection had been terminated prematurely?

A. Yes, that was my reason for going down to see

1882 058



1  
2 John to begin with, and I told him that.

3 Q. Did you emphasize to him that somewhere that  
4 instruction was not getting across to the operators?

5 A. I may have. I don't remember using those words  
6 either. I remember leaving there with the impression that  
7 the subject was being taught by the simulator instructors, and  
8 I felt that if I could get appropriate words, if they were needed,  
9 published, that in my mind, it would have been adequately  
10 covered at that point.

11 In other words, I thought the operators were  
12 being taught it in the simulator, but maybe it needed to be  
13 reinforced in writing.

14 Q. Did you tell John that he ought to take immediate  
15 steps to reinforce that instruction?

16 A. No, I did not. I told him I was going to write  
17 a letter to Don Hallman or nuclear service, maybe I didn't  
18 use Don's name. Again, as I stated earlier, I cannot get it  
19 straight in my mind whether I was talking in future tense,  
20 or past tense. I either had just written that memo or was  
21 going to.

22 Q. Did you tell Lind that there ought to be a review  
23 within the training department to see what, in fact, had been  
24 put out, and to make sure that what was being put out  
25 to operators was sufficiently clear and precise, so that there  
would not be a repetition of the kind of premature termination

1882 059

1  
2 of HPI that had occurred in September and again at October  
3 at Davis Besse?

4 A. I don't remember making such a suggestion to  
5 John Lind.

6 Q. At the time you wrote your November 1 memorandum,  
7 Mr. Kelly, were you aware of a procedure available within  
8 the B&W organization for handling basic concerns?

9 A. Yes.

10 Q. Were you aware of the existence of something  
11 called a preliminary safety concern form?

12 A. I don't recall ever having seen one but I am sure  
13 that there must have been a form that went along with it.

14 Q. Were you aware that Mr. Taylor, in the licensing  
15 section, was the in-house administrator of that procedure?

16 A. Yes.

17 Q. Did you consider putting your November 1 memo-  
18 randum on a preliminary safety concern form?

19 A. No, I did not.

20 Q. Did you believe that your November 1, 1977 memo-  
21 randum would be plugged into the system for handling basic  
22 concerns that was then in existence within B&W?

23 A. Would you repeat the first part of that. I  
24 don't know what you were asking me.

25 (Whereupon, the pending question was read by the  
reporter.)

1882 060

1  
2 By Mr. Rockwell:

3 Q. Do you have the question in mind?

4 A. Yes, I do.

5 When I wrote that memo, I didn't know whether it  
6 would be a preliminary safety concern or not. My intent was  
7 to get it in front of the people who would know. I think my  
8 memo says that additional guidance may not even be required.  
9 In other words, there was doubt in my mind, and I thought by  
10 writing this memo, that I would get to the people who would  
11 know what information was being put out in detail, and that  
12 if it had to be revised, they would revise it. And, as to  
13 whether it was a preliminary safety concern or not, I didn't  
14 feel like it was of sufficient importance at that time. I  
15 mean, I didn't feel I had enough information even to make that  
16 decision. I didn't know whether we were telling the right  
17 things or not, and that's why I wrote the memo.

18 Q. Did you talk with anyone before you wrote the memo-  
19 randum or after?

20 A. I talked to, as I pointed out, I talked to my  
21 immediate supervisor, Eric Swanson.

22 Q. I am sorry. I did not finish the question.

23 Did you talk to anyone before you wrote your memo-  
24 randum or after as to whether the concern you had was the kind  
25 of concern that ought to be expressed in a preliminary safety  
concern form?

1882 061

1  
2 A. No, I don't remember discussing that.

3 Q. Did you have that preliminary safety concern pro-  
4 cedure and form in mind as a possible way of pursuing your  
5 concerns at the time you wrote your memorandum?

6 A. I don't remember considering that.

7 Q. I know we have gone through who the people on the  
8 distribution of your memorandum are, and what positions they  
9 hold. I don't have that directly in front of me. But, my  
10 recollection is that one of the persons on distribution is  
11 in the licensing section, am I correct?

12 A. Not on my November 1 memo, no. There is no one  
13 in there that at the time was in licensing.

14 Q. Okay.

15 Referring now to deposition Exhibit 35. Do you  
16 have that exhibit before you?

17 A. Is that Frank Walter's memo?

18 Q. Yes. That is correct.

19 A. Yes, I have that.

20 Q. Let me read the first paragraph of the memorandum.

21 A. Was that a question?

22 Q. No. I am just getting something.

23 Let me read the first paragraph of the memorandum.  
24 And this is a memorandum from Mr. Walters to yourself in  
25 response to your November 1 memorandum, is that correct?

A. Yes.

1882 062

1  
2 Q. "In talking with training personnel and in the  
3 opinion of this writer, the operators at Toledo respond in  
4 a correct manner", it may be "responded", "in a correct manner  
5 considering how they had been trained and the reasons behind  
6 the training."

7 Is that an accurate reading of the first paragraph  
8 of the memo?

9 A. Yes.

10 Q. Did you understand what he meant by that?

11 A. I think I do.

12 Q. What did he mean? I am referring to your know-  
13 ledge at the time you received it?

14 A. Frank is saying that he talked to training people  
15 and whoever he talked to, and Frank both believed that the  
16 Toledo people did the right thing. If I'm answering your  
17 question.

18 Q. The right thing in light of how they had been  
19 trained?

20 A. That is what he is saying.

21 Q. Did you ever ask Mr. Walters how the operators  
22 had been trained which would suggest that they had responded  
23 properly?

24 A. I never talked with Mr. Walters about this memo  
25 at all until in the past couple of months.

Q. Did you wonder when you read that paragraph, what

1882 063

1  
2 training the operators were getting which would suggest that  
3 their reaction had been correct in light of their training?

4 A. No. I had already talked to John Lind by this  
5 time, and when I read this I just got the impression that  
6 Frank Walters was confused and decided to go ahead and esca-  
late it after talking to Bert Dunn.

7 Q. Did it ever occur to you that John Lind had been  
8 confused?

9 A. No, because at the time I was talking to John  
10 Lind, there were other simulator instructors there, and I  
11 believe I mentioned it the last time, Harry Helmyer was one  
12 of them and there was more than two, and they were all in  
agreement that they were teaching the correct things.

13 Q. Would it be fair to say that Walters' first para-  
14 graph in his memorandum is in direct conflict with what Lind  
15 had told you when you went to talk to Lind?

16 A. Yes, I would think that that is a fair reading  
17 of the words.

18 Q. And did you understand that Walters had written  
19 his first paragraph after talking with three former B&W train-  
20 ing instructors?

21 A. I don't know who Frank talked to about when he  
22 says "with training personnel", I don't know who he talked to.

22 Q. At the time you read the memorandum?

23 A. At the time I read the memorandum I did know. What  
24  
25

1882 064



1  
2 I am saying is I don't believe that now I still know who he  
3 talked to.

4 MR. ROCKWELL: Off the record.

5 (Whereupon, there was a brief discussion off the  
6 record.)

7 (Whereupon, the pending question was read by the  
8 reporter.)

9 MR. EDGAR: And you do not today, is that correct?

10 THE WITNESS: I don't think so. I don't think I  
11 do. If you ask me to name those people, I couldn't say who  
12 Frank talked to, even right now.

13 By Mr. Rockwell:

14 Q. Would it be fair to say that at the time you  
15 read the memorandum, you did appreciate that Walters' first  
16 paragraph was in direct conflict from what Lind had told you?

17 A. Yes. That was in direct conflict with what John  
18 Lind had told me.

19 Q. Did you take any steps to try to resolve that  
20 conflict at the time?

21 A. I talked to Eric Swanson, my supervisor, about  
22 it, and we decided to go ahead and I told Eric at the time,  
23 that I thought that Frank was confused about what my intent  
24 was and Eric and I agreed that we should go ahead and escalate  
25 it and get Bert Dunn involved, because Bert Dunn was the unit  
manager, have him write a letter to try and get some resolution

1882 065

1  
2 on my concerns. That was the steps I took.

3 Q. Did you realize at that time that if Walters had  
4 been talking with training personnel and had arrived at the  
5 conclusion that he expresses in his first paragraph, that one  
6 group of people who, at least at one time had been training  
7 instructors at B&W, and then the current training instructors,  
8 through Mr. Lind, were saying things about what operator  
9 instructions were directly in conflict.

10 A. Reading the entire memo I got the impression that  
11 Frank may have not even been asking the correct questions of the  
12 training people.

13 Q. Did you ever go back to him and point that out and try  
14 to get it resolved as to whether he was asking the correct  
15 questions of the training people that he was talking to?

16 A. No, I did not. I just escalated it to Bert Dunn.

17 Q. Referring to the second paragraph.

18 "My assumption in the training assumes, first,  
19 that RC pressure and pressurizer level will trend in the same  
20 direction under a LOCA for" -- I am having trouble reading  
21 this. Let me ask you to read it, the second paragraph.

22 THE WITNESS: "My assumption and the training  
23 assumes, first, that RC pressure and pressurizer level will  
24 trend in the same direction under a LOCA. For a small leak  
25 they keep the high pressure system on up to a certain flow to  
maintain pressurizer level".

1882 066



1  
2 Q. Thank you.

3 A. Do you want me to continue?

4 Q. Let me ask you a question now.

5 MR. EDGAR: Joe, let's make certain we understand  
6 what words we are dealing with here.

7 This is how you read the words, is that right?

8 THE WITNESS: Yes. I am trying to read the words as  
9 they look to me. By that I mean he didn't say "high pressure  
10 system, he said "HP" system and he has run the words "a" and  
11 "small" together.

12 By Mr. Rockwell:

13 Q. We understand your reading of that paragraph is  
14 what you see there and is your interpretation of what is  
15 written down in the sense of what it says --

16 A. Gramatical corrections and things like that.

17 Q. (continuing) -- there may be, there may be some  
18 difficulty in reading some of the handwriting here I under-  
19 stand, but referring to that second paragraph, the second  
20 sentence indicates for a small leak they keep the HP meaning,  
21 high pressure systems, up to a certain flow to maintain  
22 pressurizer level.

23 What was your understanding at that point of  
24 what operators were supposed to do in terms of maintaining  
25 pressurizer level?

A. You mean back in November, when I read this?

1882 067

1  
2 Q. Yes, all the questions are directed to your  
3 knowledge at that time.

4 Let me try a different question.

5 A. Okay.

6 Q. Was it your understanding at that time that the  
7 training of the operators focused and emphasized the necessity  
8 for maintaining pressurizer level?

9 A. During a LOCA?

10 Q. Yes.

11 A. I'm sorry. Does your question mean, are they  
12 trained to maintain pressurizer level during a LOCA?

13 Q. Yes, were they at that time?

14 A. Not to my knowledge, they were not. This is again  
15 as a result of conversations with the simulator instructors.

16 Q. So, again, with respect to what Walters has in his  
17 memo, and what you understood from Lind, there was another  
18 direct conflict in what you were getting, is that correct?

19 A. That is a fair statement, yes.

20 Q. Referring to the first sentence of that second  
21 paragraph, and I will read it again so we will have it in  
22 mind:

23 "My assumption and training assumes first, that  
24 RC pressure and pressurizer level will trend in the same  
25 direction under a LOCA".

Is that a correct reading of the sentence?

1882 068

1  
2 A. Yes.

3 Q. Was it your understanding, at the time, that RC  
4 pressure and pressurizer level would trend in the same direc-  
5 tion?

6 A. Not under small LOCA conditions, no.

7 Q. In fact, you have gotten that understanding only  
8 from your review of September 24th and October 23rd transients,  
9 is that correct?

10 A. That is correct, except that I never reviewed the  
11 October 23rd transient. But my information at the time was  
12 based on the September 24th transient.

13 Q. Okay. But at least on September 24th transient,  
14 you had gained clear understanding that pressurizer level in  
15 the RC system pressure had not been trending into the same  
16 direction?

17 A. That they do not necessarily trend in the same  
18 direction under those conditions, that's right.

19 Q. In fact, under those conditions, they had not  
20 trended in the same direction?

21 A. Right.

22 Q. Did you make any inquiries of John Lind as to  
23 whether the training program instructed operators that under  
24 certain circumstances, at least including the kind of cir-  
25 cumstances that occurred in September 24th Davis Besse transient,  
that pressurizer level and RC pressure would not trend in the

1882 069

1  
2 same direction?

3 A. I don't remember asking John Lind that, no.

4 Q. Did it occur to you that that question ought to  
5 be asked of the training program at that point?

6 A. That's why I wrote my memo, yes, to see if we were  
7 covering adequately what the operators should be getting on  
8 guidelines to secure high pressure injection.

9 Q. And is that why you put Mr. Norm Elliot on  
10 distribution of your memo?

11 A. At the time I put Mr. Elliot on the memo more for  
12 information. My intention was to get the procedures written and  
13 If they needed to be, to get the procedures changed first, and  
14 then through the system that would filter down to Mr. Elliot  
15 and into his training program, if his training program was in-  
16 adequate.

17 Again, I thought, after having talked to instruc-  
18 tors, I thought his training program at that time was adequate.

19 Q. Did you recognize at the time you read the  
20 Walters' memorandum, that the first sentence of the second  
21 paragraph --

22 A. Was that a question?

23 Q. I have not finished it yet.

24 (Continuing) -- that the first sentence of the  
25 second paragraph made an assumption about training or made  
an assumption about what the operators were trained to do

1882 070

1  
2 that was not reflected in the training program at that time?  
3 No, that question is wrong. Just a second, Mr. Kelly.'

4 Did you realize when you read the first sentence  
5 of the second paragraph that there was an assumption in the  
6 training program which was no longer accurate in light of  
7 the Davis Besse transient, namely that pressurizer level in  
8 RC pressure would trend in the same direction when, in fact,  
9 the experience at Davis Besse was that they would not, at least  
under certain conditions?

10 A. I still didn't hear that as a question. I'm  
11 sorry. Could you have him read it back and see what you are  
12 asking?

13 (Whereupon, the pending question was read by the  
reporter.)

14 A. Okay. I understand the question.

15 When I read that sentence it says "my" assumption  
16 or "my" as being Frank Walters. And I had read the entire  
17 memo once or twice at that point before I made up my mind,  
18 and my assumption, Joe Kelly, was that Frank Walters was con-  
19 fused, not the training department.

20 Q. In other words, you understood or you believed at  
21 that time that Walters' assumption about what the training  
22 was, was simply inaccurate?

23 A. Yes, I believe that Frank Walters' assumptions  
24 were wrong.  
25

1882 071

1  
2 Q. Again, did you go back to training in order to  
3 rationalize or to resolve this apparent conflict between what  
4 Walters was saying and what John Lind had told you?

5 A. I made no attempt to do that because it was John  
6 Lind and Harry Helmyer and others who, Harry talked to them  
7 as a group, convinced me that they were teaching it. So, I  
8 just assumed that Frank was the one who was confused.

9 Q. But you did not go back and present them with  
10 this memo, I take it, and ask them for an explanation?

11 A. No, I did not.

12 Q. What does Mr. Walters mean when he refers to  
13 "hydroing" in the third and fourth paragraphs of the memo,  
14 and if you want to take a moment to review those paragraphs,  
15 please do.

16 A. I'm reading that right now.

17 (Pause.)

18 When I read that, to me, Frank is saying, that  
19 leaving high pressure injection on will fill up the reactor  
20 coolant system completely, including the steam volume and  
21 pressurizer and continue when it gets into a solid water con-  
22 dition, continue to increase reactor coolant system pressure up to  
23 code safety pressure and that is what he is saying when he  
24 is saying hydroing, hydrostatically testing, this is what that  
25 words means to me.

Q. So hydroing means taking the system which includes

1882 072



1 the RC coolant system and pressurizer up to a solid condition  
2 and bringing it up against, presumably, to set points for the  
3 various release valves, is that correct.  
4

5 A. Yes, of course, in a formal system hydro, you go  
6 to much higher pressures than the code safeties. But you have  
7 to take them out of the system and blank them off. In this  
8 case, I understood that he meant going up to the code safety  
9 release valve at that point.

10 Q. Then, referring you to the fourth paragraph.  
11 Let me read it.

12 "If you intend to go solid, what about problems  
13 with vessel mechanics".

14 What does he mean by that?

15 A. I assume he was talking about brittle fracture.

16 Q. And what do you mean by "brittle" fracture.

17 A. Hardened steel under conditions of pressure at low  
18 temperatures will break brittley like glass.

19 Q. So, you understand that he was expressing a concern  
20 in the first sentence of the fourth paragraph about potential failure?

21 A. This confirms a more of -- in my mind about the  
22 confusion that I thought Frank was under because in the con-  
23 ditions we are talking about, reactor vessels would be hot  
24 enough so that brittle fracture would not be a problem. So,  
25 again, on that statement, I was under the impression that  
Mr. Walters was confused.

1882 073

1  
2 Q. Did you go back and attempt to clarify that con-  
3 fusion or that apparent conflict with your own understanding  
4 with Mr. Walters?

5 A. No, I did not, because at that time I dismissed  
6 that concern as a result of his confusion and it really was  
7 not in the realm of my objective of giving guidelines on when  
8 to secure high pressure injection. To me it was a different  
9 type of problem when you talk about brittle failure, and even  
10 talking about brittle fracture had nothing to do with letting  
11 the high pressure injection system run even up to the code  
12 safety problem, code safety check points, because the vessel  
13 was hot under those conditions and brittle failure would not  
14 be a problem.

15 Q. Referring you now to the second sentence of the  
16 fourth paragraph. Let me read it:

17 "Also, will the code in the electromatic valves  
18 relieve water (via steam) at significant flow rates to keep  
19 the RCS from being hydroed."

20 Is that a correct reading of the last sentence  
21 of the memorandum?

22 A. Yes, that is what it says.

23 Q. What did you understand he meant by that?

24 A. At that point, Mr. Walters' memo had me confused  
25 also, because I could not understand the use of the word  
"hydro" in that sentence. How that correlated with his use

1882 074



1  
2 of the word with hydro in the third paragraph that we have  
3 not talked about.

4 In other words, if the code relief and electro-  
5 matic relief are lifting and relieving water, primary pressure  
6 will stay at 2500 pounds. It will not go up to hydrostatic  
7 test pressure at 3125 GSIG.

8 Q. At the time you received that memorandum from  
9 Mr. Walters, did you understand that there were any restric-  
10 tions or concerns about going solid?

11 A. About going, about taking the reactor cooler  
12 system solid during a loss of coolant incident, is that what  
13 you are asking, or at any time?

14 Q. Any time, other than for hydrostatic tests?

15 MR. EDGAR: Let's take it both ways.

16 By Mr. Rockwell:

17 Q. Okay. Let's take for loss of coolant incident  
18 first.

19 A. Loss of coolant incident, I was aware of no  
20 concerns about taking the reactor coolant system solid.

21 Q. Were you aware of any concerns about taking  
22 reactor coolant system solid other than during a LOCA?

23 A. Wouldn't do it during normal operations.

24 Q. Why not?

25 A. Well, because the advantage of having a steam  
bubble in the pressurizer is the fine pressure regulation and

1882 075

control that you have with the steam bubble there to cushion changes in the reactor coolant system inventory. If you take a pressurizer solid during normal operations, you forfeit that advantage of pressure control during normal operation.

Q. At that time during the Fall of 1977, what operator instructions existed which advised the operators that it was permissible to go solid during LOCA transients?

A. I don't know what instructions would have told them that. That was part of my original reason for writing the letter, to see what instructions we were putting out to the customers and to the operators, when to secure high pressure injections during a LOCA.

Q. Did you ever followup in nailing down exactly what instructions were being given to operators with respect to going solid in a LOCA transient after you put out your November 1 memo?

A. I don't remember looking for instructions that talked about whether or not you could go solid during LOCA, no. I never followed that up.

Q. Would it be fair to say, taking the Walters' memorandum as a whole, that because of what you perceive to be misunderstandings or inaccuracies on the part of Mr. Walters in the memorandum, that you essentially dismissed it?

A. That is a fair statement.

To me, the value of Frank Walters' memo was in

1882 076

1  
2 its prompting me to escalate the problem to Bert Dunn to get  
3 more attention on it, on my concerns.

4 Q. During your, the first phase of your deposition  
5 in Lynchburg, you indicated that after you returned from Davis  
6 Besse, following September 24th transient, and after your brief-  
7 ing, to, I think you said some 30 people at Lynchburg, that  
8 a plane load of people went back to Davis Besse.

9 Do you know who went back to Davis Besse on that  
10 plane?

11 A. I think, still the only one I can remember was  
12 interested in going back was Joe Lauer, and if you ask the  
13 question that way, I can't even say that he actually went  
14 back. He may have changed his mind sometime between  
15 that briefing, and when the plane actually left.

16 Q. Are you aware that the plane did go ultimately  
17 back to Davis Besse with some people from Lynchburg?

18 A. That is my recollection, yes.

19 Q. How often do you personally go out to investigate  
20 transients?

21 A. I have left Lynchburg to investigate two, the  
22 one at Davis Besse and the one at Three Mile Island on  
23 March 28.

24 Q. Of '79?

1882 077

25 A. Yes.

Q. Is it a practice of B&W to send people to a site

1  
2 where a transient has occurred and appears to be significant  
3 in some way?

4 A. Yes, if its chosen to be a significant transient, it is  
5 our practice to send someone out to the site.

6 Q. How often, to your knowledge, does that occur,  
7 namely, sending someone out to investigate?

8 A. I can remember Bob Wings going out to investigate  
9 a transient and smoke SMUD, that's the only other one that  
10 presently comes to mind.

11 Q. Did Dunn ever see the Walters' memo? Did you  
12 show it to Dunn?

13 A. I don't remember ever showing it to Mr. Dunn.

14 Q. Did Swanson see it?

15 A. If I didn't show it to Eric, I told him about it.  
16 I don't remember showing it to Eric.

17 Q. What was his reaction to either seeing it or to  
18 hearing about the substance of it from you?

19 A. At the time, if I didn't show it to him, I would  
20 have given him my opinion of it and recommended to Eric that  
21 we pursue a different path, and as a result of that conversa-  
22 tion, we decided to talk to Bert Dunn and get Bert again to  
23 write a letter.

1882 078

24 Q. And the opinion of the memorandum that you would  
25 have given to Swanson, was that Mr. Walters appeared to be  
mistaken or not understanding the issues involved?

1  
2 A. That would be a fair paraphrasing of what I said.

3 Q. Is Mr. Karrasch head of your unit?

4 A. Yes.

5 Q. Did you have any conversations with Mr. Karrasch  
6 at all from the time of the Davis Besse transient to the time  
7 of the TMI2 accident about the issues raised in your and  
8 Bert Dunn's memorandum?

9 A. No, I don't remember talking to Mr. Karrasch about  
10 that.

11 Q. Was it he who referred Dunn's memorandum to you?  
12 No, excuse me. You were on the distribution of Dunn's memo-  
13 randum, weren't you?

14 A. Yes.

15 Q. You do not remember having any conversations with  
16 him at all during the time period from September 24, '77, to  
17 March 28, '79?

18 A. No, I do not.

19 Q. I think you said in your last section of your  
20 deposition at Lynchburg, that you had had a brief conversation  
21 with Mr. Karrasch in the hall about what had happened with  
22 Hallman's memorandum of August 3, 1978, came to him, is that  
23 correct?

24 A. But that was after the Three Mile Island incident.

25 Q. Right. But you did have a brief conversation  
afterwards?

1882 079

1  
2 A. Yes.

3 Q. And recapitulate that for me, would you?

4 A. That was early in June, first week in June, Don  
5 Hallman called me on the phone and wanted to go over this series  
6 of memos. I finished talking to Don and Frank Walters at  
7 that time. I just left Don's office and was walking back  
8 to my own desk when I passed Bruce Karrasch in the hallway.  
9 At that point I asked him what he knew about that memo and  
10 I don't remember his exact response, but it was on the order  
11 of shrugging his shoulders or saying he couldn't recall it  
12 at that time. This was briefly in the hall as we passed each  
other and talked.

13 Q. Is that sum and substance of that contact?

14 A. As I can remember.

15 Q. And is that the only contact which you have had  
16 with Mr. Karrasch on this subject up to the present?

17 A. No, I talked to Mr. Karrasch again this Monday.

18 Q. Did he have any comment?

19 A. It was the beginning of this week.

20 Q. Did he have any comment as to what had  
21 happened in the handling of the concerns raised by your  
22 memorandum and Bert Dunn's two memoranda?

23 A. That is what I assumed your previous question was  
24 when you asked me if I had talked to him about it. Yes, we  
25 talked about what happened to the memo.

1882 080



1  
2 Q. Right. But you said you had a second conversation  
3 with him within the last week?

4 A. Yes, that was Monday.

5 Q. Okay.

6 And what was said in this conversation?

7 A. I told him that, a brief summary of what  
8 had happened while he was on vacation in this area and about  
9 my previous testimony, and I asked him what had happened to  
10 that.

11 Q. What did he say?

12 A. He said that he had the memo, he had gotten the  
13 memo and that he sat on it for a few months, and that  
14 periodically, Don Hallman had called him and asked him what  
15 the resolution was and Bruce says that around the turn of the  
16 year, Christmas time or early January of 1979, we are talking  
17 about now, that he reread the memo from Don Hallman, decided  
18 that he agreed with Bert Dunn and that he called Don Hallman  
19 and told him so.

20 That was the essence of what Bruce had told me  
21 happened to him.

22 Q. Did he say whether he had ever sent a memo back  
23 to Hallman?

24 A. He specifically said he did not. It was all  
25 telephone conversation.

Q. Did he indicate what Hallman's response was at

1882 081

1  
2 the time he called Hallman and told him that he was in agree-  
3 ment and that he had nothing more to add?

4 A. No, Bruce didn't tell me what Don Hallman's  
5 response was.

6 Q. Have you talked to Hallman about that, about  
7 Karrasch's call.

8 A. No.

9 Q. Around the beginning?

10 A. No, I just had conversation with Mr. Karrasch on  
11 Monday, and I haven't seen Don Hallman since.

12 Q. Have you had any conversations with Hallman about  
13 Hallman's contacts with Karrasch following August 3, 1978?

14 A. The last I talked to Don Hallman about this was  
15 at this early June meeting that I mentioned, and at that time,  
16 I don't remember Don saying anything about conversations with  
17 Bruce following the August memo.

18 Q. What was the substance of that early June meeting  
19 between you and Hallman, or conversation between you and  
20 Hallman?

21 A. That is the one that I'm saying was there also  
22 with Frank Walters and we went over the series of memos that  
23 deal with this subject and talked about what we had thought  
24 had happened to them. 1882 082

25 Q. Did Hallman, at that time, make any reference to  
the fact that Karrasch had called him, back and told him that



1  
2 he, Karrasch, was satisfied with Dunn's prescription and  
3 nothing more need be added by Mr. Karrasch's department's  
4 planned integration.

5 A. No, he didn't bring that up, not that I remember.

6 MR. ROCKWELL: Off the record.

7 (Brief discussion off the record.)

8 By Mr. Rockwell:

9 Q. Mr. Kelly, that is all I have for the time being.  
10 At this time we will recess your deposition again leaving you  
11 subject to recall for further testimony should it be needed  
12 as usual. If it is needed we will advise you through counsel.

13 Thank you.

14 (Whereupon, the deposition was concluded.)

15 -----  
16 Joseph John Kelly, Jr.

17 Subscribed and sworn to  
18 before me this ---- day  
19 of ----- 1979.

20 -----  
21 Notary Public

22 1882 083  
23  
24  
25

## CERTIFICATE OF REPORTER

I, Simon Banks, J.D., Certified Court Reporter do hereby certify that I reported the testimony of the witness herein, over speaker phone, in stenotypy, and that the testimony was reduced to typewritten form pursuant to my direction.

I further certify that the testimony herein constitutes an accurate record of the proceedings had.

-----  
Simon Banks, Jr.

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5 PRESIDENT'S COMMISSION ON THE  
6 ACCIDENT AT THREE MILE ISLAND  
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12 DEPOSITION OF BERT M. DUNN, by WINTHROP A.  
13 ROCKWELL, COUNSEL ON BEHALF OF THE COMMISSION, held at the  
14 offices of Morgan, Lewis & Bockius, 1800 M Street, N.W.,  
15 Washington, D.C. 20036 on the 13th day of July, 1979,  
16 commencing at 10:15 a.m. before Simon Banks, Jr., a Notary  
17 Public of the District of Columbia.  
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3 BABCOCK & WILCOX:

4 MORGAN, LEWIS & BOCKIUS, ESQS.  
5 Attorneys for Babcock & Wilcox  
6 1800 M Street, N.W.  
7 Washington, D.C. 20036

8 BY: GEORGE L. EDGAR, ESQ.  
9 of Counsel

10 -and-

11 JOHN G. MULLIN, ESQ.  
12 House Counsel

13  
14 FOR THE COMMISSION:

15 STANLEY M. GORINSON, ESQ.  
16 Chief Counsel

17 WINTHROP A. ROCKWELL, ESQ.  
18 Associate Chief Counsel

19  
20 ALSO PRESENT:

21 JAMES FRANKLIN WALTERS

22 JOSEPH JOHN KELLY, JR.  
23  
24  
25

1882 087

INDEXWITNESS

Bert M. Dunn

DIRECT

3

1882 088

## DIRECT EXAMINATION CONTINUED

3

1  
2 MR. ROCKWELL: The records should reflect that  
3 we are resuming the deposition of Bert Dunn which was  
4 adjourned at 6:45 p.m. on July 2, 1979, by means of a tele-  
5 phone conference call in the offices of Morgan, Lewis &  
6 Bockius, in Washington, where Mr. Edgar, myself and the court  
7 reporter and Mr. Mann are present, and on the other end,  
8 offices in Lynchburg, Virginia, at Babcock & Wilcox, where  
9 the appearances, as I understand it would be Mr. Dunn, as  
the deponent, John Mullin, as counsel.

10 And, John, is there anyone else present in the  
11 room:

12 MR. MULLINS: Right now we also have Mr. Walter  
13 and Mr. Kelly.

14 MR. ROCKWELL: Would the court reporter please  
15 indicate that they are present in the appearances at the  
beginning of the deposition.

16 MR. EDGAR: Off the record.

17 (Discussion off the record.)

18 MR. ROCKWELL: If Mr. Kelly and Mr. Walters are  
19 still in the room we will note their appearances.  
20 Whereupon,

21 BERT M. DUNN  
22 having been previously sworn, resumed the stand and testified  
as follows:

1882 089

23 By Mr. Rockwell:  
24  
25

1  
2 Q. Mr. Dunn, we are back on the record.

3 If you cannot hear my question please say so  
4 immediately so that I can repeat it. Because we are using speaker  
5 phones, it is imperative that I finish my question fully  
6 before you begin to respond, and in turn, I will try to let  
7 you finish so we do not get crossed on the speaker phone.

8 Mr. Dunn, you are aware that you are still under  
9 oath, correct?

10 A. Yes, sir.

11 Q. Mr. Dunn, we were advised by Mr. Kelly during his  
12 deposition, that you went to Davis Besse in the days immedi-  
13 ately following the Davis Besse transient of September 24,  
14 1977, then returned to Lynchburg and held a briefing in the  
15 cafeteria in which you were in attendance.

16 Do you recall attending that briefing?

17 A. I didn't recall the briefing a few days ago, but  
18 I have reviewed Mr. Kelly's testimony, and I believe I do  
19 recall that briefing at this time as to my being present.  
20 I don't recall details during the briefing.

21 Q. Do you recall having a discussion with Mr. Kelly  
22 following that briefing in which you raised with him the  
23 concerns that were ultimately expressed in his November 1,  
24 1977 memorandum and in your two February, 1978 memoranda?

25 A. No, I do not specifically recall having that  
discussion. I would not doubt that it occurred, but I do not

1882 090



1 recall it.

2 Q. Mr. Dunn, at some point you have already told us  
3 you arrived at the conclusion that the Davis Besse transient raised  
4 the possibility of operator error to the extent of premature  
5 termination of high pressure injection.

6 How did you come to that conclusion? Was it a  
7 flash of insight? Did somebody tell you that? What was the  
8 intellectual process by which you reached that conclusion?

9 A. I believe I should say that it was more a matter  
10 of just identifying the fact that the high pressure injection  
11 had been terminated in conjunction with enough research to  
12 identify the additional fact that the reactor coolant system  
13 was not in a solid configuration at the time high pressure  
14 injection was terminated and in that mode, I would always  
15 consider it unwise to terminate high pressure injections. So  
16 rather than an intellectual stroke of genius, it is more  
17 recognition of those two facts within the body of the data and  
18 then recognizing that out of all of our experience with LOCA  
19 analysis, that could not be shown in a positive manner to be  
20 a safe action.

21 Q. Did you know that the termination of HPI in the  
22 Davis Besse September 24th transient, was initiated by the  
23 operator because the operator was watching pressurizer level?

24 In other words, did you have specific knowledge  
25 that the termination of HPI had been initiated based upon

1882 091

1  
2 pressurizer level alone?

3 A. At the time that I recognized that what I felt was a  
4 premature termination of high pressure injection had occurred,  
5 I do not know whether I had the reason for that termination  
6 available to me. I would say that even today, it may be  
7 unclear as to whether the reason for termination has been  
8 specifically documented and proven to me or whether I had inferred  
9 it was from, I and other people have inferred it was from  
10 high pressurizer level. It didn't seem to make sense that  
11 that was the reason.

12 Q. Do you recall whether, in the time period start-  
13 ing when you first heard about the September 24, 1977, Davis  
14 Besse transient, up to the time of Mr. Kelly's November 1  
15 memorandum, that you talked to anyone else other than  
16 Mr. Kelly with respect to the reasons that the operators may  
17 have had in mind for terminating HPI as they had done in that  
18 Davis Besse transient?

19 A. I would say probably.

20 Q. Do you know who?

21 A. As I testified earlier, I believe that very soon  
22 after the September 24th transient -- is that the correct date?

23 Q. Yes it is.

24 A. (continuing) -- I had a discussion with Don  
25 Hallman through his door. By that, I mean I was standing  
in his doorway. I don't believe I was sitting in his office.

1882 092

1  
2 I also probably discussed it with Eric Swanson, and I would  
3 believe that the subject of why, may have come up in one of  
4 those two discussions.

5 Q. Do you recall what specifically what would have  
6 been discussed with respect to the question why the operators  
7 did what did at Davis Besse?

8 A. No, sir, I do not.

9 Q. Anyone else besides Hallman and Swanson?

10 A. I wouldn't disallow the possibility, but I can't  
11 give you names that are more than speculative.

12 Q. Do you know why you went to Hallman and Swanson?

13 A. Hallman, I believe, because he was involved in  
14 nuclear service and knew a lot about, or would have been my  
15 impression that he would have known a lot about operations  
16 and why things were operating, and I also got the impression  
17 that he could communicate with the customers and had respon-  
18 sibility for following through on the accident. I don't  
19 know that that is exactly right. I think that may be my  
20 impression at the time.

21 Swanson, because he is in integration, knows  
22 a lot about system design and is a personal friend of mine  
23 with whom I would discuss many issues.

24 Q. Mr. Dunn, you may recall that Kelly, in his  
25 November 1 memorandum, referred to a transient which occurred  
on October 23rd at Davis Besse. Do you recall that?

1882 093

1  
2 A. I don't recall him referring to it in his  
3 testimony. I kind of skim read his testimony. I wouldn't  
4 say that he didn't refer to it. I'm not familiar with the fact  
5 that he has, at times, made reference to that transient, I  
6 guess.

7 Q. What is your understanding of the significance  
8 of the October 23, 1977 transient at Davis Besse with respect  
9 to the concerns that were raised by Mr. Kelly in his November  
10 1 memorandum and the concerns raised by you in your two  
11 February 1978 memoranda?

12 A. My understanding that that accident prompted the  
13 November 1 memorandum in that, in that accident there was  
14 again a, as we view it premature termination of high pressure.

15 MR. ROCKWELL: For the record, we have a telephone  
16 ringing here and we are going to have to wait until it is  
17 answered to continue.

18 Off the record.]

19 (Discussion off the record.)

20 MR. ROCKWELL: Okay, back on the record.

21 Mr. Edgar has returned to the room.

22 By Mr. Rockwell:

23 Q. Mr. Dunn, do you know, other than the fact that  
24 the October 23rd transient involved a premature termination  
25 of HPI, do you know what other significant events took place  
in that transient that may relate to the general concerns of

1882 094

1  
2 the November 24th transient. For instance, was there a failure  
3 to open PORV?

4 A. I do not know whether there was a failure to open  
5 PORV in that transient. It occurs that there was. I did not  
6 detail an examination of that transient, nor a process of  
7 what I would term an evaluation of it. At this point in time  
8 I am very unclear as to the circumstances surrounding or  
9 evolving during that transient.

10 Q. Do you know whether in the October 23rd transient  
11 pressurizer level was high with reactor coolant inventory  
12 low?

13 A. No, I do not.

14 Q. Mr. Dunn, directing your attention to February  
15 of 1978, at that time were you aware of a procedure within  
16 Babcock & Wilcox, which is known as the preliminary safety  
17 concern procedure and a form which is known as a preliminary  
18 safety concern report or form?

19 A. Yes, I was aware of that at that time.

20 Q. Was your February 9 memorandum and your February  
21 16 memorandum, intended to put your concerns into that pre-  
22 liminary safety concern procedure?

23 A. Was the first word in the question, the word  
24 "was"?

25 Q. That is correct.

A. No, that memo was not intended to put my concerns

1882 095

1  
2 in the preliminary safety concern procedure.

3 Q. Did you know at that time that Mr. Taylor, in the  
4 licensing section, was the man who administered that procedure  
5 in-house?

6 A. Yes, sir, I was aware of that.

7 Q. Was the reason that you addressed your memorandum  
8 to Mr. Taylor, both your February 9 and your February 16 memo-  
9 randa, to put before him your concerns in an effort to determine  
10 whether they should be handled within the procedure for  
11 handling preliminary safety concerns?

12 A. No, I would say that was not my reason.

13 Q. What was your reason?

14 A. My reason was that Mr. Taylor was a highly  
15 influential person, in my view, interested in the safety of  
16 the plant and capable of causing a form of discussion to be  
17 initiated surrounding my concerns.

18 Q. Why didn't you put your memorandum onto a safety,  
19 a preliminary safety concern form?

20 A. I think it would be best characterized in saying that  
21 I felt that the concerns could be handled in the manner that  
22 I did pursue it, successfully, and that a preliminary safety  
23 concern procedure would not be required unless the memo route  
24 and the resultant interaction from the memo did not produce  
25 results acceptable to me.

Q. Would it be fair to say that at the time you

1882 096



1  
2 wrote your February memoranda, February 1978 memoranda, you  
3 were aware of the preliminary safety concern procedure; you  
4 were aware that Mr. Taylor administered that procedure and  
5 that given your knowledge at that time you could have availed  
6 yourself of that procedure had you wished?

7 A. Yes, it would be fair to say that.

8 Q. Directing your attention now to the time period  
9 between February 16, 1978, and August 3 of 1978, Mr. Walters  
10 has indicated that the final prescription, as you have used  
11 the term, or another way of putting it is the proposed  
12 operator instructions contained in your February 16th memorandum,  
13 were not yet fully agreeable to him and he has also indicated  
14 in his deposition that there was continuing discussion between  
15 persons under his control. I believe one of them may have  
16 been a man named Goslow.

17 Do you recall any continuing discussion with any-  
18 one regarding the adequacy of your prescription following  
19 the issuance of your February 16th memorandum?

20 A. I do not recall any. And I believe I probably  
21 would recall them if they occurred with me.

22 Q. Did Mr. Walters or did anyone ever advise you  
23 after you wrote and distributed your February 16th memorandum,  
24 that they were not yet satisfied with the instructions to  
25 operators outlined in that memorandum?

A. Would you quantify the time period you are asking

1882 097

1  
2 the question over?

3 Q. Yes. We are addressing this to the time period  
4 between February 16, 1978, and August 3, 1978.

5 A. My recollection, the answer to the question would  
6 be no.

7 Q. Okay. The same question, but directed to the  
8 time period, August 3, 1978, to March 28, 1979?

9 A. Other than the fact that I was on distribution  
10 for the Don Hallman memo, and in relationship or qualified  
11 by the testimony I gave earlier, I do not recall any communi-  
12 cation.

13 Q. In your testimony earlier, if I recall it cor-  
14 rectly, was that you were on the distribution for the Hallman  
15 memorandum in the sense that your name appears there, but  
16 you do not recall seeing it until after the accident at TMI2.  
17 Is that correct?

18 A. That is correct.

19 Q. It is now 18 minutes of 11 and I understand,  
20 Mr. Dunn, that you wish to leave to accompany your wife to  
21 a doctor's appointment. I do have some more questions, but  
22 in deference to your own personal concerns, we can stop at  
23 this point if you wish.

24 A. Could you handle the questions in five minutes?

25 Q. Sure. Let me proceed for an additional five  
minutes.

1882 098



1  
2 Q. Before the accident at TMI2, had ECCS analysis  
3 done any small break LOCA analysis for a fail-to-open PORV?

4 A. Let me repeat the question to be sure I have got  
5 it right.

6 Before the TMI2 transient, on March 28, 1979,  
7 had ECCS performed any evaluations or simulations of a stuck-  
8 open PORV accident?

9 Q. That is correct.

10 A. We had performed evaluations to the extent  
11 that we had convinced ourselves that that accident would be  
12 bounded by other accidents for which we provide computer  
13 simulation. We had not specifically performed computer  
14 simulation of the stuck-open PORV as an accident.

15 Q. Would your answer be the same with respect to a  
16 fail-to-open code safety release valve in the pressurizer?

17 A. With respect to a fail-to-open release valve in  
18 the pressurizer as the instigating event, my answer would  
19 be the same.

20 Q. Would your answer be the same with respect to  
21 any small break LOCA within the pressurizer's face?

22 A. Under the consideration that such a small break  
23 LOCA was the instigating event, my answer would be the same.

24 Q. Had you played any role in the development of  
25 HPI policy, and by that I mean procedures for operators to  
follow as to when to terminate HPI, up to the time of March 28,

1882 099

1  
2 1979?

3 A. Well, I expect a large part of my work or my  
4 associate's work was utilized to some degree in the procedures  
5 concerning the high pressure injection system.

6 We did not play, I believe, any direct role, and I  
7 do not recall playing any direct role, relative to high  
8 pressure injection termination.

9 Q. Was the analysis which you have referred to a  
10 moment ago, which you believe bounded small breaks in the  
11 pressurizer, also have accounted for or abounded the additional  
12 fact of loss of all feed?

13 A. Excuse me. I missed the last part of your  
14 question.

15 Q. I will restate it.

16 Would the analyses which you had referred to a  
17 moment ago, which bounded breaks in the pressurizer, also have  
18 accounted for, namely would they have also abounded small  
19 breaks in the pressurizer in conjunction with a loss of all  
20 feed, namely main feed and aux feed?

21 A. No, it was a standard assumption within the  
22 emergency core cooling analyses that auxiliary feed water would  
23 be available during the loss or coolant accident.

24 Q. Would it be a fair statement of your opinion that  
25 you did not feel that the Michaelson analysis taught you any-  
thing new?

1  
2 A. That would be appropriate as the time we received  
3 the Michaelson Report, and finally dealing with the resolution  
4 of the Michaelson Report, and specifically, in reference to the  
5 writing of Appendix 5 to what I have earlier testified, de-  
6 scribed as the "blue book".

7 We have reached the conclusion that the reactor  
8 system will not repressurize during the long-term of a small  
9 break and that fact I would say is a thing we have learned.

10 Q. Other than that, however, the analysis contained  
11 in Michaelson essentially reflected knowledge that you also  
12 had at the time that the Michaelson Report came to you in the  
13 Spring of 1978?

14 A. Yes, I believe that is accurate.

15 Q. One last question.

16 Could you tell me specifically what you relied on in  
17 assuming that the subject of your concerns as expressed in  
18 your February 9th and February 16th memoranda had been resolved,  
19 as of the issuance of your February 16th memorandum?

20 A. I think the best way to state it would be that,  
21 having reached what I appeared, or what appeared to me to  
22 be agreement with the personnel for nuclear service, with  
23 whom I was having discussions, who I think we now believe  
24 was Kal Goslow, having reached that agreement with him, and  
25 having agreed to what was basically his prescription for  
termination of high pressure injection, and it was my judgment

1  
2 that nuclear service would proceed with notification of  
3 customers, unless they had further concerns about it, and if  
4 they had further concerns about it they would then return to me  
5 or I would find out about it somehow.

6 Q. And your recollection is that they never did  
7 return to you?

8 A. That is my recollection, yes.

9 Q. You have referred to Mr. Goslow as the man with  
10 whom you conferred between February 9th and February 16th in  
11 revising your original prescription? Has his name come back  
12 to mind since your deposition? I know you could not recall  
13 the name of the person at the time of your original deposition  
14 was taken. Do you now believe he was the person you talked  
15 to?

16 A. No. It is more like I can accept that he was  
17 the person I talked to and his name has, I have received his  
18 name from Frank Walters.

19 Q. Okay.

20 Since time is running and I know you have this appoint-  
21 ment, Mr. Dunn, we will recess once again, your deposition  
22 and leaving you subject to further recall for additional  
23 deposition testimony should that be required.

24 Once again, I do not have any specific plans to  
25 recall you for additional testimony, although it is certainly  
possible, and if that need should arise we will advise through

1882 102

1  
2 counsel.

3 Thank you for taking the time and being with us.

4 (Whereupon, the deposition was concluded at

5 11:00 a.m.)

6  
7 -----  
8 Bert M. Dunn

9 Subscribed and sworn to  
10 before me this ---- day  
11 of ----- 1979.

12 -----  
13 Notary Public  
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1882 103

## CERTIFICATE OF REPORTER

I, Simon Banks, J.D., Certified Court Reporter,  
do hereby certify that I reported the testimony of the witness  
herein, over speaker phone, in stenotypy, and that the  
testimony was reduced to typewritten form pursuant to my  
direction.

I further certify that the testimony herein con-  
stitutes an accurate record of the proceedings had.

-----  
Simon Banks, Jr.

1882 104

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4 PRESIDENT'S COMMISSION ON THE  
5 ACCIDENT AT THREE MILE ISLAND  
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12 DEPOSITION OF BRUCE ADOLPH KARPASCH by JOAN  
13 GOLDFRANK, held at the offices of Babcock & Wilcox, Old  
14 Forest Road, Lynchburg, Virginia 24505 on the 16th day of  
15 July, commencing at 8:35 a.m. before Norma Nasuti Costello,  
16 certified shorthand reporter.  
17

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20 7908160258  
21

22 BANKS-FEDERAL REPORTING SERVICE  
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659-0162

DUPE

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BY: KEVIN GALLAN, ESQ.

FOR THE COMMISSION:

JOAN GOLDFRANK, ESQ.

1882 106



INDEXWITNESSDIRECT

Bruce Adolph Karrasch

3

EXHIBITSKARRASCH DEPOSITION  
FOR IDENTIFICATIONPAGE

1

Resume of Bruce A. Karrasch

3

1882 107

Whereupon,

BRUCE ADOLPH KARRASCH

was first duly sworn and testified as follows:

By Ms. Goldfrank:

Q. Could you state your name and spell it, please?

A. Yes, it is Bruce Adolph K-a-r-r-a-s-c-h.

Q. And I would just like to say, if you cannot hear a question that I ask, or if you do not understand a question that I ask, please just ask me to repeat it and I will be happy to do so.

Would you state your current address, please?

A. Yes. It is 2211 Cambridge Place, the city of Lynchburg.

Q. And your current employer?

A. Babcock & Wilcox Company.

Q. And your current position?

A. I'm manager of the Plant Integration Unit in the Plant Design Section in the Engineering Department.

MS. GOLDFRANK: I would like to mark as Exhibit 1 a resume of Bruce A. Karrasch.

(Resume of Bruce A. Karrasch marked Exhibit 1.)

By Ms. Goldfrank:

Q. I show you a resume of Bruce A. Karrasch marked as Exhibit 1. Did you prepare this resume today?

A. Yes, I did.

1882 108

1  
2 Q. And is it a current resume?

3 A. Yes.

4 Q. Could you explain the responsibilities under your  
5 present position as Unit Manager of Plant Integration?

6 A. The primary role of the Plant Integration Group  
7 is to provide requirements on a system level for all the equip-  
8 ment provided in the B&W scope of supply for our nuclear steam  
9 systems. It is a design control job.

10 It is a job that you might call even one of a  
11 project engineer within the Engineering Department. Within  
12 the Engineering Department here at B&W our responsibility is  
13 to make sure that people talk to each other; that there is an  
14 interface relationship between the analysis that goes on in  
15 one section and the hardware that is procured and designed in  
16 another section.

17 It is to make sure that the licensing requirements  
18 for the nuclear steam systems are properly defined and docu-  
19 mented and related in the paper that buys the equipment.

20 It is a pretty broad responsibility. There are  
21 between 25 and 30 engineers, senior engineers, reporting to  
22 me in that function, and it is really one of coordination of  
23 effort within the whole engineering department.

24 It requires a lot of paper work. We have a lot  
25 of documentation which we prepare to make sure that things  
are properly communicated to other areas within engineering.

1882 109

1  
2 That also requires a lot of review of the work of others, so  
3 on the one hand we are preparing it to tell somebody to do  
4 something, and then revealing his work to make sure that he  
5 has done it.

6 Those are probably the two key elements of the  
7 job description.

8 Q. Let me just -- for clarification on your resume,  
9 you indicate you received a Bachelor of Science Degree in  
10 nuclear engineering from the University of Wisconsin in 1967,  
11 and then you received a Master's in Science in nuclear  
12 physics from Lynchburg College in 1971; is that correct?

13 A. That's correct.

14 Q. And between '67 and '71 you were also working at  
15 Babcock & Wilcox; is that correct?

16 A. Yes.

17 Q. Does that mean that you took your courses at  
18 night at Lynchburg College?

19 A. That is correct. I was working full-time in  
20 engineering for those four years, going to school part-time.

21 Q. Are you familiar with that incident at Davis-Besse  
22 I on September 24, 1977?

23 A. I am familiar with the fact that it occurred and  
24 with the result, and I'm also familiar with the result, short-  
25 term action that happened here at B&W, but not in a detailed  
fashion at all.

1882 110

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Q. When did you become aware of the incident at Davis-Besse I on September 24, 1977?

A. I guess it was within a day or two after it occurred.

Q. Do you remember from whom you became aware of this incident?

A. I don't recall exactly, but I believe that Joe Kelly and Eric Swanson approached me on the day or possibly the day after the incident reflecting to me that it was an abnormal occurrence, and I think that our Nuclear Service Department had asked that Joe go to the site and see if we could define the sequence of events that had occurred and any action that B&W could take as a result of the incident, and they were approaching me only to get my approval that Joe should leave the office and go to the site, and I so concurred.

Q. Do you remember if there were any memorandums to you by Mr. Kelly or Mr. Swanson about that incident?

A. I do not recall exactly. I would guess there were none.

Q. You indicated that Mr. Kelly and Mr. Swanson discussed this incident with you as they thought it was abnormal. Could you be a little more specific as to why they thought it was abnormal?

A. I do not recall.

Q. Did you talk with anyone after your discussions

1882 111

1  
2 with Mr. Kelly and Mr. Swanson about those discussions of the  
3 incident at Davis-Besse I.

4 A. No, I did not.

5 Q. Did you write any memos to anyone?

6 A. No, I did not.

7 Q. Would you have written a memo to a file concerning  
8 that discussion?

9 A. That is not my normal practice, and I am sure I  
10 did not do it on this occasion.

11 Q. You do not remember writing a memo?

12 A. Correct.

13 Q. You indicated after discussions, the initial  
14 discussions, about the incident at Davis-Besse I that you  
15 were aware of the short-term concerns of B&W. Could you  
16 explain that statement, please?

17 A. The only other event that I recall back in that  
18 chain of events as a result of Davis-Besse was an information  
19 meeting that was held after Joe Kelly returned from the site,  
20 and I couldn't even tell you the exact timing. I suspect it  
21 was within a week or two after the event, but it was a large  
22 meeting in which Joe Kelly and I believe a fellow named Fred Fiest,  
23 who was stationed at the site, came to Lynchburg for the  
24 purpose of relating to key people at Old Forest Road what  
25 had happened at the event and what action Davis-Besse had  
taken to get the plant into operation.

1882 112

I recall attending such a meeting. I really don't recall what the substance of the meeting was. I know that Joe Kelly and Fred Fiest made a presentation to a large group of people, but the content or the substance of that I do not recall.

Q. Is Fred Fiest an employee of Babcock & Wilcox?

A. Yes, he is.

Q. That would have been at Davis-Besse I?

A. Yes. I believe at the time he was the Site Operations Manager in our Nuclear Service Department stationed at the site working for the Nuclear Service Department.

Q. Do you know if there were any memorandums generated as a result of that meeting by you?

A. There were none generated by me, and I do not recall reading any memoranda of which I would have been on distribution as a result of that meeting.

Q. Did you take any notes at that meeting?

A. I really couldn't recall. My practice would be to carry a note pad with me to a meeting, and I make a note if I want to take some follow-on action. I just can't recall if I did on this occasion or not.

Q. Would those notes be retained in a file if you did take notes at that meeting?

A. No, they would not. My practice would be to take the notes -- especially if I wanted to take any follow-on

1882 113



1  
2 action -- and as a result of those notes, then I would for-  
3 mally write a memorandum, either taking action myself, or  
4 requesting one of the guys that works for me to take action,  
5 maybe even call a follow-on meeting. I know I did not do that  
6 as a result of any notes that I would have taken; and if I had  
7 done that, the notes I would take would just get thrown away.

8 Q. But you did not take any formal action as a result  
9 of that meeting in writing a memorandum?

10 A. That is correct.

11 Q. And you do not recall having had subsequent dis-  
12 cussions with anybody on your staff as a result of that meet-  
13 ing?

14 A. That is correct.

15 Q. Are you aware that the September 24, 1977, inci-  
16 dent at Davis-Besse concerned voiding in the core?

17 MR. GALLEN: Could you clarify that? Are you  
18 asking whether he is aware of it now or whether he was aware  
19 then?

20 MS. GOLDFRANK: Whether he is aware of it now.

21 THE WITNESS: I am aware even today in a very  
22 general manner of the sequence of events and what happened  
23 at Davis-Besse. I am not familiar enough with the detail  
24 sequence to even comment on whether there was voiding in the  
25 core or not.

By Ms. Goldfrank:

1882 114



1  
2 Q. Are you aware that the September 24, 1977,  
3 incident at Davis-Besse I concerned a temporary loss of  
4 feedwater?

5 A. Yes.

6 Q. When did you become aware of that?

7 A. When I was first approached by Eric and Joe.

8 Q. That is Mr. Kelly and Mr. Swanson?

9 A. Yes, I'm quite sure, and again this isn't exact  
10 recollection, but I suspect that they approached me and said  
11 there was a loss of feedwater at Davis-Besse, and the follow-  
12 ing things occurred as they would have received them over the  
13 phone from Nuclear Service, and they would have said, "We  
14 think Joe should go to the site and try and determine what  
15 the sequence of events was."

16 So, yes, the fact that there was loss of feedwater,  
17 I was aware of that.

18 Q. Were you aware that there was a failed PORV?

19 A. At that time I was not.

20 Q. Are you aware of that now?

21 A. Yes.

22 Q. Were you aware at that time that the incident  
23 concerned a premature termination of the HPI?

24 A. No, I was not aware of that at that time.

25 Q. Are you aware of that now?

A. Yes.

1882 115

1  
2 Q. From whom did you learn that the incident con-  
3 cerned a premature termination of the HPI?

4 A. In various discussions following March 28, 1979,  
5 it has come up where it has been called to my attention or  
6 discussed in group meetings since the Three Mile Island event  
7 that a similar event had occurred at Davis-Besse I. All I  
8 knew about Davis-Besse up until today, really was that it was  
9 a loss of feedwater and it was severe enough such that Joe  
10 Kelly had to go to the site and try to explain what had  
11 happened, and that's really all I recall about Davis-Besse  
up until the last several months since TMI.

12 Q. So, you did not become aware that the Davis-Besse  
13 concerned a premature termination of the HPI until after the  
14 incident of March 28, 1979, at Three Mile Island?

15 A. Let me say that I did not understand the significance  
16 of it. The fact may have been presented to me even in the  
17 big meeting I talked about earlier where Joe and Fred pre-  
18 sented it. I may have heard the words, but I did not under-  
stand the significance of it until after TMI.

19 Q. Were you aware that the incident on September 24,  
20 1977, at Davis-Besse concerned high pressurizer indication  
21 level?

22 A. At that time I was not aware of that either.

23 Q. When did you become aware of that?

24 A. Again, after the TMI event.

1882 116

1  
2 MR. GALLEN: Could we go off the record just a  
3 second?

4 (Discussion off the record)

5 By Ms. Goldfrank:

6 Q. Is it correct to say then that you were informed  
7 at this meeting when Mr. Kelly and Mr. Fiest presented a pre-  
8 sentation concerning the incident at Davis-Besse I of the  
9 factors that that incident concerned a temporary loss of  
10 feedwater and voiding in the core, that it concerned a failed  
11 PORV, high pressurizer indication level, and premature termi-  
12 nation of HPI, but that you did not focus on each and every  
13 factor that that incident concerned?

14 A. I was in the meeting where Joe and Fred presented  
15 their discription of what had happened. I do not recall  
16 understanding the significance of whatever it was that they  
17 said, because I did not take notes, and I did not take any  
18 follow-up action. I think that's a clear way of stating it.

19 Q. To the best of your recollection, could you tell  
20 at that point in time what you thought the incident on  
21 September 24, 1977, at Davis-Besse concerned?

22 A. Looking back and knowing that I did not take  
23 follow-up action or realize that something significant had  
24 happened, I think that all I came away from the meeting was  
25 that there was a loss of feedwater and some hardware or  
equipment had not functioned properly, and that follow-up

1  
2 action was very clear on what to do, which would be to fix  
3 the equipment that had failed so that it wouldn't happen again,  
4 and I am sure that my innermost thoughts would have been that  
5 the right people are being informed to take the follow-up  
6 action and do the job right. And I would have assumed that  
7 no action was necessary on my part personally.

8 Q. You state that the remedy was to fix equipment  
9 that failed. Which equipment would that have been?

10 A. I was talking in a general sense. Okay. I do  
11 not recall the specifics of which pieces of equipment or  
12 systems had not functioned properly. I can recall that I  
13 came away from the meeting knowing that something had not  
14 worked properly at Davis-Besse and that follow-up action was  
15 indeed well in hand at B&W so that I would not have to con-  
16 cern myself further.

17 The specifics of what it was I do not recall.

18 Q. That field would not be under your responsibility?

19 A. That is correct.

20 Q. I would like you to now look at a memorandum  
21 dated November 1, 1977, from Mr. Kelly. It has already been  
22 marked Exhibit 24 of the Womack deposition.

23 Did you receive this memorandum?

24 MR. GALLEN: Just a minute until I am finished  
25 reading it.

MS. GOLDFRANK: Sure.

(Pause)

By Ms. Goldfrank:

Q. Did you receive this memorandum?

A. I do not recall.

Q. Your name is on the distribution list, is it not?

A. That is correct.

Q. Do you remember reading this memorandum prior to just now.

A. Prior to now?

Q. Right.

A. I received this memorandum and three or four others in a sequence that we are talking about here today a week ago, and that was the first time that I saw this memorandum, the first time that I recall seeing this memorandum since November 1, 1977.

Q. But you do not recall seeing it on November 1, 1977?

A. That is correct.

Q. Could you tell me who showed you this memorandum about a week ago?

A. I was on vacation for two weeks prior to a week ago, and when I came into the office Monday, I was informed by -- I believe it was Bert Dunn -- that during my absence the series of memorandums starting with this one through an August 3rd memorandum to me had been un-

question by the  
1882 119

1  
2 President's Commission, and that the President's Commission  
3 was interested in talking to me about the memorandum.

4 I then asked Joe Kelly if he would give me his  
5 copy of all the memorandums, and that was last Monday, and  
6 I read them.

7 Q. Did you talk with anybody else about these memo-  
8 randums other than Bert Dunn and Joe Kelly?

9 A. Let me think a moment. During the whole last  
10 week I had a very brief conversation with Allen Womack, who  
11 was my boss, Bert, Joe, I think that's all.

12 I guess that's my involvement in the whole thing,  
13 and also both with John Mullens of our legal staff and George  
14 Edgar, also last week.

15 Q. Do you remember the substance of your conversation  
16 with Bert Dunn last week other than just informing you of  
17 the fact that he thought the President's Commission would want  
18 to talk with you concerning these memorandums?

19 A. Most of it was the latter. Him informing me that  
20 they were interested in talking to me. Let me think a moment.

21 Bert did ask me what I had done with the August  
22 3rd memorandum, if I had taken any action on it, and he did  
23 inform me that the President's Commission was most interested  
24 in what the disposition of that memorandum was. I think that  
25 was about the substance of our talk.

I do not recall going into any detail with Bert

1882 120



1  
2 about the whole sequence of events in the memorandum, except  
3 I did give him a five-minute explanation as to what I had  
4 done with the August 3rd memorandum, and I think it stopped  
5 at that.

6 Q. Do you remember the substance of your discussion  
7 last week with Mr. Womack?

8 A. With Allen it was more along the lines of how to  
9 conduct yourself when you are being deposed, his impressions  
10 of the line of thinking that the President's Commission was  
11 trying to get at, and, oh, I guess some advise on to tell  
12 the truth and answer the questions, that's the way to conduct  
13 yourself, as a manager to an employee, but we did not discuss  
14 at all -- excuse me. I told him also what I had done with  
15 the August 3rd memorandum, and that was it.

16 It was a very brief conversation with Allen. We  
17 were both quite busy last week.

18 Q. Do you recall the substance of your discussion  
19 with Mr. Kelly last week?

20 A. With Joe it was no more than, "Would you please  
21 get me a copy of the documentation?"

22 And we talked a little about what's going to  
23 happen at the Commission meeting this Wednesday, Thursday  
24 and Friday. I had been able to spend quite a few hours with  
25 George Edgar Wednesday morning, and Joe asked me if I had  
any information that would help him, and I told him what the

1882 121

1  
2 sequence of events was going to be; that we are supposed to  
3 go up to Washington Wednesday, and, you know, we would be  
4 asked to publicly answer questions related to this event, but  
5 that's all that Joe and I talked about. There were not  
6 details about the...

7 Q. Since you were on the distribution list of this  
8 November 1, 1977, memorandum, would not a copy of this memo-  
9 randum be in your files?

10 A. No, it would not. My normal course of action in  
11 handling mail is to, one, make sure that I read it. I get to  
12 my mail pretty religiously, at least twice a week. I will  
13 take memoranda that are being passed on for information and  
14 read and pass it to other people in my group if I feel they  
15 need to be informed, or I will throw it away.

16 My filing system is such that it is set up on  
17 some of the key problem areas in the group where there is  
18 currently a major activity under way, the ATWS issue, a couple  
19 of other NRC concerns that are currently requiring a lot of  
20 manpower in the group. I will then keep a file on those issues,  
21 and everything that crosses my desk, whether I prepare it or  
22 whether I am a receiver of it would go into that file.

23 On things that are not a major issue, like I said,  
24 I would read it and throw it away, or I will read it and pass  
25 it on to somebody else that I saw was not on distribution,  
but that I thought ought to be informed.

1882 122



1  
2 Q. Do you remember what you did with this November  
3 1, 1977, memorandum?

4 A. No, I do not.

5 Q. In the normal course of business you would have  
6 read it and determined whether or not it should be thrown  
7 away or passed on to somebody else?

8 A. I think that is correct.

9 Q. But you do not remember whether or not you threw  
10 this particular memorandum away or passed it on to somebody  
11 else?

12 A. That is correct.

13 Q. Do you remember whether or not you spoke to  
14 Mr. Kelly about this memorandum?

15 A. I do not remember exactly, but my guess is that  
16 I did not.

17 Q. Do you remember speaking with Mr. Swanson about  
18 this memorandum?

19 A. The response is the same there, also, I do not  
20 remember exactly. My guess is, no, I did not.

21 Q. Did you write any memoranda in response to  
22 receiving this memorandum?

23 A. No, I did not.

24 Q. Do you remember speaking orally with anybody else  
25 concerning this memorandum?

A. I do not remember.

1882 123

1  
2 Q. Could you tell me the designation of customer on  
3 this particular memorandum, on the November 1, 1977, memo-  
4 randum, "generic"; can you tell me what that term means to  
5 you?

6 A. It means to me applicable to more than one  
7 customer.

8 Q. I would like you to now look at a handwritten  
9 memorandum dated November 10, 1977. It has already been  
10 marked as Dunn Deposition Exhibit 35.

11 A. May I take a moment and read this once more. I  
12 have only glanced over it briefly last week.

13 Q. Please do.

14 (Pause)

15 By Ms. Goldfrank:

16 Q. Did you receive a copy of this November 10, 1977,  
17 memorandum?

18 A. No, I did not.

19 Q. But you did receive a copy of this last week; is  
20 that correct?

21 A. Right, that is correct. In fact, the first time  
22 I saw this letter was last Monday when Joe gave me the  
23 package of the three -- I guess it is four or five memoranda --  
24 leading up to the August 3rd one.

25 Q. Do you remember whether or not Mr. Kelly, soon  
after November 10, 1977, discussed the contents of this

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memorandum with you?

A. I am quite sure he did not.

Q. Did anybody else discuss the contents of this memorandum with you?

A. No, they did not.

Q. The first time that you ever saw this memorandum was last week?

A. That is correct.

Q. I would like you now to look at a February 9, 1978, memorandum from a Bert Dunn which has already been marked as Womack Deposition Exhibit 23.

A. Okay, I read this last week, also.

Q. This was also one of the memoranda that Dunn gave to you last week?

A. It was Joe Kelly.

Q. Did you also receive this memorandum on February 9, 1978?

A. I do not recall. My name is on distribution as was the other one, but the situation is the same; my memory does not recall either reading this memorandum or any action that I may have taken as result of reading the memoranda.

Q. Do you remember discussing the contents of this memorandum with anyone?

A. I am quite sure I did not.

Q. You did not pass on this memorandum to anybody on

1882 125

1  
2 your staff?

3 A. I cannot recall how I disposed of the memorandum  
4 after receiving it.

5 Q. Do you remember talking about this memorandum  
6 with Mr. Kelly?

7 A. No, I do not.

8 Q. Do you remember talking about this memorandum  
9 with Mr. Swanson?

10 A. I do not either.

11 Q. Did you write any memoranda as a result of receiv-  
12 ing this memorandum?

13 A. No, I did not.

14 Q. Looking at Dunn Deposition Exhibit 36, which is  
15 a February 16, 1978, memorandum from Bert Dunn to a Jim  
16 Taylor, do you remember receiving this memorandum?

17 A. Again the situation is similar to the previous  
18 two memoranda; I do not recall receiving them and I do not  
19 recall taking any action or I do not recall what action I  
20 took after I received it and read it.

21 Q. Do you remember reading this memorandum?

22 A. No, I do not.

23 Q. Your name is on the distrubition list --

24 A. Yes, it is.

25 Q. -- As the people who received this memorandum. Do  
you remember talking about this with anybody?

1  
2 A. No, I do not.

3 Q. Do you remember talking about this memorandum  
4 with Mr. Kelly?

5 A. No, I do not.

6 Q. Do you remember talking about this memorandum  
7 with Mr. Swanson?

8 A. No, ma'am. I can state that -- and again, I do  
9 not recall -- but my normal thought process in a memorandum  
10 such as this would be to confirm in my own mind that the right  
11 people were on the distribution to take any action that was  
12 necessary, and I would think that I would have read this and  
13 said to myself that the issue has been resolved, the right  
14 people are informed, and they would have probably thrown this  
15 one away, thinking that things were tracking and any action  
16 that had to be taken was being taken.

17 Q. Do you recall throwing this particular memorandum  
18 away?

19 A. No, ma'am, I do not.

20 Q. You state that your thinking probably would have  
21 been that the appropriate people did receive copies of this  
22 memorandum and that the responsibility for pursuing the con-  
23 tents of this memorandum or any action that had to be taken,  
24 that it was directed to the correct people to pursue that;  
25 is that correct?

A. That is right.

1882 127

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2 Q. Who in particular did you think was carrying out  
3 the intent of this memorandum?

4 A. Okay. I can only go through my thought process  
5 as it would be today, because I do not recall what I did. Is  
6 that acceptable to you?

7 Q. Yes, to the best of your recollection.

8 A. I would see that the people in Nuclear Service  
9 were on distribution, and that Bert had said that he has been  
10 working together with Field Service or Nuclear Service -- they  
11 are synonymous -- and that he has come to an agreement with  
12 them; therefore, I would feel after reading this that Nuclear  
13 Service had the action to follow-up and inform customers or  
14 check to see that the concern of Bert's was resolved.

15 The fact that the memo is directed to Mr. Taylor  
16 in the Licensing -- he's doing a piece of work here with  
17 Nuclear Service -- Bert and Nuclear Service have been doing  
18 something, and then Bert writes a letter saying, "Here is  
19 the result of that," and I guess I would have directed it to  
20 Nuclear Service were I writing it, but I would note here that  
21 key people in Nuclear Service who were taking action, speci-  
22 fically Pitman, Phinney and Scot, would be there, and I would  
23 not pay very much attention to it. I just let it go.

24 Q. Therefore, you do not recall discussing the  
25 contents of the February 16, memorandum with anybody on your  
staff?

1882 128



1  
2 A. I do not recall.

3 Q. You did not assign the subject matter of this  
4 memorandum to anyone on your staff?

5 A. I did not.

6 Q. If you had read the content of this memorandum  
7 and the February 9, 1957 memorandum and disagreed with it,  
8 would you have, at that point, taken some action?

9 A. Absolutely.

10 Q. Therefore, you agreed with the content of this  
11 memorandum?

12 A. Let me say that I saw an agreement between an  
13 analyst on the one hand, Mr. Dunn, and Nuclear Service, a  
14 communicator to the plant; you know, I saw an agreement there.  
15 Again, I am surmising what my thought process would be, but  
16 I would think if those two agreed, it has to be right, and  
17 therefore, I would agree also.

18 Q. You do not remember having a conversation or  
19 discussion with Mr. Kelly concerning this particular memo-  
20 randum?

21 A. I do not recall.

22 Q. Would you have made notes after receiving this  
23 memorandum and reading it?

24 A. No, I am quite sure I would have taken this  
25 memorandum and disposed of it, thrown it away.

Q. I would like you to now look at a memorandum

1882 129

1  
2 that we have discussed previously.

3 I read it and I saw it was directed to me. I saw  
4 there were two specific questions which could best be answered  
5 by Swanson or McBride. I just sent it off.

6 Q. Does Mr. McBride report to Mr. Swanson?

7 A. No, he reports to me.

8 Q. And Mr. Swanson reports to you, also?

9 A. Yes.

10 Q. Do you remember discussing the content of this  
11 memorandum with either Mr. Swanson or Mr. McBride?

12 A. I do not.

13 Q. Do you remember discussing it with anybody else  
14 on your staff?

15 A. No, I do not.

16 Q. If you had sent this memorandum on to either  
17 Mr. Swanson or Mr. McBride, do you recall if the note that  
18 was attached to it said anything else except that you should  
19 look into this and take appropriate action?

20 A. I am quite sure that it did not, because again  
21 I am trying to remember -- I have been trying to remember for  
22 the last week -- I don't recall ever really feeling the signi-  
23 ficance of what Mr. Hallman was trying to communicate. It  
24 seemed to me that it was a routine matter; Nuclear Service  
25 was asking Bruce Karrasch two questions, and I sent it on,  
two of the questions answered in a rather routine manner.

1882 130



1  
2 MS. GOLDFRANK: I would like to request at this  
3 time that if a copy of that handwritten note is retained by  
4 either Mr. Swanson or Mr. McBride that it be produced.

5 THE WITNESS: I last week talked to both Swanson  
6 and McBride and asked them if they recalled the memorandum  
7 at all or could find it, and both of them thought for quite  
8 awhile, and neither of them recalled even receiving it from  
me.

9 MR. GALLEN: We will make a good-faith search  
10 to see whether we can get a copy of that.

11 By Ms. Goldfrank:

12 Q. After having received this memorandum what was  
13 the intent of this memorandum?

14 A. Could you please clarify that?

15 Q. Having received this, what do you believe was the  
purpose of Mr. Hallman sending this memorandum to you?

16 A. I can only guess what my thoughts were at the  
17 time. I was very busy. There was a long list of things that  
18 I personally had to do during that particular point in time  
19 and I can only guess that all I did was glance over this  
20 quickly, note that there were two pretty significant ques-  
21 tions being asked, and that I could pass it on and delegate  
22 it, and you know, forget it and get on with what I thought  
was the higher priority work at that time.

23 I suspect that I glanced over the thing very  
24  
25

1882 131

1  
2 quickly, caught a few key words and decided very quickly to  
3 delegate it and get onto the next piece of work at hand.

4 Q. Is it correct to say that you felt that Mr. Hall-  
5 man was specifically asking you to answer these questions  
6 raised in the memorandum?

7 A. Yes.

8 Q. Do you recall talking with anybody else aside  
9 from either Mr. Swanson or Mr. McBride concerning this memo-  
10 randum.

11 A. I do not.

12 Q. You do not recall talking to Mr. Kelly about this  
13 memorandum?

14 A. I am quite sure I did not.

15 Q. Could you tell me what follow-up action either  
16 Mr. Swanson or Mr. McBride took in response to this memorandum?

17 A. I can tell that I asked them last week if they,  
18 one, either recalled getting the memorandum, or, two, had  
19 taken any follow-up action, and I get a negative response on  
20 those.

21 Q. Do you recall prior to receiving this memorandum  
22 on August 3, 1978, talking with Mr. Swanson concerning the  
23 general issues raised in this memorandum?

24 A. I do not recall.

25 Q. Do you recall talking with Mr. Kelly prior to  
August 3, 1978, on the subject matter raised?

1882 132

1  
2 A. I am quite sure that I did not.

3 Q. You indicated earlier that last week you had  
4 spoken with Bert Dunn concerning the series of these memo-  
5 randums, in particular the August 3, 1978, memorandum, and  
6 you discussed what action you had taken. Could you explain  
7 to me what you talked about with him last week?

8 A. Okay. I told Bert what I have told you about my  
9 disposition of the memorandum. I then told him that on at  
10 least two occasions between August 3rd and the end of the  
11 year, that Don Hallman had contacted me informally, once by  
12 telephone, and once in passing in the hallway, and asked me  
13 if I had taken any action on the memorandum that he had sent  
14 to me.

15 I told Don that I had passed the memorandum on  
16 to -- I don't even know if I gave him a name, but I had passed  
17 it on to somebody in my group for action, and that I assumed  
18 that within a short term he would be receiving a response.

19 On both of those occasions, I did not follow-up  
20 after the phone call or the casual conversation with Don in  
21 the hall. I am quite sure I did not then go back and talk to  
22 Art or Eric and if they followed up. All I can remember is  
23 in the Fall of '78 that things were very, very busy with the  
24 new manager, and several very key issues were underway in my  
25 group, the ATWS event, we were very, very much involved in  
working Reg. Guide 1.89, which is the qualification of C&I

1882 133

1  
2 Equipment. I know that Art McBride, for instance, was one  
3 of the key engineers on both of those issues, and he was very  
4 busy, and I found myself very tied up in administrative  
5 matters with lots of new things going on with the advent of  
6 a new manager in the section.

7 That's about all I can recall during the Fall, is the  
8 contact with Hallman and my attention and the whole group's  
9 attention to what were perceived to be higher priority matters.

10 Q. Would there have been any memorandum or notes of  
11 that telephone conversation with Mr. Hallman?

12 A. I am quite sure there were not.

13 Q. Would there have been a memorandum or note after  
14 having passed him in the hall and talking with him concerning  
15 the August 3rd memorandum?

16 A. No, there were not.

17 Q. And is it correct to say you did not as a result  
18 of either of those contacts, go back and talk with either  
19 Mr. Swanson or Mr. McBride on your staff?

20 A. That is correct.

21 Q. Did you talk with Mr. Walters, sometime after  
22 August 3, 1978, concerning this August 3, 1978, memorandum  
23 from Hallman to you?

24 A. No, I did not.

25 Q. Was there any further follow-up from Mr. Hallman  
either during the Fall of 1978 or any time from August 3, 1978,

1882 134

1  
2 to the Spring of 1979.

3 A. Right after the first of the year Don asked me  
4 again -- I am quite sure it was in the hallway -- would I  
5 please respond to the memorandum. I then personally got a  
6 copy somewhere. I may have even asked Don to please send me  
7 another copy because mine had disappeared, and again, all I  
8 can say is after the first of the year when the business had  
9 quieted, just because it was the beginning of a new year, I  
10 recall reading the memorandum quite carefully and going  
11 through a thought process myself which led me to the conclu-  
12 sion that, yes, what Bert is saying is right.

13 I recall thinking that Bert's concern is a very  
14 serious one, but it is talking about an event which I would  
15 consider to be very infrequent. I can remember thinking that  
16 our procedures to the operator already should cover this and  
17 make sure that he would keep his high pressure injection  
18 system on if the pressure were below the set point for the  
19 high pressure injection system, and I remember thinking that  
20 the answer to both of these questions would be such that the  
21 consequences of keeping the HPI on and going solid and  
22 releasing water through the release valves in the pressurizer  
23 were insignificant compared to the consequences of not  
24 leaving it on, even though I mentally put it aside as a very  
25 infrequent event, one of those "what-ifs" that we have day in  
and day out.

1882 135

1  
2 I remember thinking about the consequences were  
3 serious, and that Bert was right, what Bert was saying was  
4 correct.

5 I then contacted Don, and I told him of that  
6 thought process that I just related to you, and that I thought  
7 Bert was right, and that as the Manager of Plant Integration,  
8 I believed that he should take whatever action is necessary  
9 to resolve Bert's concern.

10 Let me state it a little differently. The concern  
11 had been resolved. Okay, Bert had made a suggestion, and  
12 the words I told to Don is, "Bert is right and I agree with  
13 him and the consequences of going solid are insignificant  
14 compared to not leaving the high pressure injection on," and  
15 the substance of my conversation with Don is, "I agree with  
16 Bert. Both of these questions are insignificant compared to  
17 what Bert is talking about; therefore, go take the action as  
18 you deem necessary," and that was sometime, all I can say,  
19 between about the 15th of January and the 15th of March,  
20 sometime in that time frame, this conversation occurred with  
21 Don.

22 Q. That was a phone conversation where you related  
23 this information to Mr. Hallman?

24 A. I am quite sure it was a conversation in the  
25 hallway.

Q. There would not have been a written memorandum

1882 136



1  
2 that followed that conversation?

3 A. There was no written memorandum that followed  
4 that conversation.

5 Q. When you asked somebody to get you a copy of this  
6 August 3, 1978, memorandum sometime after January 15, 1979,  
7 did you also request copies of Bert Dunn's memoranda of  
8 February 9 and February 16, 1978?

9 A. I am quite sure I did not.

10 Q. Would you have had copies of those two memoranda?

11 A. No, I did not have copies of those two. As you  
12 recall earlier in the testimony, I could not even remember  
13 how I had disposed of those two memoranda, so I did not have  
14 them in my possession.

15 Q. Is it correct to say that when you contacted  
16 Mr. Hallman sometime after January 15, 1979, concerning this  
17 August 3, 1977, memorandum, that you did not refer back to  
18 the February 9 and February 16, 1978, memoranda of Bert Dunn?

19 A. That is correct.

20 Q. Did you consult with anyone on your staff con-  
21 cerning the subject matter of this memoranda?

22 A. I can't say for sure, but I recall -- and it is  
23 way back in my memory -- but I remember talking to somebody  
24 about the consequences of water release through the safety  
25 valves and had an evaluation done as part of our work scope  
on ATWS. During this ATWS I have referred to, there is also

1882 137

1  
2 a potential for the system going solid due to an overheating  
3 and water release through the pressurizer valves, and all I  
4 can remember is that I brought up with somebody the relation-  
5 ship here with ATWS and had an evaluation done on the valves  
6 for water release, and I don't even recall the -- well, I  
7 don't recall the details of the response, except to say that  
8 the response was, "It should not be a problem. The valves  
9 were not designed for water release, safety valves," but that  
10 we had been looking at it as a result of the ATWS concern,  
and that it was okay.

11 Q. You do not recall with whom you had that conver-  
12 sation?

13 A. No, I do not. It is just back there in the  
14 memory someplace. It is just a little flash, if you will,  
and that's all it is.

15 Q. And would you have made notes of that conversation?

16 A. No, I would not have.

17 Q. Would there be a written memorandum of that con-  
18 versation?

19 A. No.

20 Q. For the record, could you explain what "ATWS"  
21 stands for?

22 A. Anticipated Transients Without Scram. It is an  
23 event postulated by the NRC wherein the reactor does not trip  
24 following an abnormal event such as a loss of feedwater, and

1882 138



1  
2 of course what happens there is a very severe overheating of  
3 the system takes place, because you have lost your feedwater  
4 or your cooling, and the reactor is still generating its full  
5 power, and of course the concern there is a very, very high  
6 pressure and high temperature reactant cooling system; and  
7 during that event, if it were to occur, all the pressurizers  
8 would go solid very quickly because of the overheating. It  
9 is an event that the NRC is making us look at, which has a  
very, very small probability of occurrence.

10 Q. Therefore, your analysis that you were concerned  
11 with at this point in time concerning ATWS was for the NRC  
12 and was not in response to an event at a particular B&W  
13 plant?

14 A. That is correct.

15 Q. You stated that you indicated to Mr. Hallman,  
16 sometime after January 15, 1979, that you agreed with the  
17 recommendations by Bert Dunn. On what basis did you agree  
with Bert Dunn's recommendations?

18 A. All I can remember is I knew Bert was suggesting  
19 that we provide a clarification to our procedures, such that  
20 the operator maintains subcooling. It was reiterated in the  
21 opening paragraph in Don's letter to me.

22 When I finally got around to studying this, it  
23 was quite clear to me that that additional clarification to  
24 the procedures that were already in place is something that

1882 139

1  
2 we ought to do, and that the two concerns were not significant  
3 compared to further clarification to the operator, that he  
4 should leave the high pressure injection system on; so I guess  
5 to summarize, I knew the concern, I could look at the letter  
6 and leave it on the one hand, and is it okay on the other,  
7 you know, and the thought process I went through led me to  
8 the conclusion that what Bert was saying was a good thing to  
9 provide to the operator as additional clarification to him.

10 Q. Is it correct to say then that you read the  
11 August 3, 1978, memorandum, and based on your knowledge,  
12 determined that Bert Dunn's recommendation was accurate?

13 A. That is correct.

14 Q. Did you review the procedures that were in  
15 existence at that time?

16 A. No, I did not.

17 Q. Were you familiar with the procedures that were  
18 in existence?

19 A. No, I was not.

20 Q. What did Mr. Hallman say to you when you informed  
21 him that you agreed with Bert's recommendation?

22 A. I really don't recall. It was another one of  
23 those rather quick conversations in the hallway, and the  
24 response would not have been any more than just an acknowledge-  
25 ment that I had stated something to him.

Q. Did he request from you a written memorandum?

1882 140

1  
2 A. No, he did not.

3 Q. Did he request anything further from you?

4 A. No, he did not.

5 Q. You indicated earlier in your testimony that you  
6 had last week also discussed what you had done as a result of  
7 this August 3, 1978, memorandum with Mr. Womack. Could you  
8 tell me what you indicated to him?

9 A. I gave Allen the same recollection that I have  
10 just given to you, only not in nearly as much detail. In my  
11 discussion with Allen I told him that I had received the  
12 letter, probably passed it on to Swanson or McBride, had had  
13 several informal contacts with Don Hallman during the remain-  
14 der of 1978, and that immediately after the first of the year  
15 I had done an evaluation myself, and in passing, told Don  
16 Hallman that Bert was right, and that whatever action he  
17 deemed to be necessary should be taken.

18 It was just that quickly with Dr. Hallman.

19 Q. Would, to the best of your recollection, you  
20 state that I now have everything with respect to the two  
21 Dunn memoranda of February 9 and February 16 that would be  
22 in your possession?

23 A. Yes.

24 Q. There would be no further memoranda or notes that  
25 you would have concerning those two memoranda?

A. That is correct.

1882 141

1  
2 Q. Have you prepared any kind of memorandum or taken  
3 notes or made any kind of recordings concerning the March 28,  
4 1979, incident at Three Mile Island?

5 A. Yes.

6 MS. GOLDFRANK: At this time I would like to  
7 request that those which have not been produced to the  
8 Commission, that they be produced.

9 MR. GALLEN: Just a second. Off the record.

10 (Discussion off the record)

11 By Ms. Goldfrank:

12 Q. Could you explain what documents you have pro-  
13 duced concerning the issues that were raised in relation to  
14 the Three Mile Island accident?

15 A. During the recovery operation for March 28, for  
16 the next five or six weeks, there was a special organization  
17 assigned to support Me+ Ed MGBU, in bringing the plant to  
18 a safe stable cold shutdown condition, and I was intimately  
19 involved in that operation, and in the normal course of  
20 events, during that recovery operation we communicated in  
21 writing many suggestions on modifications to procedures,  
22 responses to questions which were being asked from the whole  
23 world, and coming through the GPU operation, and just from  
24 general direction that B&W could give to GPU on how to handle  
25 the situation at Three Mile Island.

We kept tract of this paper through a numbering

1882 142

1  
2 system, and all I can tell you is that I was the author of  
3 quite a number of the communications that either went inter-  
4 nally here at B&W to keep ourselves organized or went from  
5 BPGD to the people up in Harrisburg.

6 Q. To the GPU?

7 A. To GPU, primarily those were the people I was  
8 working with.

9 Q. Who else would you have been working with?

10 A. I believe that's all. I can't recall anything I  
11 wrote that left the building that would have gone to anybody  
12 except our contact up at GPU.

13 Q. Who would that contact have been?

14 A. That fellow's name was Dick Wilson. He was the  
15 GPU person assigned as the leader of the engineering operations  
16 onsite at the site.

17 MS. GOLDFRANK: I would like to request that any  
18 memorialization, whether it be in writing or in the form of  
19 a memoranda or a recording or notes concerning the accident  
20 at Three Mile Island, whether it was an internal memoranda  
21 or directed to GPU be produced to the Commission.

22 MR. GALLEN: You have copies of those.

23 THE WITNESS: May I go off the record a moment?

24 MS. GOLDFRANK: Sure.

1882 143

25 (Discussion off the record)

THE WITNESS: The only other thing I could recall

1  
2 is the testimony I gave at an ACRS meeting on May 30, and  
3 June 1st. I made a formal presentation to the ACRS which was  
4 recorded.

5 MS. GOLDFRANK: At this time I have no further  
6 questions, but I would like to say that we would recess this  
7 deposition and although I do not anticipate that we would  
8 call you to be deposed again, there is a possibility that we  
9 would, and we would like to leave that open to reschedule if  
we have further questions.

10 MR. GALLEN: Off the record.

11 (Discussion off the record)

12 (Witness excused)

13 (Whereupon the examination recessed at 10:05 a.m.)  
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15  
16  
17  
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19  
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22  
23  
24  
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1882 144

## CERTIFICATE OF REPORTER

I, Norma Nasuti Costello, Certified Court Reporter, do hereby certify that I reported the testimony of the witness herein, in stenotypy, and that the testimony was reduced to typewritten form pursuant to my direction.

I further certify that the testimony herein constitutes an accurate record of the proceedings had.

-----  
Norma Nasuti Costello

1882 145



RESUME OF BRUCE A. KARRASCH  
MANAGER, PLANT INTEGRATION UNIT  
NUCLEAR POWER GENERATION DIVISION  
BABCOCK & WILCOX

- June 1967: Received Bachelor of Science Degree in Nuclear Engineering from University of Wisconsin - began employment as an engineer for Babcock & Wilcox in Lynchburg, Va.
- June 1967 - June 1969: Engineer in the Thermal Hydraulics Group in Fuel Engineering - performed fluid flow and heat transfer calculations on the Mark B Fuel Assembly for 177 FA plants.
- June 1969 - June 1971: Engineer in the Nuclear Analysis Group in Fuel Engineering - performed 3-dimensional power peaking calculations for 177 FA plants.
- June 1971: Received MS in Nuclear Physics from Lynchburg College.
- June 1971 - March 1974: Engineer, and then Supervisory Engineer, in the Control Analysis Unit in the Plant Analysis Section - assisted in the NSS system design and analysis during the startup of Oconee I.
- March 1974 - September 1975: Unit Manager, Control Analysis - responsible for transient and steady state system analysis of B&W nuclear steam systems.
- September 1975 - August 1976: Unit Manager, Core Integration - responsible for defining and controlling analytical and hardware interfaces between fuel assembly and remainder of nuclear steam supply system.
- August 1976 - Present: Unit Manager, Plant Integration - Responsible for defining and controlling analytical and hardware interfaces among the various elements of the B&W nuclear steam system design.

1882 146

EX. 1

mne 7/16/79



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2  
3 -----  
4 PRESIDENT'S COMMISSION ON THE  
5 ACCIDENT AT THREE MILE ISLAND  
6 -----  
7  
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11

12 DEPOSITION OF DONALD F. HALLMAN by JOAN GOLDFRANK,  
13 held at the offices of Babcock & Wilcox, Old Forest Road,  
14 Lynchburg, Virginia 24505 on the 16th day of July, 1979,  
15 commencing at 10:45 a.m. before Norma Nasuti Costello, certi-  
16 fied shorthand reporter.

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DUPE

HALLMAN

147

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Attorneys for Babcock & Wilcox  
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BY: KEVIN GALLEN, ESQ.

FOR THE COMMISSION:

JOAN GOLDFRANK, ESQ.

1882 148

INDEX

WITNESS

Donald F. Hallman

DIRECT

3

1882 149

1  
2 P-R-O-C-E-E-D-I-N-G-S

3 Whereupon,

4 DONALD F. HALLMAN

5 was first duly sworn and testified as follows:

6 BY MS. GOLDFRANK:

7 Q Could you state your name, please?

8 A Don Hallman.

9 Q Could you spell that, please?

10 A Donald F. Hallman, H-A-L-L-M-A-N.

11 Q Could you state your present address, please?

12 A 3416 Sabu Place, Lynchburg.

13 Q And your present employer?

14 A Babcock & Wilcox.

15 Q And your present position there, please?

16 A Manager, Plant Performance Service Section.

17 Q I would just like to say, if you can't hear a  
18 question that I ask or you don't understand a question,  
19 please just ask me to repeat it or rephrase it.

20 A Correct, okay.

21 Q Could you briefly describe your educational  
22 background?

23 A Yes. Bachelor's of Science, Chemical Engineer-  
24 ing. Doctorate Degree in Nuclear Engineering. Certificate  
25 in Meteorology from the Air Force.

Q Where did you receive your B.S. from?

1882 150

1  
2 A Princeton.

3 Q In what year?

4 A 1960.

5 Q Where did you receive your doctorate?

6 A North Carolina State, 1968.

7 Q And in which years were you in the Air Force?

8 A '60-'63.

9 Q When did you start working at Babcock & Wilcox?

10 A '72, October, I believe.

11 Q What position did you hold when you started with  
them in October of '72?

12 A Senior Research Engineer, I believe.

13 Q And how long did you hold that position?

14 A Oh, it must have been through '75.

15 Q And then what position did you hold?

16 A Oh, I was Principal Engineer.

17 Q For how long did you hold that position?

18 A I worked until September of '76, approximately.

19 Q And what position did you hold?

20 A Then my current position.

21 Q Could you tell me where you were employed when  
you finished your doctorate at North Carolina in '68 until  
you started at Babcock & Wilcox in '72?

22 A Yes. Sequentially it would have been Savannah  
23 River Laboratories, '68 and '69.

24 1882 151  
25

1  
2 Radiation Technology Canada, Limited, '69 through  
3 '71.

4 Radiation Technology, Incorporated, '71 and '72.

5 Q I would like you to look at a document that has  
6 already been marked Dunn Deposition Exhibit 37, and it is  
7 a memorandum dated August 3, 1978, written by you to Mr.  
8 Karrasch, Manager, Plant Integration.

9 A Okay.

10 Q Did you write this memorandum?

11 A No.

12 Q Could you tell me who did write it?

13 A Frank Walters.

14 Q And he is on your staff?

15 A Correct.

16 Q Did you review it?

17 A Yes.

18 Q Before it was sent, did you review it?

19 A Yes, I did.

20 Q Did he discuss with you the content of the  
21 memorandum prior to writing it?

22 A You mean, did he discuss it prior to his writing  
23 it?

24 Q Yes.

25 A I don't recollect exactly, but I believe he did.

Q Did you receive a response from Mr. Karrasch to

1882 152

1  
2 this memorandum?

3 A I received no written response.

4 Q Did you receive an oral response?

5 A My recollection is vague, but I did receive --  
6 I did receive an oral response which to my recollection  
7 stated that he did not believe there was a problem.

8 Q Do you remember when that oral response was  
9 given to you?

10 A I don't remember exactly. It was this year,  
11 after Christmas and sometime before March 28.

12 Q And what did he inform you at that time?

13 A Again, to the best of my recollection, he  
14 informed me that there was no problem.

15 Q And what did that response mean to you?

16 A That response was confusing. I did not realize  
17 at the time whether he meant there was no problem with  
18 action or there was no problem with operator inaction, and  
19 I did not ask him for a clarification at that time of our  
20 conversation.

21 Q You were not clear as to his indication that  
22 there was no problem but you did not ask him at that time  
23 to explain further?

24 A That is correct. To clarify, the meeting was in  
25 the hall by the drink machines, and per my memory I asked  
him if he had reached a decision yet on my August 3 memo,

1882 153

1  
2 and there was conversation which then terminated with "I  
3 don't believe there's a problem", and he had to go off to  
4 another meeting before we could talk further.

5 Q Did you contact him subsequent to that meeting  
6 in the hall?

7 A No, not to my recollection.

8 Q Did you contact anybody on his staff?

9 A Not to my recollection.

10 Q Did you send another memorandum to him?

11 A No.

12 Q Did you send another memorandum to him concern-  
13 ing the subject?

14 A No, I did not.

15 Q Was the discussion in the hall sometime after  
16 Christmas the only discussion you had in response or  
17 concerning this August 3, 1978, memorandum with Mr. Karrasch?

18 A No, it was not the only one. I recall at least  
19 two other conversations. I can't be sure about the time.  
20 One per my recollection was a telephone call to ask him the  
21 answer to the memorandum. Another was another conversation  
22 where maybe I went back to his desk or maybe it was another  
23 in the hall after the telephone conversation where I asked  
24 him for a response.

25 Q And at that time when you asked him for a  
response to the August 3, 1978, memorandum, did you receive

1882 154



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a response?

A No, I did not receive a response to this memorandum.

Q What was the content of your telephone call?

A The content was, per my memory, that we needed an answer for this and did not intend or did not plan to do anything with the situation until we had his response.

Q That was communicated in a telephone conversation with Mr. Karrasch?

A Yes.

Q And what did he respond to that answer?

A Oh, again per my recollection he said, "Well, we will get on it".

Q Was there a memorandum that followed that telephone conversation --

A No.

Q -- written by you?

A No, not written by me.

Q Was there a memorandum written by Mr. Karrasch?

A Not to my knowledge.

Q Did you take notes of that telephone conversation?

A No, I did not.

Q Was anybody else a party to that telephone conversation?

1882 155

1  
2 A I don't recall anyone else.

3 Q Nobody else from your staff would have been  
4 present during that telephone conversation?

5 A I don't recall anyone being present. It is  
6 possible that someone was.

7 Q You indicated that there was another time  
8 prior to Christmas of 1978 that you discussed this August  
9 3, 1978, memorandum with Mr. Karrasch. What was the  
content of that conversation?

10 A The content, again per my memory, which is not  
11 solid at this moment, was that we needed to address that  
12 memo and that situation and arrive at a resolution. The  
13 words were not as formal as that.

14 Q And what did Mr. Karrasch respond?

15 A Per my recollection, it was that, yes, we  
16 should do something about the memo.

17 Q And was any action taken on his part in  
18 response to the conversation in the hall?

19 A I don't know. I received nothing in writing  
20 in the immediate time span after that, and I don't  
21 recollect talking with him until, oh, February, March, of  
22 this year about it.

23 Q You say you don't recall talking with him again  
24 until after February or March of this year. Is that when  
25 he indicated to you that there was no problem, and you are

1882 156

1  
2 not clear as to what he meant by that indication?

3 A That is correct. To clarify, I recollect  
4 calling him once or twice, but he was not in the office.  
5 I recollect going back to his office at least once when  
6 he wasn't there with this subject in mind, but I don't  
7 recall the times.

8 Q Is there any record of times that you tried to  
9 get in touch with somebody within the office and were  
10 unable to?

11 A Oh, no. I have gone through my notebook and  
12 I didn't see any.

13 MS. GOLDFRANK: Let the record show you have  
14 brought with you a notebook.

15 BY MS. GOLDFRANK:

16 Q Could you explain to me what is contained in  
17 that notebook?

18 A This is a record of some -- excuse me while I  
19 look through to refresh my memory. This is note of my  
20 meeting minutes that I have attended. It is a note of  
21 some telephone conversations which I have had with our  
22 customers and miscellaneous information which I thought  
23 worth preserving.

24 Q Does it record meetings within Babcock & Wilcox  
25 also or just contact with customers?

A Meetings within Babcock & Wilcox, also.

1882 157

1  
2 Q And you have read through your notes and have  
3 not found any notes concerning discussions with Mr.  
4 Karrasch?

5 A No, I have not read through them thoroughly.  
6 I had glanced through them to see if there was anything  
7 in there that would help my memory, but I have not done a  
8 detailed page by page...

9 MS. GOLDFRANK: I would like to request at this  
10 time if we could have a copy of Mr. Hallman's notes. Could  
11 we go off the record?

12 MR. GALLEN: I think we can.

13 (Discussion off the record.)

14 MS. GOLDFRANK: As the conversation off the  
15 record concerned production of a handwritten notebook of  
16 Mr. Hallman, that document will be reviewed by Counsel  
17 to determine whether or not it contains proprietary  
18 information, and if it does, will be produced at Counsel's  
19 office for review by the Commission.

20 BY MS. GOLDFRANK:

21 Q In your review of your handwritten notes contain-  
22 ed in that notebook, you did not come across notes concerning  
23 discussions with or attempts to contact Mr. Karrasch with  
24 respect to this August 3, 1978, memo; is that correct?

25 A That is correct, in the review that I made,  
which was not thorough.

1882 158

1  
2 Q In the time, August 3, 1978, until March 1979,  
3 did you contact anyone on Mr. Karrasch's staff concerning  
4 this memo?

5 A I did not write any formal memo to anyone else.  
6 I don't recollect if I discussed it with anyone else on  
7 Mr. Karrasch's staff.

8 Q Do you remember if anybody on Mr. Karrasch's  
9 staff contacted you concerning this memo?

10 A Again there was no memo that I'm aware of sent  
11 out, and I don't recollect if anyone contacted me.

12 Q You do not recollect any conversations with  
13 anybody on Mr. Karrasch's staff?

14 A No, I don't recollect any.

15 Q Do you know of any conversations between anyone  
16 else on your staff and either Mr. Karrasch or somebody on  
17 his staff concerning this memorandum?

18 A No, I don't recollect any.

19 Q Could you explain to me why you wrote this  
20 August 3, 1978, memorandum to Mr. Karrasch?

21 A Could you clarify more directly what you are  
22 looking for?

23 Q What was the purpose for you writing this  
24 August 3, 1978, memorandum to Mr. Karrasch?

25 A Okay. The purpose was to request a review of  
possible consequences that would be involved in following

1882 159

1  
2 the recommendations that we had received and non-LOCA  
3 situations.

4 Q Is it correct to say that you were concerned  
5 in getting specific answers to the two questions that you  
6 raised?

7 A Definitely.

8 Q Could you tell me what you did subsequent to  
9 your conversation with Mr. Karrasch that indicated to you  
10 that there was no problem?

11 A To my recollection I waited for a memo stating  
12 what action we should take in response to this memo. When  
13 that was not received within the time period, again per  
14 my recollection of two weeks or approximately, I made a  
15 note to contact Mr. Karrasch and to find out what he meant.

16 Q Did you contact Mr. Karrasch subsequent to that  
17 conversation?

18 A No, I did not make contact.

19 Q In the conversation that you had did you  
20 indicate to him that you were awaiting a memorandum from  
21 him?

22 A I don't recall the word "memorandum" being  
23 used per se. I do recall words concerning I was awaiting  
24 a resolution.

25 Q You indicated to him that you were awaiting  
resolution; is that to say that you were not satisfied with

1882 160



1  
2 the conversation in the hall concerning this memorandum?

3 A I don't remember the exact words that we said  
4 in the hall, other than I remember the "no problem" bit.

5 I don't recall requesting that he answer this.  
6 Let me back up. I don't recall -- I just don't recall the  
7 words that were said. The intent, as I recall, was that,  
8 yes, get back with me, but I can't remember the words that  
9 would have given that information to him in detail.

10 Q But in your mind that is how you left it, that  
11 he would get back to you in writing?

12 A Yes. In my mind it was left that he would be  
13 getting back with me shortly, and I had assumed it would  
14 be in writing. I do not recall stating that it must be in  
15 writing.

16 Q Do you recall what you said to Mr. Karrasch in  
17 that conversation that would indicate to him that you  
18 expected a response, a further response?

19 A No, I don't recall specific words that I said  
20 that would have indicated that.

21 Q Did Mr. Karrasch say anything to you that  
22 would indicate that he understood that he was to get back  
23 you?

24 A No, I can't say that I recall specific words.

25 Q And you then indicated in previous testimony  
that you waited about two weeks to then try to contact Mr.

1882 161

1  
2 Karrasch?

3 A Yes.

4 Q And what happened when you tried to contact him  
5 at that point?

6 A That I don't recall specifically. I do not  
7 recall establishing contact with him at that point, and I  
8 don't specifically recall any incidents where I called him  
9 or went back to his desk. I have a recollection that I  
10 took some action at that time, but nothing I can pin down  
11 in memory right now.

12 Q Did you try to contact anybody else on his  
13 staff?

14 A No, I did not per my memory.

15 Q Did you instruct anybody on your staff to try  
16 to contact him or anybody on his staff?

17 A Not per my memory.

18 Q Would there be any indication of such attempts?

19 A I don't believe so.

20 Q What action did you take as a result of your  
21 inability to contact him?

22 A Let me think. I believe that I made a note to  
23 myself on a scratch pad of "resolve HPI situation" or words  
24 to that effect, and I believe that I made an attempt, which  
25 did not culminate in a contact, but that was thrown out with  
the waste paper, I am sure, as my daily notes are.

1882 162



1  
2 Q You do not believe you still have your hand-  
3 written notes?

4 A I don't believe I could produce them, no.  
5 Normally whenever days are past, I discard them.

6 MS. GOLDFRANK: I would like to request a search  
7 be made as to whether or not such a note would be retained.

8 THE WITNESS: Okay.

9 MR. GALLEN: Excuse me. Could we go off the  
10 record a second?

11 (Discussion off the record.)

12 BY MS. GOLDFRANK:

13 Q Could you explain to me then what you did at  
14 that point with respect to your August 3, 1978, memorandum?

15 A At which point?

16 Q At the point where you were unable to contact  
17 Mr. Karrasch concerning that memorandum?

18 A Gosh, I guess I awaited a response. I have  
19 no recollection of past that. I probably made to myself  
20 a mental note that says that I couldn't get in touch with  
21 him again, to try again later when he was available.

22 Q So the concerns raised in this memorandum were  
23 left unresolved while you awaited further response from Mr.  
24 Karrasch; is that correct?

25 A That is correct.

Q You did not notify any of the B&W customers as

1882 163

1  
2 to the concerns raised in this memorandum?

3 A Are you referring to the Karrasch memorandum,  
4 my memorandum to Karrasch?

5 Q The August 3, 1978, memorandum, yes.

6 A To the best of my knowledge, that's correct.

7 Q Is this prior to March 28, 1979?

8 A This memo?

9 Q No; that you did not inform your customers  
10 of the concerns raised in this memorandum.

11 A That is correct.

12 Q Did you since March 28, 1979?

13 A Have I what?

14 Q Informed B&W customers of the concerns raised  
15 in your August 3, 1978 memorandum.

16 (Pause.)

17 MR. GALLEN: I think we might want to go off  
18 the record for a second.

19 (Discussion off the record.)

20 ANSWER: The answer is we have sent the customers  
21 further information to clarify the response to small breaks  
22 at B&W plants.

23 Q And do you know the days of when you sent that  
24 information?

25 A Oh, the specific days I don't have in my memory.  
It was during the April, May, time frame.

1882 164

1  
2 Q And could you explain what new instructions you  
3 gave those customers?

4 A The new instructions were essentially more  
5 detailed concerning the response to a small break which  
6 incorporated the essence of the two memos by Burt Dunn;  
7 said memos being referenced in my memo to Karrasch.

8 I would like to ask, do you have a copy of  
9 two Dunn memos? I made that statement from memory and I  
10 would like to look at those.

11 MS. GOLDFRANK: Why don't I introduce the two  
12 Bert Dunn memoranda. One is dated February 16, 1973, and  
13 one is dated February 9, 1978, which are Dunn Deposition  
14 Exhibit 36 and Womack Deposition Exhibit 23.

15 (Pause.)

16 ANSWER: The question was, did the instructions  
17 which were sent out in the April time frame this year address  
18 the Bert Dunn concerns?

19 Q Right.

20 A Yes, I believe they did.

21 Q Could you explain how they were accounted for,  
22 how those specific concerns were accounted for in the  
23 instructions?

24 A Let's see. Per my recollection the operators  
25 were instructed to plot temperature versus pressure to  
determine its -- saturation relationships, which is not an

1882 165

1  
2 exact term -- to determine the thermodynamic relationships  
3 of the fluid in the reactor cooling system, and conditions  
4 were specified at which point high pressure rejection should  
5 be terminated.

6 Q Let me see if I can rephrase what you said,  
7 just said in engineering terms.

8 At that point were you instructing B&W customers  
9 to analyze temperature and pressure to determine the level  
10 of coolant in the reactor core and not the pressurizer  
11 indication level?

12 A Not exactly. We were not instructing them to  
13 do this to determine the fluid level in the system directly.  
14 We were instructing them to do this to assure that the  
15 system had reached a condition at which the core was cooled.  
16 It was not a method of determining level, liquid level  
17 directly. It was more a method of determining that a plant  
18 is now in a situation where the core is adequately cooled.

19 Q And could you repeat for me again what the  
20 instructions were?

21 A They referred to the specific instrumentation  
22 by B&W nomenclature and not by plant instruments ID number  
23 to look at, and they referred to a curve which said, if you  
24 are here, you are okay; if you are not here, continue to  
25 take further action.

Q And what instrumentation would that be?

1  
2 A That would be the temperature sensing instrumen-  
3 tation in the reactor cooling system and the pressure  
4 sensing instrumentation in the reactor cooling system.

5 To clarify -- not to clarify, but to take it  
6 somewhat out of engineering terminology, it would be  
7 measuring the pressure and temperature in the reactor  
cooling system.

8 Q And that is distinguished from the pressurizer  
9 indication level; is that correct?

10 A Yes.

11 Q Could you tell me who was consulted in  
12 formulating these new instructions that went out some time  
in April?

13 A I can give you a partial list from memory.

14 Q Okay.

15 A Burt Dunn. We are discussing April '79?

16 Q Right.

17 A Burt Dunn, Bob Jones, Bob Salm, Allen Womack,  
18 Jim Taylor, Ed Kane, Norm Elliott. There were others, I  
19 believe, in and out, but I don't remember specific names.

20 Jim Veistro was one who participated part time.

21 Q Were they included in formulating these new  
22 instructions? Were there formal meetings that these  
23 people would have attended, or were there an exchange of  
memorandum?

24 1882 167  
25

1  
2 A There were meetings. I don't understand your  
3 use of "formal". They were convened. They were technical  
4 discussions. There were decisions made as to which was the  
5 best way to go. We all tried to reach a decision of what  
6 was the best way to present the information to the operators.

7 Q By "formal", I mean were there meetings  
8 convened where these people were requested to come and  
9 participate in the discussions as opposed to an informal  
10 talk in the hall?

11 A Yes. They were requested to come. By your  
12 definition they were formal meetings.

13 Q Who would have chaired these meetings?

14 A To my recollection Ed Kane chaired the meetings.

15 Q And would there have been a memorandum sent  
16 around asking these people to attend this meeting and what  
17 was going to be discussed at this meeting.

18 A That I truthfully don't recall. The meetings  
19 were announced and the attendees were there. I don't recall  
20 whether there was a formal memorandum sent saying to be  
21 there or whether it was telephone conversations and the  
22 people appeared.

23 Q You did attend these meetings?

24 A Yes. When I say "yes", I attended at least  
25 90 percent of the meetings by my estimate, maybe all, but  
I am not sure that I attended all.



Q Would you have reviewed the final instructions that went out?

A Can we go off the record for a moment?

MR. GALLEN: Okay.

(Discussion off the record.)

(Whereupon the pending question was read.)

THE WITNESS: I would have reviewed the final instructions that went out in the period two to three weeks after March 20 and subsequent period. I may or may not have reviewed final instructions which went out March 28 plus two or three weeks due to working quite heavily on the Three Mile II recovery. I am not aware of everything that went out in that time period.

BY MS. GOLDFRANK:

Q I would like you to look at a November 1, 1977, memorandum that has already been marked as Womack Deposition Exhibit 24.

Did you receive a copy of this memorandum?

A Yes.

Q Do you recall reading it?

A Yes.

Q You are familiar with an incident that occurred on September 24, 1977, at Davis-Besse I?

A The term "familiar" needs definition. I knew the incident had happened. I know somethings and I am sure

1882 169

1  
2 there are some I don't know.

3 Q When did you first learn of this incident?

4 A I don't recall; but given the nature of my  
5 job, I would have learned about it, that the incident had  
6 occurred, and that the plant was down, that day or the day  
7 afterwards.

8 Q Do you remember who told you that this incident  
9 had occurred and the plant was down?

10 A No, I don't, and we should define "incident"  
11 as I did before, that the plant was down.

12 Q Do you remember if you were informed orally  
13 about this incident or whether or not you received a  
14 memorandum concerning the incident?

15 A Let's limit it to the plant coming down at that  
16 time. I am sure it would have been oral.

17 Q But you do not remember who orally told you?

18 A No, I don't know.

19 Q As a result of being informed that the plant  
20 was down, did you talk with anybody?

21 A I don't remember, but I would be sure that I  
22 did talk with somebody about what caused it and how long  
23 would it delay our schedule.

24 Q Delay what schedule?

25 A The schedule of startup for the plant.

Q Do you recall preparing any kind of memoranda

1882 170



1  
2 concerning that incident?

3 A No, I don't recall.

4 Q Are you aware that the September 24, 1977,  
5 incident at Davis-Besse concerned voiding in the core?

6 A I am not aware that it did. I am aware  
7 of discussions where a synopsis essentially of what occurred  
8 was presented, and I remember it being discussed that there  
9 was potential voiding in the core, but I do not know that  
10 it has been pinned down that during that incident the core  
11 was voided.

12 Q You indicated that there was discussion  
13 concerning a synopsis of what happened during that incident?

14 A Correct.

15 Q When was that discussion?

16 A I don't recall the date. The discussion was a  
17 presentation by Joe Kelly in one of the large conference  
18 rooms which summed up what happened and why.

19 Q Would that have been soon after September 24,  
20 1977?

21 A "Soon" being a matter of weeks, yes.

22 Q And Joe Kelly is the individual that described  
23 the events?

24 A Yes.

25 Q Were you aware that the September 24 incident  
concerned a temporary loss of feedwater?

1882 171

1  
2 A Oh, no. Per my memory I was aware of a malfunction  
3 in the feedwater system, but at that time I was not  
4 aware of specifically what the malfunction was.

5 Q Were you aware that that incident concerned an  
6 open PORV?

7 A My recollection is that that was brought up in  
8 the meeting, yes, I was aware of it.

9 Q Were you aware that that incident at Davis-Besse  
10 concerned the high pressurizer indication level?

11 A At that time I don't believe I was aware of  
12 that.

13 Q Are you aware of that now?

14 A I am aware of that verbally. I have not gone  
15 back and read that transient in detail to see exactly what  
16 it said.

17 Q Do you know when you would have become aware  
18 that the transient involved high pressurizer indication  
19 level?

20 A No, I don't recall.

21 Q Do you remember who might have informed you  
22 that that transient concerned that?

23 A Oh, who might have? It may have been Joe Kelly,  
24 because he and I know each other. It may have been one of  
25 my people who was following the startup.

Q Do you know for sure who informed you of that  
incident?

1  
2 A No.

3 Q Are you aware that the incident at Davis-Besse  
4 on September 24, 1977, concerned a premature termination of  
5 the HPI?

6 A At which point in time are you referring to?

7 Q Are you aware of it now?

8 A Yes.

9 Q When did you become aware of it?

10 A I believe it was with the Joe Kelly memo  
11 Exhibit whatever.

12 MS. GOLDFRANK: He's referring to the Womack  
13 Deposition Exhibit 24, Joe Kelly's November 1, 1977, memo.

14 BY MR. GOLDFRANK:

15 Q What did you do after receiving a copy of this  
16 November 1, 1977, memo?

17 A I sent it to Frank Walters for review.

18 Q With any comments or suggestions?

19 A To my recollection, there were no comments or  
20 suggestions. It was "review this to see if we have a problem."

21 Q Would that have been an oral communication to  
22 Mr. Walters or would you have written a memorandum to him  
23 concerning those instructions?

24 A I would not have written a memorandum to him.  
25 I would typically have written some instructions on the copy  
of the memo that I sent over, if I wrote any.

1882 173

1  
2 MR. GALLEN: I believe a copy of that has already  
3 been requested in Mr. Walters' Deposition.

4 MS. GOLDFRANK: Okay, fine.

5 BY MS. GOLDFRANK:

6 Q Could you explain to me, there's on this  
7 November 1, 1977, memorandum, where it says "customer" it  
8 is indicated "generic". Can you explain to me what that  
9 means to you?

10 A "Customer guidance"?

11 Q Above that line it indicates customer is  
12 generic.

13 A To me that implies it deals with all plants  
14 supplied by B&W.

15 Q All plants?

16 A All nuclear power plants supplied by B&W.

17 Q Not necessarily more than one?

18 A I am sorry; I don't think I understand that.

19 Q The distinction I am trying to make is you  
20 indicated "generic" means to you all plants, all B&W  
21 nuclear power plants?

22 A Yes.

23 Q It does not necessarily mean more than one?

24 A Yes, it means more than one.

25 Q As opposed to all?

A I must have said it badly.

1882 174

1  
2 MR. GALLEN: Could we go off the record for a  
3 second?

4 (Discussion off the record.)

5 BY MS. GOLDFRANK:

6 Q Am I correct that your understanding of "generic"  
7 is all B&W plants that are operating?

8 A Yes, plus those that are under construction.

9 Q Okay.

10 A Let's clarify that by all B&W nuclear plants,  
11 because I don't deal with the fossil plants.

12 Q You transmitted this November 1, 1977, memoran-  
13 dum to Mr. Walters on your staff?

14 A That is my recollection.

15 Q And did he discuss the memorandum with you?

16 A I don't recall.

17 Q Did anybody else on your staff discuss the  
18 memorandum with you?

19 A I don't recall specifically. I thought there  
20 was one other discussion, but my memory is vague, because  
21 it was a long time ago.

22 Q Do you remember if you discussed the memorandum  
23 with anybody out at B&W?

24 A We are referring to this particular Joe Kelly  
25 memorandum? I do not recall discussing it with anyone  
outside my staff.

1882 175

1  
2 Q I would like you to look now at a handwritten  
3 memorandum dated November 10, 1977, that has already been  
4 introduced and marked as Dunn Deposition Exhibit 35. Please  
5 look at that.

6 A It looks like some of this is cut off on the  
7 left. I have examined it.

8 Q Have you ever seen this memorandum before?

9 A Yes.

10 Q Did you receive a copy of it in November of  
11 1977?

12 A I don't think so. I don't recollect it.

13 Q Have you seen it before today?

14 A It was after March 28, but the exact date I  
15 don't remember.

16 Q Who gave you a copy of the memorandum after  
17 March 28?

18 A I recall Frank Walters showing it to me.

19 Q Do you recall why he showed it to you?

20 A Yes.

21 Q Could you explain to me why he showed it to  
22 you?

23 A I was aware of my memo to Karrasch which had  
24 raised some questions, and this would have been maybe a  
25 month after the incident because of time pressures, I had  
gone back to look and to try to follow through that chain

1882 176



1  
2 myself as to what had happened.

3 Q And in that you were talking to Walters?

4 A Yes.

5 Q And he gave you this memorandum?

6 A Yes, that's my recollection.

7 Q Did Walters talk with you prior to writing  
8 this memorandum?

9 A I don't recall. I will just have to leave  
10 it at that; I don't remember.

11 Q Would there be any notes on your part if you  
12 had discussed this memorandum with Walters?

13 A I certainly don't recall any.

14 Q If there were notes, would they be in your  
15 notebook containing those handwritten notes?

16 A If there were notes, yes, they should be in  
17 there.

18 Q Do you remember discussing this memorandum  
19 with Walters after he sent it to Mr. Kelly in November of  
20 '77?

21 A I recall a discussion of it. This would be  
22 in the post March 28, 1979, time frame. I don't recall  
23 minute details of the discussion.

24 MR. GALLEN: Excuse me. The question was whether  
25 or not he discussed it with him after he sent it in November  
of '77; is that correct?

1882 177

1  
2 MS. GOLDFRANK: Right.

3 THE WITNESS: I did not discuss it in November  
4 of '77 per my recollection.

5 BY MR. GOLDFRANK:

6 Q You did discuss it after March 28, 1979, after  
7 you were trying to reconstruct what happened pursuant to  
8 your memorandum to Karrasch; is that correct?

9 A Yes.

10 Q Do you remember anything about that conversation?

11 A No, I don't remember any specific thing. I  
12 remember that I hadn't seen it before, and I said, "Ghee,  
13 I didn't know you had written this", or words to that effect,  
14 and then I recall getting a copy of it from him such  
15 that I could read it.

16 Q Was that a discussion with him after you did  
17 receive a copy of it and read it?

18 A Yes, there was a discussion, but I don't believe  
19 it was a technical discussion per se. My note at that time  
20 was what had happened was history, and it would be nice to  
21 understand it; and where if there were improvements we  
22 could make, we fit them into the system and make it; but as  
23 far as a detailed postmortem of why this happened, that's  
24 of academic interest.

25 Q Do you remember anything generally about that  
conversation?

1882 178



1  
2 A No, I truthfully don't. Well, I remember  
3 generally saying that, okay, this memo responded to the  
4 Joe Kelly memo, and I didn't know that it had been  
5 written, and Frank saying, yes, that he had looked at it  
6 and he had had some questions in his mind, but he didn't  
7 have time to -- pardon; I am not sure that he said he  
8 didn't have time. He did not make a formal response because  
9 of other things that he was doing, but he wanted to get  
10 some thoughts down and then get back to Joe. We did not  
11 per my memory discuss the technical content of it.

12 Q Is it usual that Mr. Walters would respond  
13 directly to Mr. Kelly and not go through you?

14 A Yes.

15 Q Do you normally review memos that he would  
16 write?

17 A I review those memos which he considers needs  
18 my attention. I do not normally review every memo that  
19 he writes, now.

20 Q What memos does he usually consider needs your  
21 attention?

22 A Memos on the order of the Burt Dunn memo --  
23 sorry -- the memo which he wrote for me to Bruce Karrasch  
24 which I signed off, things that we recognize being potential  
25 problems, he brings those to my attention and we discuss.

Q What do you mean that he would consider to be

1882 179

1  
2 a potential problem?

3 A Where it would require action underneath the  
4 sections charter, which is providing information to the  
5 customer on test programs and also on certain parts of  
6 operation. It is a judgment thing where if there are  
7 administrative memos floating around such that deal with  
8 allocations or internal things such that he takes care of  
9 it and I don't get involved. Whenever he takes a position  
10 that we take differently from past positions, then I get  
involved.

11 Q So in his judgment his November 10, 1977,  
12 memorandum would not be a problem area that he would need  
13 to pass by you?

14 A I don't know what Frank was thinking at the  
time.

15 THE WITNESS: Can we go off the record a minute?  
16 (Discussion off the record.)

17 BY MS. GOLDFRANK:

18 Q I would like you to now look at a February 9,  
19 1978, memorandum from Burt Dunn to Jim Taylor that has  
20 been marked as Womack Deposition Exhibit 23.

21 A Yes, I have looked at it.

22 Q Did you ever receive a copy of this memorandum?

23 A I don't believe I received a copy, but I do  
24 believe that I saw it.

25  
1882 180

1  
2 Q Do you know how you came to see it?

3 A I don't recollect clearly.

4 Q Do you know when you did see a copy of this  
5 memorandum?

6 A I believe it was late February or early March  
7 of 1978.

8 Q Do you recall the circumstances under which  
9 you came into contact with this memorandum?

10 A No. I remember being shown it by someone.  
11 someone within Services, but I can't remember who that was.

12 Q Do you remember discussing the substance of  
13 this memorandum with anybody?

14 A I do not remember discussing the technical  
15 substance. I remember the last paragraph which said some-  
16 thing should be done and agreeing that it should be looked  
17 into, so identified it as a serious concern.

18 Q What were your actions as a result of noting  
19 that it was of serious concern and action should be taken?

20 A Per my recollection I believe I had a conversa-  
21 tion with Frank Walters who said, yes, we should follow up  
22 on this and determine what actions we should take.

23 Q Were you assigning to him the task of determin-  
24 ing what actions you should take?

25 A Yes, what actions plant performance should  
take.

1882 181

1  
2 Q Was there a memorandum indicating to Mr.  
3 Walters that it was his responsibility to determine what  
4 actions plant performance should take?

5 A No.

6 Q It was just an oral conversation?

7 A Yes.

8 Q Would you have taken notes of that conversation  
9 with Mr. Walters?

10 A I doubt it. They may be in there but I don't  
11 recall taking any notes.

12 Q If you had taken notes, they would be your --

13 A In my daily book, more or less, yes.

14 Q Did Mr. Walters discuss with you percisely  
15 what his responsibilities were with respect to this  
16 assignment?

17 A I don't recall any formal discussion. Frank  
18 was responsible for sight instructions or procedure  
19 revisions that would go out to the operating plants.

20 Q Did you discuss this memorandum with anybody  
21 else on your staff?

22 A That I don't recall.

23 Q I would like you to look at a February 16, 1978,  
24 memorandum from Burt Dunn to Jim Taylor that has been marked  
25 as Dunn Deposition Exhibit 36.

Did you receive a copy of this memorandum?

1882 182

1  
2 A Not from my recollection.

3 Q Have you seen it before today?

4 A Yes.

5 Q Could you tell me when you saw it?

6 A Approximately a month after March 28th,  
7 approximately the same time period I saw the previous  
8 Frank Walters' memo.

9 Q And that was the first time that you had seen  
10 this February 16 memorandum?

11 A This memorandum, yes, to my recollection.

12 Q Had anyone discussed the subject matter contained  
13 in this memorandum with you prior to you seeing the  
14 memorandum?

15 MR. GALLEN: Could we go off the record for a  
16 second?

17 (Discussion off the record.)

18 MR. GALLEN: Mr. Hallman would just like to  
19 clarify his last answer.

20 THE WITNESS: I previously stated that I had  
21 not seen a copy of this memo after March 28 of this year.  
22 I had seen it before then. I didn't recall it because it  
23 was a part of my letter of August the 3rd to Bruce Karrasch,  
24 one of the references, so I did not recall any technical  
25 discussions on this letter, and I still do not really recall  
seeing it before a month after March 28 of this year, but

1882 183

1  
2 obviously I did and just didn't recall it.

3 BY MS. GOLDFRANK:

4 Q You previously indicated that you did not draft  
5 the memo that went from you to Mr. Karrasch, the August 3,  
6 1978 memorandum?

7 A That's correct.

8 Q But you did attach to that memorandum the  
9 February 9 and February 16 memoranda of Burt Dunn?

10 A Yes.

11 Q But you did not review the substance of either  
12 of those memoranda?

13 A No, I did not review the substance of this  
14 memorandum. I don't recall if I reviewed the substance  
15 of the original memorandum or not. I was aware of the  
16 original Burt Dunn memorandum, although I was not aware  
17 of this memorandum until later.

18 Q Did Mr. Walters in going over his draft memo  
19 from you to Mr. Karrasch discuss with you the content of  
20 the February 16 memorandum?

21 A Possibly. I just don't recall. I recall the  
22 discussion as being Burt's recommendations deserve attention;  
23 however, there are some questions that we have concerning  
24 consequences if those recommendations are carried out in  
25 a non-LOCA situation, so we should request that Integration  
review and resolve these concerns, but I do not recall



specifically going through this February 16 memo and saying that this is the exact concern that we are addressing.

Q Did you go through the February 9 memo at that time?

A I believe we did.

Q Did you go through the substance of the February 9 memo?

A I don't recall how deeply we went into the substance but I believe we went into the substance.

Q Do you recall at all specifically what you did talk about?

A We talked about that. I don't recall specifically. In general I believe we talked about, yes, for a loca Burt's recommendations are good; but what if there is an operator error and these actions are taken in a non-loca situation, what are the consequences, and we felt that the consequences should be evaluated prior to changing the instructions.

Q And this conversation was taking place when Mr. Walters had already drafted your August 3, 1978 memo?

A Yes.

Q And he made the decision that there was concern and that Plant Integration should be brought in to answer specific questions?

A Yes, he made it, and I concurred with it.

1882 185

1  
2 I considered the responsibility mine, even though he had  
3 written the memo.

4 Q And those concerns are the type that would be  
5 reviewed by you and be sent under your signature as opposed  
6 to going directly from Mr. Walters?

7 A Yes. It is not necessary that those go out  
8 under my signature per se. It is necessary that I review  
9 that type before they go out.

10 Q Could you explain why this particular memo  
11 did go out under your signature?

12 A Yes. We felt that with my signature it was  
13 more likely to attract attention and get action than with  
14 Frank's signature.

15 Q You were the particular individual that  
16 pursued or followed up Mr. Karrasch's response to this memo  
17 and not Mr. Walters; correct?

18 A Yes, but with a clarifier. Mr. Walters reminded  
19 me to check with Karrasch to follow up. So Walters did  
20 initiate action to try to reach a resolution on the August  
21 3rd memo.

22 Q Do you know how soon after August 3, 1978, Mr.  
23 Walters contacted you as to getting a response from Mr.  
24 Karrasch?

25 A I don't know per my recollection. It was no  
longer than two months, and it could have been earlier.



1  
2 Q And how soon after Mr. Walters contacted you  
3 did you get in touch with Mr. Karrasch?

4 A That I don't recall. I attempted to get in  
5 touch with Mr. Karrasch within a day or two. I don't  
6 recall if I made contact the first attempt or if it took  
7 several attempts to do it. My recollection is that it took  
8 several attempts.

9 Q And you don't remember the exact date or the  
10 time frame when you made that initial contact?

11 A That is correct, per my recollection it was on  
12 the order of two months.

13 Q Two months from August 3?

14 A Yes.

15 Q Meaning sometime in October or November?

16 A Yes.

17 Q Was anybody else on your staff concerned with  
18 or directly concerned with follow-up of this particular  
19 memorandum?

20 A Per my conversations with Frank Walters since  
21 March the 28th, I believe that he had had someone else on  
22 the staff review it. I was not aware of that during the  
23 August 3rd time frame.

24 Q Do you know who what individual was?

25 A Per Frank's comments it was Cal Goslow.

Q Do you know if he had any contact with Mr.

1  
2 Karrasch?

3 A I don't know.

4 Q Do you know if he had any contact with anybody  
5 that worked for Mr. Karrasch?

6 A I don't know.

7 Q Does Mr. Goslow report to you or report to Mr.  
8 Walters?

9 A At that time I believe he reported to Mr.  
10 Walters. He did not report directly to me.

11 Q Do you feel at this point that I have a complete  
12 picture of the memorandum that arose out of Burt Dunn's  
13 February 16 and February 9 memoranda?

14 A Is this the package you have here that you are  
15 referring to?

16 Q The five memoranda that we have introduced here  
17 and that you have discussed with, which would be Kelly's  
18 November 1, 1977, memorandum; Walter's memorandum to Kelly  
19 dated November 10, 1977 --

20 A The handwritten memorandum.

21 Q -- Burt Dunn's February 9, 1978, memorandum;  
22 Burt Dunn's February 16, 1978, memorandum; and your  
23 memorandum dated August 3, 1978, to Mr. Karrasch.

24 A Yes, I believe that's all.

25 Q Have you prepared any memoranda concerning  
the issues or the accident at Three Mile Island on March

1882 188

28, 1979?

A Could you rephrase the question? My "memoranda" what do you include?

MS. GOLDFRANK: We can go off the record.

(Discussion off the record.)

ANSWER: I have prepared memoranda dealing with instructions to our operating plants concerning those events. I have not to my recollection prepared any internal memoranda addressing it.

Q The memoranda would have been addressed to B&W customers?

A Yes. My memoranda would have been addressed to our service managers for transmittal to the B&W customers.

MR. GALLEN: We will assure you that you have copies of all those memoranda.

BY MR. GOLDFRANK:

Q What in particular was your role since March 28, 1979, with respect to the accident at TMI2?

A I was on shift for two or three weeks during the recovery trying to help it die down. I was then in mode of formulating instructions to clarify to the operators actions that they should take during loca.

I have been involved in many meetings, formal and informal, about how is the best way to handle the situation based on what we have learned at Three Mile 2.

1  
2 I have also been involved with discussions  
3 looking at the data from Three Mile 2 and figuring out  
4 how exactly did it happen, what was the sequence of events.

5 Q You say you were involved in recovery; were  
6 you on site at Three Mile Island?

7 A No, I was not. I was in our Control Center,  
8 or whatever, here.

9 Q In Lynchburg?

10 A Yes, in Lynchburg.

11 Q What would your specific responsibilities  
12 have been?

13 A I was in charge of communications between the  
14 site and the B&W technical people at Lynchburg to past data  
15 and recommendations along both ways.

16 MS. GOLDFRANK: At this time I don't have any  
17 further questions. I would just like to say that we would  
18 recess this deposition, and in thinking that at such  
19 future time we might want to call you back to ask you further  
20 questions, and would reschedule it at a future date.

21 THE WITNESS: Okay.

22 MR. GALLEN: I have a few questions I would just  
23 like to clarify.

24 BY MR. GALLEN:

25 Q At the time the August 3rd memo went out, did  
you feel that pending resolution of the operator to should

1882 190

1  
2 be questions raised in that memo, that adherence to  
3 existing operating specifications would preclude premature  
4 termination of HPI?

5 A Yes, I did.

6 Q More specifically, was it your understanding  
7 about the existing specifications cautioned against  
8 termination of HPI if the RCS's pressure decreased below  
9 the HPI accuation point?

10 A Yes, that was my feeling.

11 Q So it was your understanding that the prescrip-  
12 tion contained in the Burt Dunn memos was designed to  
13 provide a further clarification or elaboration of existing  
14 operating procedures?

15 A Yes.

16 MR. GALLEN: That's all I have.

17 MS. GOLDFRANK: Okay. I would like to repeat  
18 that this deposition is recessed.

19 (Witness excused.)

20 (Whereupon the examination recessed at 12:15  
21 P.M.)  
22  
23  
24  
25

1882 191

## CERTIFICATE OF REPORTER

I, Norma Nasuti Costello, Certified Court Reporter,  
do hereby certify that I reported the testimony of the witness  
herein, in stenotypy, and that the testimony was reduced to  
typewritten form pursuant to my direction.

I further certify that the testimony herein con-  
stitutes an accurate record of the proceedings had.

-----  
Norma Nasuti Costello

1882 192