NUCLEAR REGULATORY COMMISSION

ORIGINAL

In the Matter of:

METROPOLITAN EDISON COMPANY	)	
	)	DOCKET NO. 50-289
(Three Mile Island Unit 1	)	(Restart)

DATE: June 29, 1981 PAGES: 21,861 - 22,087

AT: Harrisburg, Pennsylvania

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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In the matter of: :

METROPOLITAN EDISON COMPANY : Docket No. 50-289 (Restart)

(Three Mile Island Unit 1) :

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25 North Court Street,
Harrisburg, Pennsylvania

Monday, June 29, 1981

Evidentiary hearing in the above-entitled matter was resumed, pursuant to adjournment, at 9:32 a.m.

BEFORE:

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

DR. WALTER H. JORDAN, Member

DR. LINDA W. LITTLE, Member

Also present on behalf of the Board:

LAWRENCE BRENNER, Esq.
Legal Advisor to the Board

APPEARANCES:

On behalf of the Licensee, Metropolitan Edison Company:

DELISSA A. RIDGWAY, Esq.
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On behalf of the Commonwealth of Pennsylvania:

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MICHELE STRAUBE, Esq.
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WILLIAM DORNSIFE,
Nuclear Engineer

On behalf of Union of Concerned Scientists:

ROBERT D. POLLARD, Esq.
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Mechanicsville, Pennsylvania

On behalf of Anti-Nuclear Group Representing York:

GAIL BRADFORD

On behalf of Three Mile Island Alert:

LOUISE BRADFORD

On behalf of the Regulatory Staff:

JAMES TOURTELLOTTE, Esq.
JAMES CUTCHIN, Esq.
Office of Executive Legal Director,
United States Nuclear Regulatory Commission,
Washington, D. C.

C O N T E N T S

E X H I B I T S

NUMBER	IDENTIFIED	IN EVIDENCE	REJECTED
Staff #16	21,872		
UCS #37	21,873		
UCS #38	21,874	22,057	
UCS #39	21,874		
UCS #40	21,876	22,086	
UCS #41	21,968	22,079	
UCS #42 & 43	21,982	22,080	
UCS #44			22,084

PROCEEDINGS

(9:32 a.m.)

CHAIRMAN SMITH: Good morning.

Dr. Little has missed a flight connection. We will go under the quorum rule until she arrives, which will be later this morning.

Is there any preliminary business?

MR. BAXTER: I have two preliminary matters with respect to the schedule for proposed findings of fact and the plan design procedure issues. At my request, the parties, the NRC staff, the Commonwealth and UCS have agreed to defer reply findings on UCS contention 4, connection of pressurizer heaters to diesel, from the current scheduled July 13 until the second round of replies are due on July 27. That is to accommodate some personal problems on Licensee's counsel team.

The second schedule matter is the Board's memorandum and order for June 9 scheduling this hearing session directed the parties to confer about a proposed findings schedule for Board questions on UCS 12, which we are going to hear from the staff on today. And Licensee, the staff, Commonwealth and UCS have agreed to submit proposed findings on July 13 and replies on July 27.

CHAIRMAN SMITH: What is the date on UCS 4?

MR. BAXTER: The date was July 13.

CHAIRMAN SMITH: And now it will be?

MR. BAXTER: The 27th.

CHAIRMAN SMITH: Okay. Anything else?

MR. BAXTER: No, sir.

CHAIRMAN SMITH: Any other preliminary business?

(No response.)

We have a few items. I think it would be better to take them up at the end of the session on this contention.

Are we ready?

MR. CUTCHIN: Yes, sir. I would like the record to reflect that I served by hand this morning on the Board members and the parties who had not previously been given copies a copy of Mr. LaGrange's professional qualifications and a June 12 letter, which you should find in front of you.

CHAIRMAN SMITH: What was your reference to a June 12 letter?

MR. CUTCHIN: There is a June 12 letter from Licensee to the Office of Nuclear Reactor Regulation, attention Mr. Stolz. The two documents were laid down in front of you together. If you cannot readily locate it, I can provide another copy.

Mr. Chairman, the staff has brought today witnesses at the request of UCS to respond to questions on

Board question UCS 12. Dr. Rosztoczy has previously been sworn. I would call also Mr. Robert G. LaGrange, who has not yet been sworn.

Whereupon,

ROBERT G. LaGRANGE,

called as a witness by counsel for the Regulatory Staff , having first been duly sworn by the Chairman, was examined and testified as follows:

Whereupon,

ZOLTAN R. ROSZTOCZY,

called as a witness by counsel for the Regulatory Staff, having previously been duly sworn by the Chairman, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CUTCHIN:

Q Gentlemen, do you have before you a document bearing the caption of this proceeding and entitled "NRC Staff Supplemental Testimony of Zoltan R. Rosztoczy Relative to Environmental Qualification of Equipment Important to Safety (UCS Contention 12)," which consists of seven numbered pages?

A (WITNESS ROSZTOCZY) Yes, we do.

Q Was that testimony prepared by you or under your supervision?

A (WITNESS ROSZTOCZY) Yes, it was.

Q Did you participate in the preparation of the testimony also, Mr. LaGrange?

A (WITNESS LaGRANGE) Yes, I did.

Q Are there any corrections that you wish to make to this testimony, either of you?

A (WITNESS ROSZTOCZY) No, we have no corrections at this time.

Q Is the testimony as filed with the Board and the parties, then, true and correct to the best of your knowledge and belief?

A (WITNESS ROSZTOCZY) Yes, it is.

Q And do you both adopt it as your prefiled testimony in this proceeding?

A (WITNESS ROSZTOCZY) Yes, we do.

Q Mr. LaGrange?

A (WITNESS LaGRANGE) Yes, I do.

Q Mr. LaGrange, did you also prepare a document labeled "Professional Qualifications of Robert G. LaGrange," consisting of one page?

A (WITNESS LaGRANGE) Yes, I did.

Q Is it a true and correct statement of your professional qualifications?

A (WITNESS LaGRANGE) Yes, it is.

MR. CUTCHIN: Mr. Chairman, I would ask that the document, consisting of seven pages of supplemental

testimony on UCS 12, plus the one-page professional qualifications of Robert G. LaGrange be received into evidence and bound into the transcript at this point as if r ad.

I would note here parenthetically that a copy of Dr. Rosztoczy's professional qualifications was bound into the record with his previous appearance on November 26th.

CHAIRMAN SMITH: How about the attachments to the testimony?

MR. CUTCHIN: I will approach them separately, sir.

CHAIRMAN SMITH: If there are no objections, the testimony is received and bound into the transcript, and the professional qualifications of Mr. LaGrange.

(The documents referred to, the statement of Messrs. LaGrange and Roztoczy and Mr. LaGrange's professional qualifications, together with the four attachments described below, follow:)

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the matter of	)	
	)	Docket No. 50-289
METROPOLITAN EDISON COMPANY, ET. AL.	)	
(Three Mile Island Nuclear Station Unit 1)	)	

NRC STAFF SUPPLEMENTAL TESTIMONY OF ZOLTAN R. ROSZTOCZY
RELATIVE TO ENVIRONMENTAL QUALIFICATION
OF EQUIPMENT IMPORTANT TO SAFETY

(UCS CONTENTION 12)

UCS Contention 12 states in pertinent part that "TMI-1 should not be permitted to resume operation until all safety-related equipment has been demonstrated to be qualified to operate as required by GDC 4. The criteria for determining qualification should be those set forth in Regulatory Guide 1.89 or equivalent." GDC 4 requires that structures, systems, and components important to safety be designed to accommodate the effects of and be compatible with the environmental conditions associated with normal operation and postulated accidents. For the purposes of this proceeding the equipment and environmental conditions of interest are those associated with accidents having a nexus to the TMI-2 accident. Thus, the equipment required to safely shutdown the reactor following a loss of feedwater and small break loss of coolant accident must be qualified to perform their safety functions when subjected to the environmental conditions to which they would be exposed during the period in which those safety functions must be performed.

As indicated in my previous testimony following Tr. 6927-A, the criteria against which the electrical equipment will be evaluated and the methods to be used to qualify the equipment are set forth in the DOR Guidelines and NUREG-0588. The Commission has stated that these documents form the requirements which licensees and applicants must meet in order to satisfy the legal requirement of GDC 4.

By letter dated May 1, 1981, the NRC requested information concerning the qualification of electrical equipment required to mitigate the consequences of a small break loss of coolant accident (SBLOCA). The licensee provided their response in an attachment to a May 18, 1981 letter, and references qualification information previously submitted by letter dated January 30, 1981. In response to staff questions, the licensee provided supplemental information by letter dated June 5, 1981.

The licensee's submittal identifies all Class IE electrical items, located in a SBLOCA harsh environment, that are required to bring the plant to a safe shutdown. An analysis was performed to define the most severe environmental conditions, i.e., temperature, pressure, humidity, chemical spray, submergence, and radiation levels, that the equipment located both inside and outside containment could be subjected to. The analysis considered a range of break sizes concurrent with a loss of offsite power, loss of

main feedwater, and a worst case single failure, i.e., the loss of one emergency diesel generator. The environmental conditions defined as a result of this analysis were then used to evaluate the qualification of the required electrical equipment.

The staff has completed its review of the licensee's January 30, May 18, and June 5, 1981, submittals. This review involved an evaluation of the list of equipment identified as required to mitigate the consequences of the SBLOCA, the environmental (service) conditions specified for the equipment, and the qualification information provided for each piece of of equipment. The qualification information reviewed was data extracted from referenced documentation which contain detailed information concerning the qualification of the equipment. The staff is in the process of reviewing the supporting documentation referenced by the licensee and other qualification information that may be applicable to equipment installed at TMI-1.

As a result of its review, the staff agrees that the licensee has identified all the equipment, located in a harsh environment, required to safely shutdown the reactor in the event of a loss of feedwater/SBLOCA.

In its review of the environmental conditions specified for the equipment, the staff performed their own analyses and calculations to assess the adequacy of the licensee's specified environmental conditions. The staff determined that, with the exception of the radiation levels in the Auxiliary Building, the most severe environmental conditions that could

result from this postulated event have been specified by the licensee. The staff determined that a reasonable estimate of the radiation doses in the Decay Heat Pump Rooms of the Auxiliary Building, normal plus accident, following a postulated SBLOCA would be greater than specified by the licensee. Therefore, in its review of the qualification information provided by the licensee for the electrical equipment, the staff used its own estimate of the radiation doses in the Auxiliary Building.

Using its own, higher estimate for the radiation doses in the Auxiliary Building, together with the other environmental conditions specified by the licensee, the staff reviewed the environmental qualification information submitted by the licensee. As a result of this review, the staff has determined that all the identified electrical equipment, located in the harsh environment, have been demonstrated to be capable of performing their intended functions following a loss of feedwater/SBLOCA event, with the following exceptions. Two models of Conax Connectors have not been demonstrated to be qualified, two Limitorque motor operators that may become submerged have not been qualified for submergence; several items of equipment use materials that have calculated qualified lives of six years or less and, in some cases, the aging evaluations are still ongoing; the test report referenced by the licensee to demonstrate qualification of Foxboro pressure transmitters indicates that three of eight of the tested transmitters failed during the radiation test and further, the model tested is not the same model used at TMI-1; recent testing

on Limitorque operators with Reliance motors have resulted in failures of the motors under more severe environmental conditions than expected for the event being analyzed at TMI-1 and the applicability of these tests to the valves and for the environmental conditions expected for TMI-1 have not been evaluated.

For the two unqualified models of Conax Connectors, the licensee has committed to replace these with a qualified model prior to restart.

For the two motor operators, the licensee has provided justification acceptable to the staff for interim operation, which demonstrates that these motor operators will be capable of performing their containment isolation functions following this postulated event. The licensee states that these valves will close prior to becoming submerged and that there is sufficient time for the operators to verify this by examination of the position indicator lights, as required by emergency procedures. As soon as the valves close, the valve motors are de-energized. Further, if the limit switches are shorted out by subsequent submergence, the control circuit fuse should blow. However, this results in a loss of the already verified valve position indicator lights. The contactors which energize the actuator motors are located in a motor control center which is not subject to submergence and, therefore, submergence will not cause a change in valve position. The licensee also states

that submergence of any of the electrical components in the motor operators will not affect any other electrical system because of the isolation provided by the motor control center.

The staff recommends that as a condition of restart that the licensee commit to the following or, if not, that the Commission require the licensee to:

1. Replace materials with a qualified life of 1.5 years prior to restart.
2. Prior to criticality, put in a place a maintenance and replacement program that will asure all materials with a qualified life of less than 40 years will be replaced when needed.
3. Consider aging of the materials during the periods prior to installation, during plant operation, and during the periods the plant is not operating in establishing the material replacement schedules.
4. Complete the aging evaluations for the equipment still to be evaluated prior to exceeding 5% power operation and factor the results into the replacement program, if required.
5. For the Foxboro pressure transmitters, reevaluate the referenced test report to justify the acceptance of the test results for demonstrating Foxboro pressure transmitters are qualified for the specified radiation levels. The failures occurred during a test to radiation levels several thousand times greater than the radiation levels expected as a result of

a loss of feedwater/SBLOCA event. Also, provide justification for applying the test results to the transmitter model installed in TMI-1 and provide the results of the above evaluation and justification to the NRC for review prior to exceeding 5% power operation.

6. Evaluate the information made available to them prior to criticality, concerning the recent testing on Limitorque motor operators, and determine whether the results of that testing are applicable to the operators in TMI-1 for the event being analyzed. Prior to exceeding 5% power operation, provide the results of this evaluation to the NRC for review.

Based on the results of its review, the commitments made by the licensee, and the recommended conditions of restart, as discussed above, the staff concludes that the equipment necessary to cope with a loss of feedwater/SBLOCA event will have been demonstrated, prior to exceeding 5% power operation, to be capable of performing their safety functions when subjected to the environmental conditions to which they would be exposed during the period when their functions must be performed, should this event occur.

insert #2

PROFESSIONAL QUALIFICATIONS

OF

ROBERT G. LaGRANGE

I am a Senior Mechanical Engineer in the Equipment Qualification Branch, Division of Engineering, Office of Nuclear Reactor Regulation, United States Nuclear Regulatory Commission. My duties and responsibilities involve the review and evaluation of the structural integrity, operability, and functional capability of safety-related mechanical and electrical equipment, mechanical components, and their supports under all normal, abnormal, and accident environmental conditions and in the event of seismic occurrences and other pertinent dynamic loads including the formulation of regulations and safety criteria. I am also responsible for managing and coordinating various outside technical assistance programs and consulting activities related to the equipment qualification aspects of nuclear plants. Prior to my present appointment in the Equipment Qualification Branch, I was an Applied Mechanics Engineer in the Engineering Branch, Division of Operating Reactors. My duties and responsibilities included the review, analysis and evaluation of structural and mechanical aspects of safety issues related to reactor facilities licensed for power operation.

I have a B.S. degree in Mechanical Engineering from the University of Maryland (1972) and have done graduate work at both the University of Maryland and George Washington University.

Prior to my joining the NRC, I was associated with [illegible]ner Corporation as a Group Leader in the piping stress analysis group. My duties and responsibilities included performing and supervising stress analyses of nuclear power plant piping, and related activities, with emphasis on seismic analysis.

MR. CUTCHIN: Mr. Chairman, I would also like to ask, I think the attachments that were filed, with the one exception of the thick pages, would better be bound into the transcript. So I would not choose to label them as exhibits, but I will now identify them for the record.

Attached to the prefiled testimony was a letter dated May 1st from Mr. John Stolz of the NRC staff to Mr. Henry Hukill of Metropolitan Edison, the subject being "TMI-1 Restart Environmental Qualification." That consists of a one-page document.

BY MR. CUTCHIN: (Resuming)

Q Are you familiar with that document, Dr. Rosztoczy and Mr. LaGrange?

A (WITNESS ROSZTOCZY) Yes.

Q And does that document reflect the request made of Met Ed with respect to demonstration of qualification of equipment to the small break LOCA?

A (WITNESS ROSZTOCZY) Yes, it did.

Q There is also attached to your prefiled testimony a document dated May 18th, consisting of three pages plus a component list notes page and numerous pages labeled "component list," 17 in number. That letter is identified as L1L-161 and was written by Mr. Henry D. Hukill to the Office of Nuclear Reactor Regulation, attention Mr. John Stolz.

Does that letter consist of the information initially reviewed by the staff to determine if the components list identified was qualified to withstand the environment associated with a small break LOCA?

A (WITNESS LaGRANGE) Yes, it is.

BY MR. CUTCHIN: (Resuming)

Q Also attached to your original prefiled testimony was a letter dated June 5th, denoted as L1L-176 from Mr. H.D. Hukill to the Office of Nuclear Reactor Regulation, attention Mr. Stolz. Attached to that were two pages of questions and answers.

Were those questions and answers -- were the answers in response to questions posed by the staff in connection with a small break qualification review?

A (WITNESS LaGRANGE) Yes, they were.

MR. CUTCHIN: There's one additional letter, dated June 12, 1981, identified as L1L-180, from Mr. Hukill to the office of Nuclear Reactor Regulation, attention John Stolz, and it includes one additional page of questions and answers. Were those additional questions and answers also referred to in your review of the qualification of equipment for the small break LOCA environment?

A (WITNESS LaGRANGE) No.

Q Can you identify the purpose of the additional questions and answers, then?

A (WITNESS LA GRANGE) We had asked those questions of the licensee in order to clarify some points prior to writing the testimony. However, we did not receive them prior to filing the testimony.

Q But you did, indeed, did you not, have the information and this confirmed information you had previously received?

A (WITNESS LA GRANGE) Some of it,

MR. CUTCHIN: Mr. Chairman, I would ask that these documents that have been identified be bound, be received into evidence and bound into the transcript at this point.

CHAIRMAN SMITH: We don't have the letter of June 12.

MR. CUTCHIN: I can supply you with additional copies, sir. That is the letter to which I referred just before the witnesses took the stand.

(Pause.)

CHAIRMAN SMITH: Yes, we have it. Okay, so you want to bind them into the transcript. And what will be their status as far as evidence is concerned?

MR. CUTCHIN: I ask that they be received into evidence. They are the information that the staff used. I will identify one additional document which provides the

details of the list in the May 18 letter, but I will identify that as an exhibit and in their totality these documents will comprise the information that the staff referred to in its review of the qualification of equipment to the small break LOCA environment.

CHAIRMAN SMITH: I see no problem with your approach. These documents will be regarded as evidence and available for proposed findings. They don't seem to fall into the category of being exhibits or as testimony.

MR. CUTCHIN: They are not testimony. They could have been labeled exhibits, but I thought, because of their small bulk, it would perhaps be more efficient.

CHAIRMAN SMITH: We will receive them into the transcript as if they were exhibits. This, I think, is a totally new category of evidence.

MR. CUTCHIN: There was one additional document which was served on the Board and the parties and it was about one inch thick and each sheet in the package was labeled a "system component evaluation work sheet." Those sheets are the references identified in the attachment to the May 18 letter that was just received in evidence.

I do not, Mr. Chairman, have the latest staff exhibit number, but I would like to have this package identified as a staff exhibit. I understand that Exhibit Number 16, Staff Exhibit Number 16 is the appropriate

exhibit number.

CHAIRMAN SMITH: I can neither confirm or deny that. My exhibit book is not with us.

MR. CUTCHIN: My co-counsel advises me that 16 is the appropriate number. I would ask that it be marked at this time as Staff Exhibit 16.

CHAIRMAN SMITH: But it is not yet being offered? All right. I didn't call for objections to binding in the three letters of attachments to the transcripts. Are there objections?

MR. POLLARD: No objections, Mr. Chairman. I was just inquiring how do we refer to these in findings. If they don't have exhibit numbers it will be just a document following testimony?

CHAIRMAN SMITH: It will just be attachments following the first page of the testimony. They should be bound in, Mr. Reporter, immediately following the written testimony, so you should refer to them as attachments to the testimony. But they have the evidentiary status of exhibits.

(The document referred to was marked Staff Exhibit No. 16 for identification.)

MR. CUTCHIN: The witnesses are available for cross examination, Mr. Chairman.

(Pause.)

CHAIRMAN SMITH: Mr. Pollard?

MR. POLLARD: I have a number of exhibits to distribute, first, before we begin.

(Pause.)

CHAIRMAN SMITH: We have the SER but we don't have the cover letter. That's right, that was off the record.

MR. POLLARD: We can go through and explain.

I have distributed to the Board and to the reporter copies of I&E Bulletin 7901B and the three supplements. I would ask that that be marked for identification as UCS Exhibit -- I am not sure the next number -- I believe it is 36.

MR. BAXTER: Excuse me, Mr. Pollard, we already have an identification of UCS Exhibit 36 as the Secretary's paper on pressurized thermal shock. I think the next one would be 37.

MR. POLLARD: So I&E Bulletin 7901B would be marked for identification as UCS Exhibit 37.

(The document referred to was marked UCS Exhibit No. 37 for identification.)

I next distributed to the Board and to the parties and three copies to the reporter of a document which on the cover page is listed "Master List, Three Mile Island Unit 1,

Docket Number 50-289, Class IE Electrical Equipment Required to Function under Postulated Accident Conditions."

This document consists of a copy of the master lists which were included in the Licensee's submittal of January 30, 1981, in response to I&E Bulletin 7901B. I would ask that this be marked for identification as UCS Exhibit 38.

(The document referred to was marked UCS Exhibit No. 38 for identification.)

MR. POLLARD: I next distributed to the Board and to all parties, with three copies to the reporter, a document that consists of 84 pages, which was primarily the system component evaluation work sheets which were selected from the Licensee's submittal of Jaunary 30, 1981, in response to I&E Bulletin 7901B.

For the convenience of the parties I have, in the corner, hand-numbered the pages running 1 through 84. When I use this during cross examination I will identify first the sheet within the actual submittal and then give you the page of the UCS exhibit number. I would ask that this document of 84 pages of evaluation work sheets be marked for identification as UCS Exhibit 39.

(The document referred to was marked UCS Exhibit No. 39

for identification.)

(Pause.)

MR. POLLARD: And I have given to the reporter three copies, and to the Board one copy, of a letter dated March 24, 1981, to Mr. Henry D. Hukill, Vice President and Director of TMI-1, from John F. Stolz of the NRC staff. The subject is environmental qualification of safety-related electrical equipment. Attached to the March 24, 1981, letter is a safety evaluation report by the Office of Nuclear Reactor Regulation for Three Mile Island Unit 1 entitled "Environmental Qualification of Safety-related Electrical Equipment."

I would ask that this be marked for identification as UCS Exhibit 40.

CHAIRMAN SMITH: Why shouldn't this be a staff exhibit, as all of the other TMI 1 restart SERs are?

MR. CUTCHIN: This is in no way related to the subject matter within the proceeding in the staff's view, Mr. Chairman, and that is the primary reason why we put in these other documents as comprising the basis for our review.

That SER is addressed to the totality of the equipment that has to be qualified for withstanding any set of accident conditions and, as was discussed here on April 21, the staff has limited its review in this hearing to

environmental qualification of that list of equipment necessary to cope with a small break LOCA following or accompanied by a loss of main feedwater to the environment to which it would be exposed in that event.

CHAIRMAN SMITH: How does it happen that the staff is issuing a safety evaluation report on Unit 1?

MR. CUTCHIN: It is in connection with the directives given the staff in the Commission's order of May 23, 1980, to do a review of the environmental qualification of all plants.

MR. BAXTER: Mr. Chairman, I note that the staff is issuing such safety evaluation reports with respect to all operating reactors.

CHAIRMAN SMITH: You want this marked as UCS Exhibit 40?

MR. POLLARD: Yes, I would like it marked for identification, Mr. Chairman.

(The document referred to was marked UCS Exhibit No. 40 for identification.)

DR. JORDAN: Will this be discussed in more detail later -- what it covers and why it is not -- it does discuss small break LOCAs and the radiation involved with a small break LOCA and so forth. And are you saying that is all outside of the scope?

MR. CUTCHIN: No, sir. It may well be that the information that the staff reviewed and addressed in this more narrowly defined approach that was outlined to the Board on April 21 does indeed duplicate information that may be included in that March 24 document, but for the purposes of this proceeding we thought it was more efficient to put in the documents that we have just put into the record as being the totality of the information that the staff used to do its review in this proceeding rather than including a lot of other material that we would view as being outside the scope of this proceeding.

DR. JORDAN: But I notice it does identify deficiencies, for example, and it is not a question of whether those deficiencies existed as of that date.

MR. CUTCHIN: It depends on what accident one is qualifying the instrumentation and equipment to withstand. It may well be that a piece of equipment would be viewed to be, for lack of a better word, not demonstrated to be qualified to withstand the large break LOCA environment but may well have been demonstrated at present to be able to withstand the small break LOCA environment.

DR. JORDAN: All right, I understand a little better now.

MR. CUTCHIN: The March 24 document would be the review to the larger envelope, if you will.

DR. JORDAN: All right.

CROSS EXAMINATION

BY MR. POLLARD:

Q Mr. LaGrange, on your statement of professional qualifications can you tell me what role you have played in the review of the environmental qualifications of the Class 1-E electrical equipment for Three Mile Island Unit 1 restart?

A (WITNESS LaGRANGE) Yes. I reviewed the qualification information that was submitted by the Licensee as shown on the system component evaluation work sheets, and I compared that infomation against the environmental conditions that the equipment might see during the accident to determine whether or not it would be -- that it would qualify for these conditions.

Q And you say in your professional qualifications that you are responsible for managing and coordinating various outside technical assistance programs and consulting activities related to the equipment qualification aspects of nuclear plants. Can you describe for me some of the tasks that you are managing and coordinating with respect to the qualification of electrical equipment?

A (WITNESS LaGRANGE) I have none at present.

Q Prior to being assigned to the review of the environmental qualification of the electrical equipment for

Three Mile Island Unit 1 did you participate in any activities involving a review of environmental qualification of electrical equipment?

A (WITNESS LaGRANGE) Yes.

Q Can you describe for me, please, what you did?

A (WITNESS LaGRANGE) For seven other operating units I also did the same environmental qualification review.

Q With what training did you have, do you feel, that equips you to do such reviews?

A (WITNESS LaGRANGE) I have no specific training relative to environmental qualification reviews.

Q Did you participate in the development of any standards related to environmental qualification of electrical equipment?

A No, I did not.

Q Would it be correct, then, to say, sort of, that this is on-the-job training; that prior to being told to evaluate the environmental qualification of electrical equipment you had no training to prepare you for doing that?

A (WITNESS LaGRANGE) I would say that that is true. However, the job that I have been assigned, comparing information submitted by the Licensee against environmental conditions specified with that equipment, in my opinion I don't think extensive training is required in that area.

Q With respect to your testimony for today, have you, the staff, completed the review of Met Ed's response to I&E Bulletin 79-01B and its three supplements?

A (WITNESS LaGRANGE) Yes. I am sorry. I have to qualify that. Supplement 3 required some information on cold shutdown concerning equipment to achieve cold shutdown, and TMI-related equipment has to be installed, and that review has not been completed.

Q Is that the only exception where you have not completed your review of the responses to Bulletin 79-01B and its supplements?

A (WITNESS LaGRANGE) As far as I know, yes.

Q In the environmental qualifications safety evaluation report --

A (WITNESS ROSZTOCZY) Mr. Pollard, may I add to the previous question? In addition to the part which has been delayed by supplement 3 to the bulletin, there are also some other ongoing works, and those are so identified in our SER, the one that you have marked as Exhibit No. 40, I believe.

(Pause.)

Q The March 24 SER asks the Licensee to provide the information identified in sections 3 and 4 of the safety evaluation to you within 90 days. Has the Licensee done that?

A (WITNESS ROSZTOCZY) It is 90 days from the

receipt of the SER, and that 90 days I believe will be up some time this week. As far as I know, we have not yet received a response to that SER.

Q And do you plan to issue the SER supplement prior to restart, the environmental qualification SER supplement?

A (WITNESS ROSZTOCZY) We expect to issue it. Whether it will be before restart I am not sure. This review is being done for all operating plants as one overall work, and whether it will be completed prior to the restart I am not sure.

Q So do I understand you correctly, then, that for all of the open items in the March 24, 1981, safety evaluation on environmental qualification, you believe the plant is safe enough to restart without resolving those items?

MR. CUTCHIN: Mr. Chairman, objection here. I am going to object on the basis of the relevance of that answer to the issues in this proceeding. There has been no showing that that question is limited to the qualification with respect to loss of main feedwater followed by a small break LOCA, and I would like the question so limited.

(Pause.)

MR. POLLARD: The contention we are addressing, Mr. Chairman, states in part that TMI-1 should not be permitted to resume operation until all safety-related

equipment has been demonstrated to be qualified to operate as required by general design criteria 4. When Mr. Rosztoczy testified last November -- I believe that is at TR following 6927A -- he referred us to the safety evaluation report which would be published following the review of the Licensee's submittals in response to I&E Bulletin 79-01B.

At that time there was no such limit to the scope of the staff's review as to what evidence they were going to produce with respect to this contention.

CHAIRMAN SMITH: Do you think that is a waiver?

MR. POLLARD: It seems to me relevant to this contention whether or not the equipment at Three Mile Island Unit 1 is in fact qualified in accordance with the requirements of GDC-4. I do not see why it must be limited, as Mr. Cutchin suggests, to the small break LOCA.

MR. CUTCHIN: Might I address that further, Mr. Chairman, because there have been intervening events between the November 26th testimony of Mr. Rosztoczy, the important one being the abandonment by UCS of that contention. I believe -- I don't have it in front of me, but in early December the record could reflect that, or early January it may have been. But it was after Mr. Rosztoczy had testified previously.

And so the Board in effect adopted portions of that abandoned contention and, as the staff indicated here

in April, that its intention was to address qualification of equipment only to the extent of that equipment that was necessary to cope with a loss of main feedwater accompanied by a small break LOCA. And at that point the contention was the Board's contention or the Board's question and no longer the broad UCS contention.

MR. BAXTER: Mr. Chairman, I'm sorry to correct counsel for the staff, but I believe that UCS did abandon this contention in the summer of 1980, before the proceeding started. It was in July of 1980. They had asked at that point that the Board take up this issue, along with UCS 6 and UCS 8, which the Board did.

But I don't think that is controlling. There are some other events, though, that do influence the scope of the issue in my view. One is the fact that on October 24, 1980, the Commission issued an order imposing technical specification modifications to this license, and along the same time frame they issued such orders with respect to other operating reactors, imposing the requirement that the Commission's May 1980 order issued in response to UCS's petition, i.e. that equipment be qualified to NUREG-0588 or the DOR guidelines by July 30, 1982 or June 30, 1982, be a condition of this license, and that Licensee be required also to maintain documentation.

So I think to a certain extent that the Commission

has taken over this issue since it was first accepted as a contention by the Board in December 1979, and then subsequently abandoned by UCS in the summer of 1980, but taken on as a Board question. So I think it is highly appropriate for the staff now to try and construe the issue as they have with respect to events that have an immediate nexus to the accident. Otherwise, I think we would be jumping in and attempting to do the generic review that the Commission obviously has under way as a separate proceeding to this one.

CHAIRMAN SMITH: Well, we were not prepared for this type of objection. Most of our files are now back in Bethesda. We're going to have to rely entirely upon the parties to provide the information we need to rule.

Do I understand your comments, Mr. Cutchin, that you would not be objecting had the contention not been withdrawn?

MR. CUTCHIN: No. I think, Mr. Chairman, it is more a matter of what is within the scope of this proceeding. I had misremembered when the abandonment took place, but I don't think, abandonment or no, it really makes any significant difference to the scope of the issue to be heard here. And that is qualification or demonstrated qualification to withstand environments associated with clear and close analogues to the TMI-2 accident.

And the Board has said time and time again that is loss of main feedwater, accompanied or no by a small break LOCA, and that is the limitation.

CHAIRMAN SMITH: And then when the Board adopted the contention, did we narrow it specifically?

MR. CUTCHIN: Well, the Board had originally said equipment within the containment and the auxiliary building, and I think the scope of the proceeding is what narrowed it, and I think in April when Mr. Tourtellotte was indicating to the Board what our intention was with respect to addressing this contention at the time, he again intimated that we would limit our testimony to qualification to withstand the environments associated with clear and close analogues to the TMI-2 accident.

The Board, if I recollect -- I don't remember the page numbers, but it was on April 21st, if my memory serves me correct -- indicated at the time that it would have had no interest in calling witnesses even, perhaps, and that is when they decided to leave it up to the parties to decide if they wanted to call witnesses.

CHAIRMAN SMITH: We stated on April 21st, on page 19,487, that whatever evidence is presented on this issue would have to be consistent with the standard used throughout the area, and that is there must be a close nexus to the accident.

DR. JORDAN: Could you give us a little bit more in the way of examples of qualifications that are not included therefore because, in your opinion, they are outside the scope?

MR. CUTCHIN: Well, it may be better, Dr. Jordan -- I will make an attempt, but then it may be better to ask the witnesses. But it is my understanding that the harshness of the pressure and temperature environment over some periods of time, at least, and the harshness of the radiation environment to which certain of this equipment would be exposed is dependent on the basic accident that it is being qualified to withstand.

For instance, if you took the full-blown large break LOCA with the attendant core damage that might accrue to the extent of the 50.46 limits, there may be a harsher environment with respect to radiation, temperature and pressure.

DR. JORDAN: I see. Could I ask -- and perhaps you will want to refer then to your witnesses -- if the small break LOCA environment does not include the full release of gaseous fission products, 100 percent of the xenons, kryptons, 50 percent of the iodines, does it not include the flooding that occurred at TMI?

I don't see it wouldn't be a harsher environment if there is a full break LOCA so far as radiation is

concerned or flooding is concerned; is that correct?

MR. CUTCHIN: Well, it may be correct, Dr. Jordan. But we can confirm this with the witnesses with respect to the flooding that would eventually occur. But with respect to the radiation, the radiation that was reviewed for here was that associated with one percent failed fuel. That is clearly spelled out in the testimony. Because if you have a small break LOCA the temperature of the cladding never goes above on the order of 1100 degrees, so you would never get the release of the radioactive products that you would, say, with the large break LOCA.

DR. JORDAN: Now I am completely and utterly puzzled.

MR. CUTCHIN: Maybe we better go to the witnesses, sir. But I don't see them contradicting me yet.

DR. JORDAN: I think this is perhaps a matter outside of those witnesses' competence right at the moment, and that is why I am interested, because it was my understanding that during the TMI-2 accident the radiation was greatly in excess of that which you would expect under 10 50.46.

MR. CUTCHIN: As was the damage to the fuel.

DR. JORDAN: As was the damage to the fuel. And are you therefore claiming at this time that there will never, can never be -- that it was a Commission policy not

to discuss the releases beyond that of 10 CFR 50.46?

MR. CUTCHIN: Dr. Jordan, I cannot say what is and what isn't Commission policy with any clarity. But I guess for reference I could go back to the Commission's ruling on the hydrogen issue, and there indeed they said to go beyond what was required by 50.46 would take some special showings, and they were never made in this proceeding.

DR. JORDAN: I guess I am puzzled because it seems to me that we have time and again during this proceeding discussed the radiation levels that would be expected during a release of all the kryptons and xenons; that this came up, for example, in the emergency planning preparations. And I just cannot remember any other places, but it seems to me that we have not -- and as a matter of fact, it was -- in adopting this question, I adopted it with the idea that we must address radiation qualification of equipment similar to that of the TMI-2 accident.

And this is the first time I have heard, or at least that it sunk into me, that we were now going to go back to a different standard of radiation. It's entirely new to me.

MR. CUTCHIN: I guess I cannot address that other than to say I am sorry it was misunderstood. But with respect to the requirements for demonstration qualification, I guess all I can say is the Board will have to decide

whether it believes that the demonstration of qualification should have been to a harsher environment than what we have done. And if that happens, of course, there is much more work to be done, because, as is demonstrated by the March 24th safety evaluation report, if this Board is going to take it within this hearing to decide the full qualification issue we are going to spend a lot more time.

DR. JORDAN: I understand. Then one more question, and we will have to consider this, go into it. There is no representation, either on the part of the Licensee or the staff, that the equipment inside the containment -- and that was the limitation we did put on, as you recall.

MR. CUTCHIN: And the auxiliary.

DR. JORDAN: And the auxiliary buildings. That there was no limitation on that equipment beyond that required for a release of one percent. And I guess I have to think back now to a recent amendment 25 by the Licensee, in which they discussed the radiation levels, the shielding levels, and those shielding levels on equipment and radiation levels were not based on a one percent release.

MR. CUTCHIN: That is correct, sir.

DR. JORDAN: And so therefore, I guess, why is it that we have, when it comes to meeting that particular requirement of the order that the shielding be adequate to

handle a TMI-2 type accident, that the radiation levels in the auxiliary building and so on be based upon those releases, why is it different then for the shielding than it is for the equipment?

MR. CUTCHIN: Well, there are a number of situations, Dr. Jordan, in which the staff, for defense in depth considerations, insists that a Licensee demonstrate backup capability. I think this may be one of those. The shielding analysis is indeed based on large break LOCA considerations.

DR. JORDAN: How about small break LOCA?

MR. CUTCHIN: Well, the small break LOCA would be enveloped by the radiation levels associated with a large break LOCA.

MR. POLLARD: Mr. Chairman, may I address this point some? In discussion with staff counsel, Ms. Weiss learned perhaps three or four weeks ago from Mr. Cutchin, as I understand it, that the staff was considering taking the position on this contention that they needed to demonstrate environmental qualification just for a small break LOCA and just for obtaining a safe hot shutdown condition. It was at that time, or perhaps even more recently, that it was brought to our attention -- it was on the 21st, and I think it was at that time that the Board Chairman said, did you consult with UCS. And that apparently went away when

someone reminded the Board that this contention had been adopted by the Board, it was no longer a UCS contention.

So the first time we finally became aware that the staff was going to take this position was approximately last week, when they now told us they were going to adopt the position that they need not demonstrate sufficient environmental qualification to bring Three Mile Island Unit 1 to a cold shutdown, that they need not consider the environmental qualification for a main steam line break, and that they need not consider the qualification for a high energy line break outside containment as an issue needed to be resolved in order to recommend restart.

Throughout this proceeding we have, for example, discussed the extent to which there was safety-related equipment to bring the plant to cold shutdown. We have discussed the radiation levels that will be present outside of containment, assuming that we had core degradation. This was specified in the requirements of 0737 as to what radiation level should be used.

The staff's SER supplement number 3, issued in April of 1981, at particularly page 38 and 39, where they are discussing the environmental qualification requirement for the emergency feedwater flow transmitters, clearly is an environment that goes beyond an environment that would be created at that location caused by a small break loss of

coolant accident.

It seems to me that, considering the scope of the contention as written and adopted by the Board, the staff has made a determination as to whether or not this plant is safe enough to restart, but only recently have they decided that they would only examine loss of main feedwater small break LOCA. It seems to me consistent with the rest of the testimony in this hearing that we have to explore to what extent the equipment qualification deficiencies were a lesson from the Three Mile Island accident. And I don't think if you have deficient environmental qualification in terms of your safety equipment that you can justify restart without considering the equipment qualifications for other accidents other than a small break LOCA.

CHAIRMAN SMITH: Why?

MR. POLLARD: For example, if you are evaluating the reliability of the emergency feedwater system, which we went into a great deal in assessing the adequacy of the defense against Contentions 1 and 2, where we had to either rely upon emergency feedwater or high pressure injection in the feed and bleed mode, now, if the equipment in the emergency feedwater system is not qualified to a high energy line break in the auxiliary building I think that would affect the Board's determination of whether or not the core cooling systems are adequately reliable to allow restart.

MR. BAXTER: Mr. Chairman, the issues that UCS attempts to litigate in this proceeding with this construction of the contention are the matters that were brought to the Commission in their generic remedial petition where they requested, in addition, that plants be required to demonstrate the environmental qualification of safety-related equipment, that the Commission, on an emergency basis, suspend the operation of all nuclear power plants in the country until this demonstration was made.

The Commission specifically has declined to do that in response to that petition in the order they issued in May 1980, which, to my knowledge, has not been appealed.

Therefore, to argue here that we have to essentially complete the Commission's entire 7901B review

before this Board can consider staff and Licensee recommendations to restart the unit is essentially to ask the Commission to reconsider what has already been ruled upon in response to UCS's filings and contentions in that area.

I would also point out the fact that elsewhere in the proceeding with respect to other issues we have discussed emergency planning. We have discussed degraded cores for the purposes of inadequate core cooling and the development of procedural guidance to the operators without considering how we necessarily got there.

It is not inconsistent with the assumptions the staff makes in this testimony. It is repeated and consistent practice in the Commission that for one regulatory purpose one assumption is made and for another one another one is made. We did not assume that the TMI-2 accident happens and look at the consequences of it to consider the qualification of all equipment in the plant at this point.

DR. JORDAN: I guess I'm a little puzzled, Mr. Baxter. Are you saying that we should not take a consistent attitude with respect to the requirements that if the staff, for example, in requiring that there be level instrumentation because they think it has a nexus to the TMI-2 accident, in their view level information would be valuable?

If they say well, if we have nothing but a small break LOCA -- well, would the Licensee argue, for example, since it is only a small break LOCA we are talking about and if we have only a small break LOCA within the limits of 5046 then obviously there is not going to be any core damage or the need for core cooling, so long as you stay within the requirements of 5046. And, therefore, it is outside the scope? Could you argue that way?

Are you saying that sometimes we consider accidents which have a close nexus and other times we should not consider accidents? This, for example, and now we're talking about equipment qualifications and radiation levels, then we abandon the idea of close nexus because it was obviously much higher radiation levels than we are talking about under the 5046 levels.

MR. BAXTER: I don't associate the concept of nexus to the accident with carrying forward for the purposes of all regulatory considerations and analyses the status of the core at TMI-2 after the damage was done. No, sir.

And I don't find that inconsistent with your considering whether you might want to, as a prudent measure, recommend additional instrumentation, for inadequate core cooling, to consider and postulate non-mechanistically what a degraded core and other situations might look like, that might be helpful to the operator as opposed to going back to

your regulatory loss of coolant accident analysis under 5046, Appendix K, for looking at how equipment will withstand that kind of environment -- the small break LOCA environment.

DR. JORDAN: All right. One of the lessons -- certainly one of the lessons learned from the TMI-2 accident was that the equipment was not adequate and there have been, particularly inside the containment. Now tell me where we stand legally or the regulatory position with respect to 0737, obviously does address, I believe -- does not 0737 itself address the radiation levels inside of containment and the requirements and the need for equipment qualification?

MR. CUTCHIN: Dr. Jordan, I think one of the problems here may be that the short-term versus the long-term considerations, again. And, with respect to the example that you used with respect to level transmitters for the short-term or for restart, there are -- is only needed to be a showing of reasonable progress toward demonstrating qualification or providing equipment that was qualified to that level.

So I think that may be part of the problem and there are lots of inconsistencies on the surface or apparently inconsistencies in the way we approach these things.

DR. JORDAN: Let's go to 0737. Could we do that for a moment? It might help us.

MR. CUTCHIN: I don't believe I have my copy here.

DR. JORDAN: I have my copy. Do you remember what section it is that discusses equipment qualifications?

MR. CUTCHIN: Roman II, capital B, 3, I understand, sir.

DR. JORDAN: No, that is post-accident sampling capability.

MR. CUTCHIN: Then my information was wrong, sir.

MR. POLLARD: It is II, B, 2, Design of Plant Shielding and Environmental Qualification of Equipment for Space Systems which may be used in Post-Accident Operations.

DR. JORDAN: Okay. Yes, precisely.

Are you saying that this -- and I have not taken the time to read it, of course -- are you saying that 0737 applies to operating reactors but that the dates required are specified and that those dates are beyond restart and, therefore, it becomes a long-term item, as we have considered in some other instances?

MR. CUTCHIN: I am told, Dr. Jordan, that is one of the items that was addressed in the separate package of SERs.

(Pause.)

MR. CUTCHIN: I am told that it is not one of the

ones that was addressed as having to show reasonable progress toward during our review in the package of 0737 items that we culled out as being outside the order.

It is also addressed, I am told, Dr. Jordan, in Supplement number 3 to NUREG-0680, which was Staff Exhibit number 14 on page 11 of Table B-2, and the comment there, in connection with this item, Plant Shielding, is that equipment qualification of safety-related electrical equipment was not identified in the order.

The Licensee's response to this item will be evaluated during staff review of NUREG-0737 responses, which puts it in the category of other operating reactors.

CHAIRMAN SMITH: Does the Commonwealth have a position?

One final thing. Would you address or respond to the comments about the Commission's ruling on hydrogen certification and what guidance we may take from that, if any?

DR. JORDAN: May I just point out, while he is thinking about that, that, of course, 0737 does consider 100 percent of the core equilibrium noble gas releases and 25 percent of the hydrogen, which is, as I say, exactly what I had remembered it to be. So I think all we are talking about now is whether this is an 0737 item that is outside the scope of this hearing.

MR. POLLARD: Mr. Chairman, I don't know what the connection is with the Commission's ruling on hydrogen, because throughout this proceeding we have been looking at other of the lessons-learned requirements, which clearly presumed that there had been some core damage with respect to the radiation levels for developing the shielding design outside of containment.

So I don't know how to address, other than it seems like it was an isolated ruling of the Commission as to just whether that particular requirement with respect to hydrogen would be waived or not.

DR. JORDAN: Just one further question before we do take a break.

I am looking now at item 2.1.6.b of the lessons learned report which has to do with the design review of plant shielding and spaces for post-accident operations, so this is certainly one of the short-term lessons learned items.

Now I will turn for the first time to the table of 2.1.6.b, complete design review is a category A item and the modifications, however, are of category B items. And, are you saying that the design review has been completed under the requirements of 2.1.6.b for releases?

MR. CUTCHIN: I am told that is correct, Dr. Jordan.

DR. JORDAN: All right. What are the releases? Are the releases those of 0737?

MR. CUTCHIN: The ones that are specified in 0737.

DR. JORDAN: All right, then, you see I'm completely puzzled, because that is 100 percent of the natural gases.

MR. CUTCHIN: And that is correct. That is what was used for the plant shielding design review. It was reviewed against those numbers.

DR. JORDAN: I see, so the shielding review was done in terms of the 100 percent releases, but the qualification reviews were not?

MR. CUTCHIN: The qualification reviews ultimately will be, in looking toward the 6/30/82 requirement that was laid on by the Commission's May 23, 1980 order, but for purposes of this proceeding and for restart and to put TMI in the same category, if you will, as other operating reactors, which, I believe, the Commission indicated should be done unless the record indicated there was a basis for doing something different, the staff chose to do the review for purposes of this limited scope, the modified way or the narrower way.

DR. JORDAN: I now understand better, I believe, the staff position. Is that essentially the Licensee's position too?

MR. BAXTER: We agree with the staff's position.

CHAIRMAN SMITH: Is there anything further?

DR. JORDAN: We'll need to take a little break here and go and discuss this item. Is there anything further?

MR. POLLARD: All plants are being reviewed against 7901B, and among those requirements are the requirements to consider high energy line breaks inside and outside containment and to consider large break LOCAs. And the question, remember, which engendered all of this discussion was I simply asked the witnesses, for all of the open items in the environmental qualification SERs, is your position these need not be resolved prior to restart.

CHAIRMAN SMITH: We'll take a fifteen-minute recess.

(A brief recess was taken.)

CHAIRMAN SMITH: The Board is not prepared to make a ruling. The major problem is that I don't understand the issue. It is possible that some arguments have been made that include extraneous arguments which I am trying to force into the issue, but I can't. So I am going to ask for a fresh start and summarize your positions again for us.

But I just simply am not able to help Dr. Jordan in making a ruling, because I don't understand the issue. To me it seemed to be a rather simply one that fell within

the consistent rulings that we made a to the close nexus to the accident. But I've heard so many additional comments I am just concerned that I am missing something. So start again.

What is the question that is being objected to? I think it is important that we take time to resolve this because I think it will affect the entire cross examination, so what is the question? Whatever the question was, phrase it again so that we know exactly what it is.

Well, withdraw the question and make it now. Bear in mind that we are going to start afresh. Here is the question back to us. Do I understand you correctly that for all of the open items in the March 24, '81, safety evaluation of environmental qualification -- on environmental qualification -- you believe the plant is safe enough to restart without resolving those items? Now does the question frame the issue correctly that we are to rule on?

MR. POLLARD: I don't believe so.

CHAIRMAN SMITH: It's not a short-term-long-term issue -- a short-term or a long-term issue?

MR. POLLARD: I didn't understand your last comment.

CHAIRMAN SMITH: Well, we can take this that the objection is going to be related to -- I mean, this

question, the way the question is phrased, it could be that you are talking about short-term-long-term allocations.

MR. POLLARD: Let me convey my understanding of the issue which the staff has tried to bring up earlier in today's cross examination.

CHAIRMAN SMITH: Well, first, is this question focused enough for your purposes? Are you satisfied with this question?

MR. POLLARD: I am satisfied with the question for where I was in my cross examination plan. I don't think it is adequate for the discussion that subsequently followed.

CHAIRMAN SMITH: All right.

MR. POLLARD: I think the staff used this as a way to bring up the dispute early.

My understanding of the dispute between UCS and the staff is, as I understand their position -- and perhaps we can do better by cross examining the witnesses on their testimony -- they believe that this contention can be adequately responded to by demonstrating solely that there is enough equipment environmentally qualified to cope with a loss of main feedwater small break LOCA and bring the plant to a safe hot shutdown.

What I was launching into on my cross examination was to determine on what basis the staff believes that Three Mile Island Unit 1 is safe enough to restart without

considering the environmental qualification of equipment needed to take the plant to a cold shutdown in the event of loss of main feedwater small break LOCA and whether or not a lesscn learned from the accident was that the environmental qualification is deficiency and, therefore, also to justify a restart, whether the staff has examined the environmental qualification of the equipment needed to cope with a large break LOCA, a main steam line break inside containment, or a high energy line break outside containment and take the plant to a safe cold shutdown.

CHAIRMAN SMITH: You're talking too fast.

MR. POLLARD: I'm sorry.

Is that correct, Mac, or can you phrase it better -- the dispute.

MR. CUTCHIN: It is a scope question, in my view, Mr. Chairman.

CHAIRMAN SMITH: Okay. I couldn't pick up the last minute or so of your comments. I think we're out of shape.

MR. POLLARD: Whether or not to say the plant is safe enough to restart should the staff evaluate the environmental qualification of equipment needed to cope with a main steam line break or a high energy line break outside containment, in both cases be able to take the plant to a cold shutdown using environmentally-qualified equipment?

DR. JORDAN: Yes, I do understand what you are asking and I think in some ways that was a simpler question. Perhaps I was the one that brought it up because I felt it was broader issue. And I brought it up because even in the case of a small break accident, which we had at TMI-2, the radiation levels were very much higher than those that are assumed in 5486 and 5484.

And then I said, further, is it necessary in view, I would postulate, that in view of TMI-2 small break accident where there were these large radiation levels, that provision should be made for coping with them. Well, it seems to me that the answer -- the reply -- has been yes, the Commission has indeed made provision for coping with these levels because the TMI lessons learned, when it talked about shielding, it required an analysis which involved 100 percent of the fission product release. And that analysis had to be done by a certain date and, in fact, the Licensee in his last amendment has made such shielding calculations on the basis of a release of 100 percent of the fission products.

And then I said, well, if he has to make the shielding calculation, why doesn't he have to make the environmental calculations or qualifications? As a matter of fact, I think he has to do more than make the shielding calculations. He has to show how the operator can cope with

these levels in the auxiliary building, even though those are -- the levels are very high, and I believe there are going to be equipment changes made which will allow the operator to do these operations remotely and not required to go in. So that, I believe, there is no question but what this is well within the scope.

But now, then, my understanding is that yes, the shielding calculations will be required as a matter of restart because it exists as part of the requirement in 0578. However, the equipment qualifications -- the environmental qualifications for the equipment that must stand this radiation is not required for restart. It is in 0737. It is one of the items that is a long-term item. The equipment qualifications will be done, but it will not be done for restart.

Now I do not believe and I suspect the argument would be we do not have to consider it in this hearing because it is not one of the mandatory issues. It is only an 0737 issue and not a NUREG-0678 issue. And, therefore, you do not have to demonstrate that there is progress -- adequate progress -- because it is not one of the mandatory issues.

Now it was a UCS question that was adopted in this hearing because of its close nexus and no one, I think, is questioning that at all. The Board adopted it and the Board

adopted it with the idea that, as I stated a little while ago, that the radiation levels were so high that -- during the TMI-2 accident -- that therefore it is obvious the provision must be made. I don't think there's any question but what everybody agrees that provision must be made for these very high levels.

The Commission will require all plants to make provision for environmental qualification of these high levels, but they are not going to do it by September or whenever one projects for restart.

Now whether that -- is my summary an accurate reflection of the status? And now I would invite the Chairman to ask you questions on the basis of my summary. First of all, have I erred in the summary?

MR. CUTCHIN: That summary appears to the staff to be a correct statement.

CHAIRMAN SMITH: Part of my problem -- only a part of my problem is that when there is a crossing over to the short-term-long-term considerations in this case, the short-term-long-term considerations in 0737, which are not within the scope of this hearing, without an identification of the various categories we should be discussing.

Dr. Jordan just discussed what the Commission is going to require in the long term. I don't know if he means that that is included in the scope of the hearing. You

didn't mean that?

DR. JORDAN: I didn't mean that. I believe that there are many items that are in 0737 that are long-term items that have been agreed to that are not within the scope of the hearing, and I presume it is the staff's and Licensee's position that this is one of them and that when I adopted the question -- well, we didn't have 0737 at that time.

So that obviously, therefore, the situation has changed since the Board adopted the question, as a matter of fact.

CHAIRMAN SMITH: Mr. Pollard, is there anything in the March 24, 1981, SER which is beyond the scope of this proceeding?

(Pause.)

MR. POLLARD: I don't know how to answer your question, Mr. Chairman.

CHAIRMAN SMITH: Well, you'd better because otherwise your question fails on your own statement. I mean the question which is the issue.

Your question, I think, makes the assumption that all of the open items in the March 24 SER are within the scope of this proceeding, otherwise the question would be objectionable for irrelevancy if nothing else.

MR. POLLARD: It seems to me the main question UCS

has raised in this proceeding, including this contention, is whether the short-term lessons learned are sufficient to allow restart. So the question as to is there anything in the SER outside the scope of the hearing, what I tried to start questioning on was whether those open items in the SER have to be resolved before restart and, if not, why not.

Now if the answer to that is they think the answer is it is a legal question that they need not resolve them, then I guess that is the answer to the question.

CHAIRMAN SMITH: Well, what if we should find in the SER a description of a problem with no relationship to the accident which would indicate to the Commission and to the staff that that plant should not be allowed until that problem is resolved? Would we have jurisdiction to hear it? I would say no, even though the literal answer to the question that you are posing is are the short-term items sufficient to assure the health and safety of the public we further modify that question as to tests of sufficiency within the context of the hearing in all the rulings we've been making ever since we began making rulings, coming close to two years now.

MR. POLLARD: Well, Mr. Chairman, it depends, I suppose, how you want to determine what the lessons learned is. If the TMI-2 accident, which happened to be a small break LOCA, demonstrated that the equipment in Three Mile

Island Unit 1 did not meet the requirements of general design criterion 4, I don't know how, on a technical basis, you could exclude considering whether those instruments would also fail for a steam line break.

In other words, are we to allow Three Mile Island Unit 1 to restart by ruling it outside the scope of this hearing that the equipment does not meet general design criterion 4 for some other accident other than a small break LOCA?

CHAIRMAN SMITH: Can you point to any parallel issues that the Board has had when we have ruled the way that you are asking us to rule?

(Pause.)

CHAIRMAN SMITH: Would you note, please, that Dr. Little has joined the Board?

(Dr. Little joined the Board at 11:18 a.m.)

(Pause.)

CHAIRMAN SMITH: We'll perhaps give you another opportunity to come back to that point. It seems to me, just looking through this SER -- the problem may very well be that I just don't understand your point. But looking through this, for example, I see -- just an example of where I opened up to page 5 where there is a section there under aging. While although they stated it does not require an aging qualification it requires quite a few actions that

have to be taken under the consideration of aging.

As far as I know there is no relationship to aging or environmental effects of aging. I mean, the effects of aging -- the relationship between aging of equipment and environmental qualification as it relates to the accident.

MR. POLLARD: But in fact that item you have picked is addressed in today's testimony. In fact, they are proposing a condition on restart dealing with aging.

CHAIRMAN SMITH: Okay, then, I want to know why they include that in their direct testimony.

MR. POLLARD: Well, I think we can establish through the witnesses that in fact aging is directly related to environmental qualification. What you want to know is, even if you limit the scope to small break LOCAs, can the equipment that is 40 years old withstand the small break LOCA environment as well as a piece of equipment that is five years old?

CHAIRMAN SMITH: Why do we want to know that? Why do we want to know that in this hearing? We are not talking about 40-year-old equipment in this hearing. Or are we? I mean, I don't know.

I mean if they put it in the direct testimony they must have a reason for it but I need some explanation on why it is.

DR. JORDAN: May I ask one question? I notice,

for example, in the 7901B supplement number 3, which was issued on October 24, 1980, requires qualification information for equipment needed to achieve and maintain a hot, safe shutdown condition, must be submitted not later than November 1, 1980. And so be the qualification -- the information for equipment required to achieve and maintain a cold shutdown condition must be submitted not later than February 1, 1981.

Now are these dates that have slipped and are no longer current?

MR. CUTCHIN: I'm not sure of the answer to the second question, Dr. Jordan. The submittal of information to demonstrate capability to go to a hot shutdown following the small break LOCA was indeed submitted and reviewed by the staff in connection with their preparation of testimony in response to this Board question.

DR. JORDAN: All right.

MR. CUTCHIN: Whether the other information has been submitted and reviewed I am uncertain to say. The witnesses may be able to answer that. I don't know.

CHAIRMAN SMITH: Can anyone else be helpful? Would you like to summarize now your objection? What is the central point? What is the basic reason in just summary identification that you would have us sustain the objection?

MR. CUTCHIN: It is the staff's position, Mr.

Chairman, that the demonstration of qualification of equipment in this proceeding should be limited to qualification to withstand accident situations having a clear and close analog to the TMI-2 accident.

CHAIRMAN SMITH: Which is a small break LOCA and loss of main feedwater.

MR. CUTCHIN: A loss of main feedwater accompanied by a small break LOCA.

DR. JORDAN: But accompanied with large amounts of radiation.

MR. CUTCHIN: No, sir.

DR. JORDAN: That, you say, is outside the scope of this hearing? And that is the reason?

MR. CUTCHIN: Because I think that is what the whole hearing is ultimately about -- if this Board and the Commission don't agree that the prevention of a recurrence of the TMI-2-type situation has been demonstrated to be possible.

CHAIRMAN SMITH: Well, can you give us a little bit more than that? Is it because of 5046 that we cannot consider the radiation levels that actually existed in the accident, or is that your plain ordinary argument that we cannot receive evidence because we have to make an assumption that the accident won't happen again and that is what we are up here to find out.

We have rejected that argument from the very beginning of the hearing.

MR. CUTCHIN: Well, I think, Mr. Chairman, that we have come up with a scenario, and that scenario being the small break LOCA and the accompanying environment and for the small break LOCA that is a design basis event. You will not get those high radiation levels associated with it.

CHAIRMAN SMITH: Well, why not just come up with the scenario of the accident?

MR. CUTCHIN: Of which accident, Mr. Chairman?

CHAIRMAN SMITH: Well, you know, there's a very well-known accident in this vicinity.

MR. CUTCHIN: That is correct.

CHAIRMAN SMITH: Why can't we use the very accident that happened as the test for admissibility, I mean, of the environmental qualification, the very accident and the very consequences of that accident, other than your argument that the accident is not going to happen again, which that is what we are here to decide, not to pre-decide, not to decide before we receive the evidence.

MR. CUTCHIN: The staff has reviewed this qualification of equipment against a loss of main feedwater accompanied by a design basis small break LOCA, and the radiation levels associated with TMI-2 were well beyond those which would be associated with a design basis small break LOCA.

Now, there is no question that ultimately TMI will have to demonstrate qualification of equipment to all of these things which Mr. Pollard seeks to raise.

CHAIRMAN SMITH: Why do they not have to demonstrate environmental qualification for the radiation levels which were observed in the accident?

MR. CUTCHIN: In our view, it is beyond the design basis associated with a small break LOCA.

CHAIRMAN SMITH: Is that the only reason, then, that you are offering for your objection?

MR. CUTCHIN: That is my understanding of the staff's position and that is a technical position. And so if the witnesses disagree I would ask them to comment.

CHAIRMAN SMITH: You are not pointing to any regulation?

MR. CUTCHIN: I am not pointing to any regulation.

CHAIRMAN SMITH: Do you have any more comments, Mr. Baxter?

MR. BAXTER: The only clarification or addition I wanted to make to Dr. Jordan's summary is I think it is not just a difference between NUREG-0578 and NUREG-0737, because of my remarks earlier about the Commission's generic 01-79B program as being complementary to the staff's taking on the scope of this hearing. The 79-01B program goes beyond the 0737 item we have been discussing. That is not all embodied here. So we're not just talking about 0578 versus 0737. I think we're talking about a completely different Commission program, generic and outside of this proceeding, which I think complements, is not the basis solely but it complements the interpretation the staff has given to the

issue.

CHAIRMAN SMITH: Now, you said before we could take some guidance from the Commission's ruling on the hydrogen certification. Do you believe that is the case and why? What guidance can we take from that ruling?

MR. CUTCHIN: I had indicated that that was my argument, Mr. Chairman..

CHAIRMAN SMITH: What guidance can we take from that ruling?

MR. CUTCHIN: Because that again is not a design basis scenario, and for the same reason.

CHAIRMAN SMITH: Is that why the Commission ruled, then, on hydrogen?

MR. CUTCHIN: I believe -- and I could stand corrected -- but the hydrogen released in the TMI-2 accident scenario was in greater amounts than the amount that is designed for in 50.46. Now, I am looking at the witness. I believe --

DR. JORDAN: There is no question about that.

MR. CUTCHIN: And there clearly the Commission did not allow in this proceeding inquiry into demonstration of capability to cope with that amount of hydrogen, absent some scenario.

CHAIRMAN SMITH: That is because there was a regulation, 50.44, that said this is the amount of hydrogen

that you must assume would be released. And they said, for reasons that they put forth in their opinion, that we were going to stick by our regulation.

But I just asked you if there is a regulation which would require us to assume lower amounts of radiation than actually existed during the accident. And you say --

MR. CUTCHIN: There is no regulation to which I can point that limits the amount of radiation other than to that associated with the credible accident scenarios. And the staff -- and I'm going to have to call on our technical witness here -- the amount of radiation to which or for which equipment must ultimately be demonstrated to be qualified is higher, a higher amount than what the staff has reviewed qualification against for this small break LOCA. And that demonstration will be made over the longer term.

CHAIRMAN SMITH: Generically?

MR. CUTCHIN: Generically.

CHAIRMAN SMITH: You see, this is going to go -- when you start talking about what they're going to do generically, you take me down the path. When I'm trying to rule in this case, it just causes me confusion. So when you do that, start talking generically, because I followed your reasoning as if it was something that was going to happen within the staff's responsibilities in this case.

But I understand now generically, not as a result

of this accident, they're going to require much greater. Now I'm just worried now, right now, what the relation will be in this accident. So you are not depending on the radiation postulations or the radiation calculations of 50.46?

MR. CUTCHIN: I guess I don't recall any 50.46 radiation postulations.

DR. JORDAN: Mr. Cutchin, I think your argument for hydrogen would be the same as for radiation. Under 50.46 the amount of damage to fuel elements is limited to one percent, and therefore the amount of radiation. So long as we are dealing with a design basis small break LOCA, I don't think there's any question that we are dealing with one percent of the hydrogen and one percent of the radiation.

And therefore I think the main thing is, are we in this hearing only going to be dealing with design basis accidents, and that has not been the case for many of the items of 0578. So I would say it hardly stands that we are restricted to design basis accidents.

(Board conferring.)

CHAIRMAN SMITH: We'll take a very short break.

(Recess.)

CHAIRMAN SMITH: The Board is still having difficulties making this ruling. There have been quite a

few problems connected with this contention. It was a very broad contention when accepted by the Board. It was never -- I don't believe, and I'm not sure -- it never came under the requirements of greater specificity, as other contentions did.

I guess the best thing we are going to have to do is construe the contention the way we meant it to be accepted, which was, as in anything else, there must be a close nexus to the accident. The bases for the objections by the parties are not sufficient. I think they could have been sufficient, but I don't think they were adequately argued. But it is not our business to argue for parties.

In the first place, the staff's position that hot shutdown is good enough is an issue that is legitimately litigable. We would have argued that the main steam line break and the high energy break outside containment are outside the scope of the hearing, because they don't have a close argument -- I mean a close relationship, to the accident. But the question that is being objected to does not get to that. That is not part of the question.

We were not satisfied with Mr. Pollard's explanation as to why all of the SER environmental qualification is relevant to this hearing. Not only were we not satisfied with it, but we didn't understand it. So maybe if we understood it we would accept it more. But just

frankly, I heard what you said but I don't know what those words mean. I just don't know what they mean in this hearing.

Therefore, we are going to overrule the objection. But the Board itself will not allow an endless inquiry into the SER, environmental qualification of equipment, unless there's a demonstration on the particular questions that they are relevant to the accident.

Also, we will -- during the lunch break we want to read again the Commission's decision on hydrogen to see what guidance that gives us. I don't recall the Commission saying anything about design basis events. I don't think that was the basis for it, because I don't think that we have read it the same way. But I will have to concede, Mr. Cutchin, it has been a wrong time since I have read that decision. But I might recommend it to everyone's reading over the lunch break. If we all don't have copies of it, I think right away we can Xerox it and distribute it, because we don't have a copy of it here.

MR. CUTCHIN: Neither do I, unless we happen to have it on microfiche somewhere, Mr. Chairman.

CHAIRMAN SMITH: Would your office have it?

MR. BAXTER: We will check, Mr. Chairman. I don't know for sure.

CHAIRMAN SMITH: So the sum of our ruling is the

objection is overruled. But don't be too heartened by that, Mr. Pollard, because we are not going to allow an unrestrained examination into this issue.

DR. JORDAN: Into accidents that do not bear a close nexus. But on the other hand, small break LOCA accidents that have a close nexus to TMI-2, we will say go ahead.

CHAIRMAN SMITH: Didn't we rule in a similar situation we would not allow an inquiry into a main steam line break scenario?

MR. BAXTER: It was steam generator tube rupture, Mr. Chairman.

CHAIRMAN SMITH: But we did allow the main steam line break?

MR. BAXTER: Not to my knowledge. I don't think we had a contention specifically into main steam line break.

CHAIRMAN SMITH: We had quite a few questions on it, okay. But that is our ruling.

MR. TOURTELLOTTE: Mr. Chairman, one of the things I had indicated earlier in April was that we would not be reviewing this matter in light of the large break LOCA or main steam line break, and that we did put on the record in that case. And at that time the Board agreed.

CHAIRMAN SMITH: Well, what we agreed with was

that the presentation should be -- the consistent standard that we have applied in this hearing, and that is there has to be a reasonable nexus to the accident. We didn't, I don't think, comment particularly on the main steam line break and large break LOCA.

However, I agree with you that if their inquiry is into a large break LOCA and a main steam line break and an objection was made, our ruling would be there probably is no reasonable nexus to the accident.

I just reread the transcript pages I think where we heard what you had to say, and we agreed that it should be limited to the accident scenario.

MR. TOURTELLOTTE: I was merely bringing to your attention the fact that I did specifically mention main steam line break and large break LOCA at the time that I made that argument.

CHAIRMAN SMITH: Okay. I understand.

Okay, now you may answer. Do you know what the question is?

WITNESS ROSZTOCZY: Yes, would you please restate the question?

CHAIRMAN SMITH: I have it written here. Perhaps it's the only copy.

Question: Do I understand you correctly, then, that for all the open items in the March 24, 1981, sefety

evaluation of environmental qualification, you believe the plant is safe enough to restart without resolving those items?

WITNESS ROSZTOCZY: The March 24 SER provides a conclusion and the conclusion basically states that the Commission established certain requirements and certain deadlines for meeting these requirements. As long as those requirements are being met on those deadlines, yes, it is appropriate.

BY MR. POLLARD: (Resuming)

Q Let's take specifically, then, an example on page 3 of an open item. In the third paragraph on that page it states: "Display instrumentation which provides information for the reactor operators to aid in the safe handling of the plant was not specifically identified by the Licensee. A complete list of all display instrumentation mentioned in the LOCA and high energy line break emergency procedures must be provided."

Now, with respect to the emergency procedures for a small break LOCA, has the Licensee provided a list of that instrumentation which is needed for the reactor operator?

(Pause.)

A (WITNESS ROSZTOCZY) This requirement to provide this list was given to the Licensee as part of the larger SER, the March SER, and the reply to this is due in 90

days. So I will assume that this information will be in the submittal that we expect this week.

Q My question is, does this portion of the open item have to be resolved prior to restart? That is, must Met Ed provide you with a list of all display instrumentation mentioned in the small break LOCA emergency procedures and must you determine that that equipment is either environmentally qualified or its failure wil not mislead the operator or adversely affect the mitigation of the consequences of the accident?

A (WITNESS ROSZTOCZY) Yes. But it must provide this information within 90 days of the receipt of the SER, and that is definitely ahead of the startup date.

Q And by then the hearing will be closed. So you presume -- you suggest we should leave it to the staff to decide whether this equipment is adequately qualified, is that right?

A (WITNESS ROSZTOCZY) Yes.

Q Now, in your response attached to the testimony, in the Licensee's list of equipment, the May 18, 1981, letter to Mr. Stolz, did the Licensee identify there the equipment -- excuse me -- the display instrumentation used by the operator to cope with design basis small break loss of coolant accidents?

A (WITNESS ROSZTOCZY) I'm sorry, which letter are

we talking about?

Q I'm sorry, I didn't understand you.

A (WITNESS ROSZTOCZY) You were referring to a letter. Which letter is this?

Q The Licensee's letter of May 18th, in response to your letter of May 1st.

A (WITNESS ROSZTOCZY) Which page?

Q I was not referring to a specific page. My question was, in your review of this response did you determine the Licensee has identified all of the display instrumentation needed to cope with a small break loss of coolant accident?

MR. CUTCHIN: Mr. Chairman, I would ask for a clarification on that. I think it should be limited to display instrumentation located within the containment building and the auxiliary building, for the purposes of the scope of this proceeding.

CHAIRMAN SMITH: Is that agreeable?

MR. POLLARD: I tried to ask Mr. Shelly what Mr. Cutchin said. I didn't catch it.

DR. JORDAN: I didn't quite understand you. Let me define. You would like to limit it to equipment inside the containment or auxiliary building. But of course the display equipment is inside the control room and that is obviously included, because it has to do with equipment that

is subject to the environmental qualifications.

MR. CUTCHIN: To the environmental qualification in that portion of the building in which it appears, and that is -- I'll let the witness answer, but that is ambient in the control room.

MR. POLLARD: My question obviously intended to apply to all of the equipment that is needed to make the meter in the control room function. When I say an instrument, I don't simply refer to the meter. I expect it also to include the sensors which supply the information to the meter.

WITNESS ROSZTOCZY: I'm sorry, are you waiting for me?

BY MR. POLLARD: (Resuming)

Q Yes.

A (WITNESS ROSZTOCZY) Yes, we have looked at the May 18th submittal and we compared it relative to the small break emergency procedures.

Q Can you show me where in the Licensee's response they refer to the pressurizer level instruments?

A (WITNESS ROSZTOCZY) This part of the review has been performed in a different division. It was not done under our supervision. We have the report of their conclusions and they stated in that they have compared it to the emergency procedures. I don't know the details, how did

they perform it.

(Pause.)

Q Perhaps I misunderstood. When you were asked during questions by Mr. Cutchin, did you not testify that the May 18th letter from the Licensee was a complete list of all of the equipment needed to cope with a small break loss of coolant accident?

A (WITNESS ROSZTOCZY) Are you referring to earlier testimony today?

Q Today.

A (WITNESS ROSZTOCZY) I don't believe such a question was asked and I don't believe such an answer was given.

(Pause.)

MR. BAXTER: Mr. Chairman, I don't know whether we are testing the witness' knowledge of the document or trying to find out if the information is there. If it is the latter, I can identify it.

BY MR. POLLARD: (Resuming)

Q If we turn to page 3 of your direct testimony today, you say you have completed -- the staff has completed its review of the Licensee's January 30, May 18, and June 5, 1981, submittals. Then the next paragraph says: "As a result of its review, the staff agrees that the Licensee has identified all the equipment located in a harsh environment

required to safely shut down the reactor in the event of a loss of feedwater small break LOCA."

Now, are the pressurizer level instruments among that equipment?

A (WITNESS ROSZTOCZY) I don't know.

Q You don't know whether the pressurizer level instruments are required to cope with a small break LOCA?

A (WITNESS ROSZTOCZY) This, as I indicated earlier, this review has been done in a different division not under my supervision. I provided no guidance for the review and I do not know what instrument did they include and which one they did not include.

Q Mr. LaGrange, do you know?

A (WITNESS LaGRANGE) I could look through the list to find out. But as Zoltan said, I took input from another branch, who reviewed this equipment list, and they informed us that all the equipment required to cope with this accident had been identified, and we continued the review from that point.

MR. CUTCHIN: Mr. Chairman, I might note for the record that back earlier in the proceeding there were issues to be litigated with respect to the instrumentation and instrument ranges necessary to cope with various of these accidents, and there were witnesses available at that time to address what instruments and the like were necessary. I

will stipulate that these witnesses took a list of equipment that was provided to them and assessed whether or not that list of equipment was indeed environmentally qualified to the small break LOCA environment.

DR. JORDAN: Well, I think it's not clear to me what that list includes. I gather that you gentlemen rely upon other branches for identifying equipment that would be necessary to deal with say a small break LOCA accident. You did not yourselves try to identify what information was required; is that correct?

WITNESS ROSZTOCZY: The identification was done by the Licensee. The Licensee provided the list and then another department reviewed this list and checked on it whether they agreed with the Licensee's identification.

DR. JORDAN: All right. That list then was submitted to you; is that correct?

WITNESS ROSZTOCZY: Yes, we received a submittal.

DR. JORDAN: All right. Then I guess I am puzzled as to why you don't know whether the pressurizer level instrument was included on that list. You say you could --

WITNESS ROSZTOCZY: We could look through the list and find out.

DR. JORDAN: Go ahead and do that.

WITNESS ROSZTOCZY: Thank you.

MR. CUTCHIN: To save time, if we're not testing the witness' knowledge of the list, we might start on page 16 of 17.

WITNESS LaGRANGE: Yes, the level transmitters are on page 16.

MR. POLLARD: I did not understand tha..

WITNESS LaGRANGE: I said the level transmitters are on pae 16 of the 17-page submittal.

BY MR. POLLARD: (Resuming)

Q And do you agree with the Licensee's statement on that page that those are qualified?

A (WITNESS LaGRANGE) Yes.

Q And how did you determine that?

A (WITNESS LaGRANGE) I compared the qualification information submitted for those level transmitters against the environmental conditions that were specified for those transmitters.

Q If I could direct your attention to the January 30, 1981, submittal of the Licensee, under the category of additional accident monitoring equipment, sheet 5 --

MR. POLLARD: For the Board's information, the same information appears on page 71 of UCS Exhibit 39.

(Pause.)

BY MR. POLLARD: (Resuming)

Q Does that page indicate they have not yet

completed the evaluation of the qualification for chemical spray and also for aging?

A (WITNESS LaGRANGE) Yes, it does.

Q Then on what basis do you conclude that the equipment is qualified to operate in a small break LOCA environment?

A (WITNESS LaGRANGE) In a small break LOCA the containment spray is not actuated; therefore it need not be qualified to chemical spray.

Q Did the spray turn on during the TMI-2 accident?

A (WITNESS LaGRANGE) I don't know.

Q Did you say you don't know?

A (WITNESS LaGRANGE) I don't know, no.

Q Let's assume for the moment that the spray did turn on during the TMI-2 accident. Would that change your conclusion as to whether or not Three Mile Island Unit 1 should be allowed to restart until you have completed your evaluation of the containment spray qualification of the pressurizer level transmitters?

A (WITNESS LaGRANGE) As Dr. Rosztoczy stated earlier, the conclusions in the March 24 SER say that restart should be permitted and that qualification shall be demonstrated by June 30, 1982.

Q What criteria did you use to decide whether a particular requirement should be met with respect to

environmental qualification prior to restart or could wait until June 30, 1982?

A (WITNESS ROSZTOCZY) The main requirement, what we are using, is that there has to be reasonable assurance that the Licensee is going to meet the June '82 requirement. So we expect the Licensee to proceed on a timetable that is consistent with the June '82 final deadline. The 90-day response was set up keeping this in mind and that is why they were limited that they had to provide the information within 90 days.

Q Do you have any technical basis from your evaluation of the adequacy of the instrumentation for saying it is safe enough to restart without completing the chemical spray aspect of environmental qualification for the pressurizer level instruments prior to restart?

A (WITNESS ROSZTOCZY) We have the technical bases which are spelled out in the SER.

Q And can you specifically tell me what that is?

A (WITNESS ROSZTOCZY) It is the concluding part of the SER, I believe the last page.

Specificallyl let me refer you to the very end of the SER. This is I think the last sentence, starting with the words, "This conclusion is based on the following," and then there are one, two, three items listed.

DR. JORDAN: That is on page 11?

WITNESS ROSZTOCZY: Yes, sir.

BY MR. POLLARD: (Resuming)

Q Am I correct that the SER identifies what I might call three categories of deficiencies: one category where immediate corrective action would be required; another category where additional information and/or corrective action is required; and another where the equipment is conditionally acceptable? Is that correct?

A (WITNESS ROSZTOCZY) Yes, that is correct.

Q Now could you please tell me what criteria you used to decide whether a deficiency required immediate corrective action or not?

A (WITNESS ROSZTOCZY) The question is what was the criteria to decide whether immediate action was required?

Q That's right. Your first justification, item one, says, "There are no outstanding items which would require immediate corrective action." And what my question is is, what criteria did you use to decide whether a particular outstanding item would require immediate corrective action?

A (WITNESS ROSZTOCZY) If there was information available which would show that the given item, the given equipment, would not perform its function on the expected environmental conditions, then we would require immediate action, provided there are no other means to accomplish the same function.

Q Let me see if I can understand your answer, that if you had documented proof from a test that the pressurizer level instruments were not qualified to operate in a spray environment, you would require immediate corrective action and you would not allow restart under those conditions; but under the current condition, where you just don't know, you are willing to allow restart. Would that be a correct understanding of your position?

A (WITNESS ROSZTOCZY) You are using the example that I believe it is basically correct. If there was no information available on a given equipment, that goes into category B. That would be the second category.

Q All right. The second category states: "Some of the items found deficient have been or are being replaced or relocated, thus improving the facility's capability to function following a LOCA or high energy line break." My question there is, does the phrase "are being replaced or relocated" mean in all instances prior to restart?

MR. BAXTER: As to the LOCA, is that the limitation?

BY MR. POLLARD: (Resuming)

Q Excuse me. Yes, as to the LOCA.

A (WITNESS ROSZTOCZY) The statement, the basic statement, is that certain changes have already been made, additional changes are being made. All of these are going

in the direction to improve the safety of the plant.

Q My question is, though, for those items where they have been found deficient, are they being replaced or relocated prior to restart?

A (WITNESS ROSZTOCZY) I am sorry, could I ask you to repeat the question, the early portion of the question?

Q Item 2 states: "Some of the items have been found deficient."

A (WITNESS ROSZTOCZY) Yes.

Q That is the first thought. The second thought is that those have been or are being replaced or relocated. My question is, for those items which have been found deficient and are being replaced or relocated, is that replacement or relocation required to take place prior to restart?

A (WITNESS ROSZTOCZY) It is not a requirement to replace or relocate all those equipment where some deficiency exists at the present time prior to restart. The statement is that some of these will be accomplished prior to restart.

Q But for those that are being replaced or relocated, that would be prior to restart?

A (WITNESS ROSZTOCZY) No. We expect that additional information is coming in which will tell us the resolution of many of the items which have not yet been spelled out, and my expectation would be that some of those

would be done before restart and some would be done after restart.

Q And this is for equipment where you have already found deficiencies?

A (WITNESS ROSZTOCZY) The deficiencies -- you have to understand I am talking in the second category. The deficiency could be that simply there is no information available in some area of the qualification. At the time when this was written, the Licensee was still trying to get hold of that information.

There are various possibilities. One possibility is that they do find information which shows that that equipment will function and therefore it is appropriate to leave it in the plant. Another possibility is that they will perform additional qualification and through this additional qualification they will show that it is appropriate to maintain that equipment in the plant. A third possibility is that they will take some kind of corrective action, which could be protection, like if the problem is radiation they can put a shield around it, it could be relocation -- in case of flooding, that is normally one of the corrective actions -- or it could be replacement by some other equipment.

We are waiting for the Licensee's decision, how is he going to resolve each of these.

Q Okay. For your third basis for allowing restart you talk about the harsh environmental conditions for which this equipment must be qualified result from low probability events. Events which might reasonably anticipated during this very limited period would lead to less demanding service conditions for this equipment.

How low a probability is required for you to classify this as a low probability event?

A (WITNESS ROSZTOCZY) The qualification, the overall qualification has been established to limiting conditions which cover all loss of coolant accidents, all steam line breaks and all feed line break accidents. And the testing, normally the qualification is performed against these limiting values.

The statement here is that the fact that qualification up to all of those limits, to those high limits, on each of the qualification parameters, the fact that the qualification doesn't exist to all of them, that doesn't necessarily mean that they will not function under a more likely event.

The purpose of today's testimony, which is limited to small breaks and to bundle fuel failure, is to show that for a more likely type of event like that one all equipment will be qualified prior to restart, prior to operation of the plant.

DR. JORDAN: I guess I'm a little puzzled by that last statement. Hasn't that always been the case, that all of that equipment had to be qualified for the small break LOCA's, the design basis accidents? Is there something new?

WITNESS ROSZTOCZY: The basic requirement is general design criteria 4. There's no change in that. It is the same as it was before. We are just requiring more thorough proof to show compliance with it.

DR. JORDAN: I see.

(Pause.)

BY MR. POLLARD: (Resuming)

Q Do I correctly understand your testimony that you consider a high energy line break outside containment to be such a low probability event that you think the plant can restart?

MR. BAXTER: Objection. I understood the questioning was going to be limited to the Board's direction to accidents with a close nexus to the TMI-2 accident.

DR. JORDAN: This is what he's going to try to find out.

MR. BAXTER: He's asking about the probability of high energy line breaks.

DR. JORDAN: No, he's not. He's asking if that was the basis for it. He was not asking necessarily the

probability of a high energy line break. He may have been. In that case I'm wrong. But on the other hand, I thought at the moment that he was just asking for the criteria.

MR. BAXTER: The staff I thought has explained that the criteria was nexus to the accident in terms of the scope of the testimony that they're presenting.

DR. JORDAN: No, no. It is now clear that that is no longer the case. What the situation is, that the criteria of the accident has very little to do with the equipment qualification for restart, and I think that is what he was talking about, was the equipment qualification for restart, and that was not based on the TMI-2 accident. That is, the harsh environment which the equipment will have to meet after, in a longer term.

Am I correct in what I said? If not, please correct me. You didn't understand?

WITNESS ROSZTOCZY: I'm sorry, I didn't follow.

DR. JORDAN: Let me summarize Is it not the case that restart will require qualification to the design basis accidents, small break LOCA's and so on, that in the long term the qualification will have to be to a harsh environment which is based upon the TMI-2 or a nexus to the TMI-2? In other words, a higher radiation environment.

WITNESS ROSZTOCZY: The Commission order requires Licensees to show full compliance with the qualification

requirement by June 30th, 1982. So they have until June 3, 1982, to show this for the design basis accidents.

DR. JORDAN: They have until June '82 to even demonstrate compliance with design basis?

WITNESS ROSZTOCZY: That is correct.

DR. JORDAN: I see, and that is because it isn't that there has been a change in the criteria for environmental qualification; there has been a change in the amount of work that you do in making sure that it is qualified. Has there been a change in the criteria for environmental qualifications for the design basis accidents?

WITNESS ROSZTOCZY: There is no change in the basic criteria.

DR. JORDAN: All right.

WITNESS ROSZTOCZY: There have been some questions when you go into more details and clarification has been provided wherever questions were raised.

DR. JORDAN: All right. But now then, they have until 1982 to demonstrate that all of the equipment has met the design basis criteria, so-called, presumably the criteria that they have been under all the time?

WITNESS ROSZTOCZY: That's correct.

DR. JORDAN: Now then, after 1982, then they will have to demonstrate some time or other compliance with the

harsh environments, with greater amounts of release of radioactivity outside the design basis accident, such as we had at TMI-2; is that not correct?

WITNESS ROSZTOCZY: The design basis requirement as far as radioactive material release is concerned is 100 percent noble gases, 50 percent halogens, and one percent solids. So that it is a very restrictive requirement.

DR. JORDAN: That's right. So these have always been the criteria, really?

WITNESS ROSZTOCZY: Yes.

DR. JORDAN: All right. To let everybody know that I goofed this morning, the TMI-2 accident and the releases there were certainly no more than 100 percent of the noble gases. So therefore there has been an increase in the amount of release of radioactive materials. All that has happened now is that we have got to go back and restudy, calculate the doses for certain, and demonstrate that indeed the equipment does do this. And they have until July of '82 to make this demonstration. Now is that correct?

WITNESS ROSZTOCZY: That is correct.

DR. JORDAN: All right. I was a little unclear and I needed that clarification. Thank you.

Now, I don't think that got you over the objection that you had to your question, and you may want to ask the question again, and Mr. Baxter may want to re-object, and

that's fine. I really got off on the track of something else.

CHAIRMAN SMITH: We suggest it's been so long since the question that you place it again and then see if there is objection. Do you recall?

MR. POLLARD: I'll see if I can remember the question.

BY MR. POLLARD: (Resuming)

Q I believe what I asked you was: Is the technical basis for your recommending restart the fact that you consider a high energy line break outside containment to be a low probability event?

MR. BAXTER: I have to renew my objection, Mr. Chairman.

CHAIRMAN SMITH: Overruled.

WITNESS ROSZTOCZY: The most limiting of all high energy line breaks, the one which was established in the limiting environmental conditions, is, yes, a very low probability.

BY MR. POLLARD: (Resuming)

Q Then you say that since it is going to be a very limited period of time -- implies that you need not consider this now because it is a short time between now and June of 1982; is that correct?

A (WITNESS ROSZTOCZY) Yes, there's a certain time

element involved. And for this plant that would be the time between restart and June '82. I don't know exactly when the restart is, but I believe we're talking about a few months.

Q Have any companies to your knowledge applied to the NRC to extend that deadline to June of '83?

A (WITNESS ROSZTOCZY) There have been a number of letters received from utilities expressing difficulties to meet the June '82 deadline. One of the letters was sent directly to the Commissioners and I believe that letter in a sense asked for a delay. It was not to June '83, no.

Q Do you know how long the delay was for?

A (WITNESS ROSZTOCZY) I believe they were asking for an equivalent delay, at least an equivalent delay of how much later than February 1st they received our SER.

Q Now, could the same justification number 3 of low probability be used to justify continued operation of Three Mile Island Unit 1 on June 30th of 1982 if the equipment data is still not available?

A (WITNESS ROSZTOCZY) I'm sure all circumstances would have to be considered at that time if it is not in full compliance, and I am sure that this would be one of those that should be considered.

(Pause.)

Q On your direct testimony for today, on page 1 near the bottom, you talk about the equipment required to safely

shut down the reactor following a loss of feedwater and small break loss of coolant accident. And on page 3 you state: "As a result of its review, the staff agrees the Licensee has identified all the equipment located in a harsh environment required to safely shut down the reactor."

In both of those cases, are you referring to hot shutdown or cold shutdown?

A (WITNESS ROSZTOCZY) Hot shutdown.

Q And have you completed your review of the equipment needed to obtain cold shutdown?

A (WITNESS ROSZTOCZY) No.

Q And you believe that the plant can restart without completing that review?

A (WITNESS ROSZTOCZY) Yes.

Q And during the TMI-2 accident, is it not correct that the ultimate they were trying to achieve was cold shutdown, was it not?

A (WITNESS ROSZTOCZY) Eventually, you always end up with a relatively cold case. But I believe in the TMI case the reactor was kept at hot shutdown condition for quite a while.

Q Can you tell me why you believe the health and safety of the public is adequately protected if Three Mile Island Unit 1 is allowed to restart without demonstrating that there is sufficient equipment qualified to bring the

plant to a cold shutdown?

A (WITNESS ROSZTOCZY) There is a requirement on cold shutdown. They have to meet that requirement, and the deadline for that again is June '82. So we are not saying that that one is not required. But following an accident the reactor can be maintained in a safe condition, even if it is not cooled down.

MR. POLLARD: Mr. Chairman, could I have the witness answer the question that I asked, please.

CHAIRMAN SMITH: I thought that that was responsive.

MR. POLLARD: I asked him why he thought that the health and safety of the public was adequately protected by allowing the Three Mile Island plant to restart without demonstrating environmental qualification of the equipment needed to obtain cold shutdown. And his only answer was that eventually they are going to require that.

CHAIRMAN SMITH: That wasn't his answer. His answer was more than that. His answer was that he gave the date on which it would be required. You may not be satisfied with the answer, but it was a reasonable response in his mind and I don't think it was totally unresponsive.

Ask another question if it doesn't cover everything.

BY MR. POLLARD: (Resuming)

Q At the time of restart, the staff does not know whether the equipment needed to bring the plant to cold shutdown will in fact survive long enough to achieve that; is that correct?

A (WITNESS ROSZTOCZY) That information has been requested and the deadline for submitting information was February 1st. The information has been received and it is presently under review. So it is my expectation that it will be reviewed and will be completed prior to startup of the plant.

Q Then prior to restart all of the equipment needed to obtain a cold shutdown condition will be environmentally qualified, is that what you just said?

A (WITNESS ROSZTOCZY) No, I didn't say that. I said that the Licensee was requested to evaluate the qualification of the equipment needed for cold shutdown and provide his summary information to us by February 1st. The Licensee has provided such a submittal. That submittal is presently under review.

I am not sure what was the conclusion, what was the Licensee's conclusion in there, whether they stated that everything is fully qualified. And our review, whether we agreed with their conclusion, is not complete yet.

Q Is it the staff's position that your review must be completed prior to restart?

A (WITNESS ROSZTOCZY) No.

Q In other words, you believe the plant can restart without you determining whether or not the equipment needed to obtain cold shutdown is environmentally qualified?

A (WITNESS ROSZTOCZY) That is correct.

Q And that is independent of what equipment that is? In other words, it doesn't matter to you whether the steam dump valves are qualified or the RHR system is qualified? It doesn't matter?

A (WITNESS ROSZTOCZY) It is independent from which information the Licensee elects to use for going to cold shutdown, that is correct.

Q The Bulletin 79-01B does require at least one path for going to cold shutdown using environmentally qualified equipment; is that correct?

A (WITNESS ROSZTOCZY) Yes.

Q Can you tell me why you believe it is safe enough for Three Mile Island Unit 1 to restart without the staff making a determination that that equipment is in fact qualified?

A (WITNESS ROSZTOCZY) I answered this question for you before. Let me repeat it again.

We believe that the plant can be handled safely without going to cold shutdown.

Q Can you tell me then the purpose of imposing that

requirement in the bulletin of demonstrating environmental qualification for cold shutdown?

A (WITNESS ROSZTOCZY) It provides additional assurance that that option of going to cold shutdown is also available, and it is the Commission's position that in the long-term this assurance should be provided. That is why by June '82 they have to provide qualified equipment for that purpose.

DR. JORDAN: Can I ask just one question? In this Licensee submittal that you already have, it is possible that they might have pointed out some equipment that would not meet the environmental qualifications; is that correct.

WITNESS ROSZTOCZY: That is a possibility.

(Pause.)

BY MR. POLLARD: (Resuming)

Q For your testimony today, am I correct that you evaluated the environmental qualification for the equipment needed to obtain a hot shutdown condition in the event of a loss of main feedwater and a small break LOCA coincident?

A (WITNESS ROSZTOCZY) That is correct.

Q How long did you consider that the equipment had to operate in the accident environment? In other words, how long must the plant remain at the hot shutdown condition?

A (WITNESS ROSZTOCZY) For each equipment, we required on the summary sheet, one of the pieces of

information for the given equipment is to specify the time, how long that that equipment needs to function in order to perform its intended function.

Q And Mr. LaGrange, are you the one that actually looked at those specific pieces of equipment to determine that this was met?

A (WITNESS LaGRANGE) Yes, I did.

Q Can you tell me which accident profile you used for determining the small break LOCA accident environment?

A (WITNESS LaGRANGE) The accident profile was supplied with the May 18th letter. The accident profile on containment is given in note 7 on that page of notes. The accident profile in the auxiliary building was the radiation levels from the recirc fluids.

CHAIRMAN SMITH: What kind of fluid? Your statement, what type of fluid did you say?

WITNESS LaGRANGE: The fluid recirculating in the pipes.

CHAIRMAN SMITH: Recirculating.

BY MR. POLLARD: (Resuming)

Q This is a specification of the maximum pressure, temperature and humidity. What I am interested in is the time frame of those parameters.

A (WITNESS LaGRANGE) The staff did some independent calculations to determine how long these temperatures and

pressures would exist.

Q And what were the results of these calculations?

A (WITNESS LaGRANGE) I don't believe I have those with me.

Q Well, for example, if you were going to evaluate the adequacy of a piece of equipment that is needed to cope with a small-break LOCA, how long did you assume that the temperature lasted?

A (WITNESS LaGRANGE) I used the profile supplied and made my evaluation based on that.

Q That is my difficulty, Mr. LaGrange. Which profile? Is it the profile that came in with the Licensee's submittal of January 30th?

A (WITNESS LaGRANGE) No.

Q In other words, we just don't have the profile here today. Is that what you're saying?

A (WITNESS LaGRANGE) I'll have to look through my papers, if you'll give me a minute.

CHAIRMAN SMITH: Would you object to having your cross-examination interrupted for lunch, or do you want to pursue this point?

MR. POLLARD: The only thing -- that's fine. The only thing, if I could at least ask him to give me the profile before we go to lunch, it would be helpful.

CHAIRMAN SMITH: Okay.

MR. CUTCHIN: Mr. Chairman, if it would speed things up, we have here at the table a copy of the profile that we believe he used. If he could confirm that that is the case, then we could provide Mr. Pollard a copy of that.

MR. POLLARD: We don't need to stay on the record to do this.

CHAIRMAN SMITH: Mr. Pollard does not object to that approach. You might have the answer on the record, however. Do you want the answer on the record?

MR. POLLARD: We can do it after lunch?

CHAIRMAN SMITH: All right, let's take a break until 20 to 2:00, a quarter to 2:00.

Ms. Ridgway has a copy of the Commission's order on hydrogen for the parties.

We'll break.

(Whereupon, at 12:39 p.m., the hearing was recessed, to reconvene at 1:45 p.m. the same day.)

AFTERNOON SESSION

(1:52 p.m.)

CHAIRMAN SMITH: Mr. Pollard -- when we adjourned there was a question and the answer was not yet on the record.

MR. POLLARD: I have received a copy of a graph plotting temperature and pressure versus time, which I am told is the profile that the staff used for the Three Mile Island Unit 1 containment building in evaluating the environmental qualification of the equipment for a small breawk LOCA.

You're right, it is not on the record. I don't know what to do with it, I guess.

CHAIRMAN SMITH: Well, you're either going to have to get a stipulation that it is acceptable or get the witnesses to say or or something, if you want to refer to it in the findings. Or, since there is no dispute, Mr. Cutchin, why don't you reduce what you've provided to Mr. Pollard to an evidentiary basis.

MR. CUTCHIN: We have no problem with having this bound into the record as evidence of the profile that was used, if that is the purpose to which he wants to put it. It is indeed factually true that that is a profile, the profile against which the equipment was assessed.

CHAIRMAN SMITH: Well, I think we'd really better

do it directly. Does the witness say that is the case?

WITNESS LaGRANGE: Yes. This is the profile I used, yes.

CHAIRMAN SMITH: All right, sir. If that's your testimony, let's bind it into the transcript right at this point.

(The document referred to follows:)

lay-in #7
c/29

TMI-1 .44 ft² Core flood line Break

Temperature peak 237°F @ time .43 hours

Temperature

Pressure peak = 25.9 psig @ time .43 hours

Pressure

Temperature (°F)

Pressure (psig)

TIME in HOURS

MR. BAXTER: Could I ask one clarification, Mr. Chairman? In my copy at least, the words at the bottom of the page are cut off. Is that "time in hours"?

WITNESS LaGRANGE: Yes.

MR. CUTCHIN: We will so mark a copy and provide it to the reporter and to the Board if the Board would like copies as well.

CHAIRMAN SMITH: You will mark a copy, did you say?

MR. CUTCHIN: We will mark a copy so that it reads clearly at the bottom that it is time in hours, and Mr. Jacobs will go run a few copies, and we'll provide the reporter one and the Board copies as well, and the other parties who have not yet received it.

MR. POLLARD: I'm going to ask some questions on it. You still don't have a copy?

CHAIRMAN SMITH: He's making a couple of copies now.

Whereupon,

ZOLTAN ROSZTOCZY

ROBERT G. LaGRANGE

the witnesses on the stand at the time of recess, resumed the stand and, having been previously duly sworn, were examined and testified further as follows:

CROSS-EXAMINATION

BY MR. POLLARD:

Q As you point out, in the Licensee's submittal, note 7, he specifies the reactor building environment peak pressure of 30 pounds and 245 degrees Fahrenheit. But the parameters you used are less severe than that, isn't that correct, that the peak pressure is 25.9 pounds and the peak temperature 237 degrees?

A (WITNESS LaGRANGE) I actually reviewed against the Licensee's higher numbers. But it doesn't make any difference, really. There is no equipment that was so close it would have made a difference.

Q Now as far as your evaluation goes, what was the maximum amount of time you considered that the equipment has to withstand this environment?

A (WITNESS LaGRANGE) It varied depending upon each piece of equipment. Some equipment operates in the first minute, some equipment has to be able to perform longer than that.

Q Let me ask the question a different way. When does the accident end, the small break loss of coolant accident?

A (WITNESS LaGRANGE) I believe we consider it to end when the temperature reaches the original temperature inside containment.

Q And how long is that?

A (WITNESS LaGRANGE) Well, according to this graph here, it is about 20.5 hours.

Q So if you have the plant in a hot shutdown condition, after 20.5 hours then it is all right if the equipment fails, is that basically your answer?

A (WITNESS LaGRANGE) No, that is not true.

Q For how long must the equipment continue to be operable?

A (WITNESS LaGRANGE) It varies depending on each piece of equipment. There is no generic time limit on any of the equipment. Some of the equipment may be able to perform its function and then fail such that it will not affect itself or the function it has performed or the function of any other equipment.

Q Well, for the long-term continued decay heat, removal of decay heat, what components are being used?

A (WITNESS LaGRANGE) I couldn't say. The scope of my review is to look at the information presented and compare that against the environmental conditions. I did not distinguish between what components were needed to perform what function.

Q When you calculated these profiles, how many fan coolers were running?

A (WITNESS LaGRANGE) This calculation was performed by another branch. I didn't perform these calculations.

WITNESS ROSZTOCZY: If it is any help, Mr. Pollard, the calculation presumes a single failure as far as the calculated conditions are concerned.

Q So with one single failure, how many fan coolers do we have?

A (WITNESS ROSZTOCZY) I don't know, but I believe the single failure was that one diesel didn't start.

Q So neither of the witnesses, if I understand your testimony, prepared this profile. So you don't know what assumptions were made in calculating these pressures and temperatures?

A (WITNESS ROSZTOCZY) As I mentioned, the basic assumption was a loss of coolant accident, a small loss of coolant accident, with one additional single failure. Now just exactly for this calculation what was that single failure I am not sure. But I believe it was that one diesel doesn't start. So any equipment that is attached to that diesel or gets its power from that diesel was assumed not to operate in the calculation.

Q Mr. LaGrange, when you said it didn't make any difference whether you used your profiles or the licensee's as specified in note 7, isn't it correct that with your profile the containment spray would not come on, but with theirs it would?

A (WITNESS LaGRANGE) I didn't look at the submittal

to determine whether or not it came on or not. The May 18th submittal said that the containment spray would not actuate, and I didn't try to make a determination as to whether or not it would.

Q So you just assumed it would not actuate?

A (WITNESS LaGRANGE) In my review I assumed it would not unless someone else, another branch in NRC, told me that it would.

Q Did you ask anyone else on the NRC staff whether or not you should assume containment spray comes on, or did you simply accept the Licensee's statement that it would not come on?

A (WITNESS LaGRANGE) I talked to one of the people involved in preparing the temperature profile, the temperature and pressure profiles, to ask them what kind of margin we had relative to that 30 psi. And as you can see, his calculations showed about 26 psig. And there was really no further discussion as to the margin that was built into there.

But I just pointed out that the Licensee calculated about 30 psig and the containment spray was to operate around there. And I asked him, you know, what fat was in that calculation. And he said, well, we came up with 26. I said, okay, maybe there is a little margin in the pressure calculation.

Q Do you know what pressure the containment spray actuates at?

A (WITNESS LaGRANGE) I am not sure, but I thought it was about 30 psig. I don't know.

Q Did you evaluate the adequacy of the profiles that were submitted with the Licensee's January 30th submittal?

A (WITNESS LaGRANGE) I did not personally, no.

Q Did you, Mr. Rosztoczy?

A (WITNESS ROSZTOCZY) Yes, we have checked those profiles against certain guidelines.

Q Against certain what?

A (WITNESS ROSZTOCZY) Certain guidelines.

Q Certain guidelines.

Is it acceptable in calculating those profiles for the staff to assume that all of the emergency building fan coolers work -- the containment building emergency fan coolers, I'm sorry.

A (WITNESS ROSZTOCZY) As I mentioned earlier, a single failure has to be assumed in the calculations.

Q But the profile, if you take a look, for example, at accident profile two submitted with the Licensee's January 30th response to the Bulletin 79-01B, it makes the assumption that three reactor building air coolers are operable. With a single failure of a diesel generator, that is not possible, is it?

A (WITNESS ROSZTOCZY) All possible profiles have to be evaluated. So should it be the case that a profile which does not include a single failure is limiting in some sense, then that profile still has to be considered.

Q Have you done this evaluation for Three Mile Island Unit 1?

A (WITNESS ROSZTOCZY) Yes, we have done an evaluation from that and the conclusion of that evaluation is given in the SER. The conclusion, I believe, is that we are not pleased with the temperature calculations. We require either further justifications on the temperature calculations or changing them to higher values.

Q And what about for the pressure?

A (WITNESS ROSZTOCZY) The pressure I believe was acceptable.

Q With three fan coolers operable?

A (WITNESS ROSZTOCZY) The pressure calculations have been reviewed as part of the normal licensing of the plant, because it is always part of the containment design calculations, and as long as they have looked at the proper spectrum of pressure curves then that is acceptable, which could include in it, among others, a calculation which has three fan coolers.

Q These are the profiles which I understand the Licensee used in his response to 79-01B; is that correct?

A (WITNESS LaGRANGE) Yes.

Q Have you evaluated those profiles to determine whether they are an adequate basis for evaluating environmental qualification?

A (WITNESS LaGRANGE) I think Dr. Rosztoczy just mentioned we do not agree with the temperature.

Q I'm asking about the pressure now. I'm sorry. This is profile number two, which plots pressure versus temperature. My question is basically, why does the staff consider this profile acceptable, if in fact it does, when the profile is based upon the operation of three fan coolers?

A (WITNESS ROSZTOCZY) The staff considers those acceptable, those profiles, together with the other profiles in the SER in this plant.

Q Acceptable for the environmental qualification review?

A (WITNESS ROSZTOCZY) Yes.

Q Even though the Licensee specifically references this profile as the one that it is using to judge environmental qualification?

A (WITNESS ROSZTOCZY) I'm not sure the Licensee is referencing only that profile.

Q It is the only reference I see on any of the work sheets for equipment inside the containment building. Can

you direct me to some reference to some other profile for pressure inside the reactor building?

A (WITNESS ROSZTOCZY) Yes, I'm sure there are a number of profiles given in the FSAR.

Q I'm talking about the environmental qualification submittal in response to 79-01B.

A (WITNESS ROSZTOCZY) Let us check just minute, please.

(Pause.)

A Could you give us the page reference for the profile

Q I'm sorry, I can't. It simply was included with the January 30th submittal. It is a page labeled "Accident Profile 2, TMI-1." It is reactor building pressure versus time for the design basis accident with continuous steam release with three reactor building air coolers. There's a figure. It says Figure 14-66, if that helps.

(Pause.)

A (WITNESS ROSZTOCZY) Mr. Pollard, we are not sure if this is the only profile referenced in the report or whether there are others. It is possible. One would have to look through all of the summary sheets and see if there are any others.

MR. POLLARD: Mr. Chairman, I would just bring out to you, this is one of the problems I don't know how to get

around, when I'm not allowed to put the entire January 30th submittal on the record. It is very difficult to prove that something is missing. I can prove what is there, but the witnesses think there might be some other profile reference. Now I have never been able to find such a profile.

CHAIRMAN SMITH: Well, you couldn't prove it by putting it all in the record anyway. You would have to come up with I don't know how many conformed copies, and then the Commissioners would have to look at those conformed copies and then go through all of them to arrive at the conclusion that you would like for them to arrive at, that a page is missing.

The witness I think can do that much better. You're talking about the foot-high stack of documents.

MR. POLLARD: Well, it's not quite that bad.

CHAIRMAN SMITH: I would approach with a stipulation first, I think would be the most efficient and reliable way. As a matter of fact, the Board will help you along that line. If you assert that there is something missing, we will require the adversary parties to concede that that is the case or to point out where it is, if it is done timely. But I think it can be worked out.

MR. POLLARD: The stipulation I guess I'm looking for is in the January 30th submittal. For all of the

equipment located inside of the reactor building, the only profile referenced in the January 30th submittal is in fact this profile 2, which is based upon the operation of three air coolers.

CHAIRMAN SMITH: What was his answer to it?

MR. POLLARD: They say they don't know.

WITNESS LaGRANGE: No, for equipment inside profile 2 is the only --

MR. POLLARD: That is the only pressure versus time profile referenced in the submittal?

WITNESS LaGRANGE: That's right.

(Pause.)

BY MR. POLLARD: (Resuming)

Q Would you agree with me in general, if a fan cooler was not operating, the pressure could in fact go higher than shown when the fan cooler is operating?

A (WITNESS ROSZTOCZY) I assume that is possible.

DR. JORDAN: Let me ask one question. Do you know how many fan coolers there are and how many are connected to each diesel?

WITNESS ROSZTOCZY: No, I do not know. You have to understand that these calculations were part of the normal design calculations for the plant when the plant was designed, and they were reviewed at that stage. It was stipulated for the purpose of this review that the pressure

calculations had been correctly performed and had been reviewed by the NRC staff as part of the licensing complement.

DR. JORDAN: Would you believe, then, that this temperature profile would include the failure of one diesel?

WITNESS ROSZTOCZY: We are talking about the pressure profile?

DR. JORDAN: The pressure profile.

WITNESS ROSZTOCZY: No, I do not know if that specific one includes the failure of one diesel.

DR. JORDAN: All right.

WITNESS ROSZTOCZY: But I would assume that there is in the SER, the safety evaluation report of the plant, a profile which does account for the failure of one diesel.

DR. JORDAN: But you are not sure that it would be the same as this pressure profile?

WITNESS ROSZTOCZY: That is correct.

DR. JORDAN: All right.

BY MR. POLLARD: (Resuming)

Q On page 11 of the March 24 safety evaluation report, directing your attention to the first full paragraph on that page, which states that:

"The staff issued to the Licensee sections 3 and 4 of this report and requested, under the provisions of 10 CFR

50.54(f), that the Licensee review the deficiencies enumerated and the ramifications thereof to determine whether safe operation of the facility would be impacted in consideration of the deficiencies. The Licensee has completed a preliminary review of the identified deficiencies and has determined that, after due consideration of the deficiencies and their ramifications, continued safe operation would not be adversely affected."

My question is, did either of you perform the review necesssary to write this paragraph of the SER?

A (WITNESS ROSZTOCZY) What was the question again?

Q Did either of you review the Licensee's submittal which is duscussed in this paragraph of the SER?

A (WITNESS ROSZTOCZY) The Licensee provided a letter reply to our issued so-called FER, and it is basically a short letter which states that they had reviewed the safety of the plant and they arrived at this conclusion.

(Pause.)

Q Is this the letter you are referring to, Dr. Rosztoczy?

A (WITNESS ROSZTOCZY) Yes, I believe this is the letter.

MR. POLLARD: Mr. Chairman, I would like to have this letter dated March 12, 1981, from the Licensee to the

NRC on the subject of environmental qualification of safety-related electrical equipment marked for identification as UCS Exhibit No. 41.

(The document referred to was marked UCS Exhibit No. 41 for identification.)

BY MR. POLLARD: (Resuming)

Q Now, comparing this letter with the safety evaluation report, the safety evaluation report says the Licensee completed a preliminary review. Can you show me anywhere in this letter where the Licensee says they have only done a preliminary review, or does the letter indicate that they have completed their review?

A (WITNESS ROSZTOCZY) I believe you are correct in pointing out that the Licensee did not use the word "preliminary" in its letter.

Q And it did not state that they reviewed the ramifications of the deficiencies, did they?

A (WITNESS ROSZTOCZY) I believe if you read the letter the intent is there.

Q I see, but it's not stated in the letter?

A (WITNESS ROSZTOCZY) That paragraph, the paragraph you are quoting, is not a quotation from the letter. It is a general paragraph included in the SER of seven different plants, and expresses the basic meaning of the letter.

Q Now, the Licensee concludes --

CHAIRMAN SMITH: Excuse me. Doctor, would you slow down just a little bit in the answers. Your voice is fading off at the end and dropping out of our hearing range over here.

WITNESS ROSZTOCZY: Certainly.

BY MR. POLLARD: (Resuming)

Q The Licensee's conclusion that there is adequate assurance that TMI-1 will operate safely following authorization for restart was based on what they referred to as the planned activities under way for restart of TMI-1. Can you tell me what the Licensee was referring to in the phrase "the planned activities under way for the restart of TMI-1"?

A (WITNESS ROSZTOCZY) The Licensee has indicated in his submittal that he is going to replace some equipment prior to restart, and I assume that is what he is referring to.

Q So without a specific list of what the Licensee considered as planned activities, you have no way of determining whether their plans changed, have you?

A (WITNESS ROSZTOCZY) The Licensee's submittal indicated what their plans were.

Q Which submittal indicated what their plans were?

A (WITNESS ROSZTOCZY) The January 30th submittal.

Q Was that in the cover letter or the master list or the work sheets?

A (WITNESS LaGRANGE) Typically, it was a statement on the component work sheets.

Q On the component work sheets, is that what you said?

A (WITNESS LaGRANGE) Yeah.

Q If you'll notice in the appendices to the SER, some of the equipment has a designation that it will be replaced.

(Pause.)

Q If we can turn now, I will be using your direct testimony for today, all right. Now, I mean, on page 3 of your direct testimony, the first full paragraph, you say: "The staff has completed its review of the Licensee's January 30th, May 18th and June 5th, 1981, submittals."

Can you tell me specifically what this review consisted of? When you say "the qualification information reviewed was data extracted from referenced documentation which contained detailed information concerning the qualification of equipment," do I understand this testimony to be that in order to prepare this testimony you looked simply at the work sheets that were submitted in the January 30th submittal; is that correct?

(WITNESS LaGRANGE) That is correct. The majority

of our testimony is based on the information provided on the work sheets.

Q And that you did not review the supporting documentation referenced on those work sheets; is that correct?

A (WITNESS LaGRANGE) Some of the supporting documentation has been reviewed, and further back in the testimony you will note there is some discussion on some pressure transmitters, that we asked the Licensee to commit to examining the applicability of that test report. But the majority of the referenced documentation, we are still continuing that review and it has not been completed yet.

Q In preparing your testimony on your evaluation of the safety of TMI-1 to restart, did you examine the licensee event reports or, as they used to be called, the abnormal occurrence reports for Three Mile Island Unit 1?

A (WITNESS LaGRANGE) The ones that were referenced in the submittal, yes.

Q Just those two LER's that were referenced in the submittal?

A (WITNESS LaGRANGE) That's right.

Q You made no independent review of previous abnormal occurrences where equipment on the master list had failed in the past at TMI-1; is that correct?

A (WITNESS LaGRANGE) I did not, no.

Q Did you review the Licensee's response to previous I&E bulletins other than 79-01B?

A (WITNESS LaGRANGE) For Three Mile Island, I think I reviewed the response to 79-14, which was some piping as-built problems. And I can't really recall any more responses on I&E bulletins on TMI.

Q Am I correct, Mr. LaGrange -- let me back up a minute -- that you have played a role in supplying to the Commission the bimonthly progress reports on the review in accordance with 79-01B?

A (WITNESS LaGRANGE) Yes.

Q Have you, in your review of Three Mile Island Unit 1, examined the equipment noted as deficient in those reports to see if it exists in Three Mile Island Unit 1?

A (WITNESS LaGRANGE) No, I have not.

A (WITNESS ROSZTOCZY) It may be appropriate to state here that such a review is under way. What we have done, we took the individual submittals and reviewed the submittals and issued the SER's. Now we are in the second phase of the review and we are looking at individual equipment types, and then we are checking it across the board with the computerized data system that we developed from the original submittals, whether these equipment types have been properly handled in each case.

That review is presently under way, as we

indicated in the SER.

Q But I am correct, am I, that you are offering testimony today that it is your view that Three Mile Island Unit 1 is safe enough to restart, and you have not attached as a condition to that conclusion your need to go back and look at these reviews of the equipment that has previously been found deficient in other plants?

A (WITNESS ROSZTOCZY) You are correct in that we are not requiring completion of this review before restart. But the review is going on and it goes on on a time schedule consistent with the final date.

Q Now, in performing your review and examining your work sheets, did you make your judgments in accordance with the requirements as stated in I&E Bulletin 79-01B as to whether or not the submittal was sufficient?

A (WITNESS LaGRANGE) Yes.

Q Am I correct that I&E Bulletin 79-01B specifies that you may not simply use the word "analysis" in describing the method of qualification; is that correct?

A (WITNESS LaGRANGE) I think you're referring to DOR guidelines. I'm not sure 01B specifically says that. But the use of analysis was examined during the review.

(Pause.)

Q I'm reading from attachment 3 to I&E Bulletin 79-01B, page 203. Under "qualification method" it says:

"Identify the method of qualification. To describe the qualification method, use words such as 'simultaneous test,' 'comparison test,' sequential test,' and/or 'engineering mathematical analyses.' Words such as 'tests' and/or 'analyses' when used alone do not adequately identify the qualification method."

Does that help refresh your memory?

A (WITNESS LaGRANGE) Yes.

Q Now when you examined the work sheets, did you verify that the Licensee had in fact identified the qualification method without using simply the word "analysis"?

A (WITNESS LaGRANGE) Yes, I did.

Q If you would look then, please, at the section of the Licensee's January 30th submittal entitled "additional accident monitoring equipment, sheet 8." For the Board, that is page 72 in UCS' Exhibit 39.

(Pause.)

A (WITNESS LaGRANGE) I have it.

Q Do you see in there where it says the qualification for containment spray was analysis?

A (WITNESS LaGRANGE) Yes.

Q Was that acceptable under the bulletin?

A (WITNESS LaGRANGE) No.

Q What action have you taken to correct that?

A (WITNESS LaGRANGE) That was noted as a deficiency and the Licensee was supposed to respond to that in the 90-day response.

Q It was noted as a deficiency where?

A (WITNESS LaGRANGE) In one of the appendices to the SER.

(Pause.)

A (WITNESS LaGRANGE) It is appendix page B-7.

Q Did you say B as in "boy"?

A (WITNESS LaGRANGE) Yes.

(Pause.)

Q And on the same page of I&E Bulletin 79-01B, where it says "outstanding items," the last sentence reads: "Identify in the notes section on page 1 of this attachment the actions planned for determining qualification and the schedule for completing these actions."

Now, in evaluating the Licensee's submittal did you verify that in all cases where there was an open item that the schedule for completing these actions was given?

A (WITNESS LaGRANGE) No. In many cases the schedule was not given.

Q And was that noted as a deficiency also?

A (WITNESS LaGRANGE) Well, no, because in response -- in the 90-day response they were to provide that information.

A (WITNESS ROSZTOCZY) I'm sorry, it has been noted as a deficiency in the SER, in the general part of the SER, not in the appendix.

Q In general, am I correct that as far as the backup documentation to qualification a simple vendor certification that a specification has been met is not adequate? Is that correct?

A (WITNESS ROSZTOCZY) A simple certification alone without any others, so-called, would not be enough.

Q If we take a look at the reactor building isolation, sheet 27, which is page 49 in UCS Exhibit 39.

(Pause.)

A (WITNESS LaGRANGE) That was sheet 27?

Q Yes, sheet 27 under reactor building isolation.

A (WITNESS LaGRANGE) I have that.

Q That is a solenoid valve CAV-139; is that correct?

A (WITNESS LaGRANGE) That is correct.

Q Now, the documentation referenced for qualification for operating time, temperature, pressure and humidity are two documents, one a record of the conversation between EDS and ASCO dated 8-13-80 and ASCO catalogue. Now, do you consider that an adequate documentation reference?

A (WITNESS LaGRANGE) First of all, you'll note the specification of the environment. This equipment only has to operate in an ambient environment, except for the radiation qualification, and there may very well be some information in this ASCO catalogue which shows that this has been qualified for radiation.

But we reserve the right to judge that. When we take a look at this reference to documentation, we may indeed find it is not adequate.

Q Under the column labeled "qualification method," it is blank. Would that indicate that no tests have been done?

A (WITNESS LaGRANGE) They are saying that the unit has an explosion-proof and watertight enclosure. Therefore there was no testing done.

Q And you consider that an adequate basis for qualification?

A (WITNESS LaGRANGE) At this point, until we take a more detailed look at the component, yes.

Q Well, this component is listed among those that are required to cope with a small break loss of coolant accident, isn't it?

A (WITNESS LaGRANGE) I would have to cross-reference the list. I don't know.

Q We did this with the lunch hour, so maybe I can help you find it.

(Pause.)

Q It's on page 8 of 17, the first top item.

A (WITNESS LaGRANGE) Okay, I have it.

Q Your testimony today was that the plant was safe enough to restart and that the equipment needed to cope with a small break loss of coolant accident was qualified; is that correct?

A (WITNESS LaGRANGE) That is correct.

Q And the Licensee says it is qualified --

A (WITNESS ROSZTOCZY) One second, please. I think the testimony really indicated this was based on a review of the summary sheets and the review of the backup documentation. The type of documentation referenced on the summary sheets is still ongoing.

Q Well, is basically your evaluation just looking to see whether the Licensee said it was qualified? Isn't that

what your review amounted to?

A (WITNESS LaGRANGE) Not entirely, no. There were several instances where we disagreed with the Licensee's qualification claims.

Q Well, let's see for this particular component, which is the demineralized water isolation valve. It is part of the equipment needed for reactor building isolation. Now, what review did you do to determine whether or not this equipment is qualified for a small break LOCA other than simply looking to see if the Licensee said it was?

A (WITNESS LaGRANGE) Okay. Given that the component is located in the auxiliary building, the only harsh environment it was to see during this accident was radiation. So I took the 1.8 times 10^{-4} rad and went back to the evaluation work sheet and saw that the qualification was above that value.

Q You saw that the Licensee said it was?

A (WITNESS LaGRANGE) Yes.

Q You have not looked at the record of conversation or the ASCO catalogue?

A (WITNESS LaGRANGE) Well, if you notice, the radiation qualification was actually done by materials search, and I did take a look at those attached sheets which listed the different materials and the radiation levels to

which they can perform their functions up to.

A (WITNESS LaGRANGE) Mr. Pollard, to help you along these lines, our requirement was that the Licensee has to perform a review and provide a summary sheet in terms of the outcome of his review. Furthermore, he has to collect together, arrange and maintain in a central file all the qualifications information that he based his review on. There was a deadline set for establishing the central files.

So the referenced information on the one that you are mentioning there has not been submitted to us. We have never asked for it. It is maintained in the Licensee's central file. It is our intent to inspect the central files through the normal NRC inspection process.

Q Would you agree, then, at least for the stage that review is in now, all that you have done is simply looked to see whether the Licensee said it is qualified? That is the extent of your evaluation, is that not correct?

A (WITNESS ROSZTOCZY) The main purpose of our review is simply to check whether the Licensee has performed the required review. It was never our intent to review every plant and every piece of equipment. You have to understand the number of equipment involved here. When it is grouped into equipment types, we are talking about a few hundred equipment types on each plant. And when you

multiply that with the number of plants, we are in the 10,000 range.

It was never our intent to repeat or duplicate the Licensee's effort. Our intent is simply to check whether the Licensee has done the work and whether the Licensee has done a responsible job.

A (WITNESS LaGRANGE) I think our review went a little further than what you have suggested. If we had depended solely on what the Licensee told us, we would only have looked at the outstanding items column here. And we did review all the numbers on here, and in many cases elicit outstanding items where they indicated there were none.

Q Perhaps -- let me use this as an example. The cable connectors which are still listed as unqualified, and then it is claimed they are going to be replaced prior to restart, this would be in the category of the common systems, sheets 9, 10, and 11, which is pages 82, 83 and 84 of UCS Exhibit 89.

Now, do either of you recall Bulletin 77-05 and 77-05A, which specifically requested identification of cable connectors which must operate in the accident environment?

A (WITNESS LaGRANGE) I do not.

A (WITNESS ROSZTOCZY) I am aware there was such a bulletin, yes.

Q And do I understand this was not one of the

bulletins where you went back and looked at the Licensee's earlier response?

A (WITNESS ROSZTOCZY) That is correct.

(Pause.)

MR. POLLARD: Mr. Chairman, I have distributed to the Board and the parties, and we will give the third copy to the reporter, two letters, one dated December 8th, 1977, from Mr. Herbein, Vice President of Met Ed, to Mr. Grier of the NRC, responding to Bulletin 77-05; and another letter, dated December 15th, 1977, from Mr. Herbein, Vice President of Met Ed, to the NRC, responding to I&E Bulletin 77-05A.

I'd like to have these marked for identification as UCS Exhibits 42 and 43 respectively.

(The documents referred to were marked UCS Exhibit Nos. 42 and 43 for identification.)

(Pause.)

BY MR. POLLARD: (Resuming

Q Have you had a chance to read the letters?

A (WITNESS ROSZTOCZY) Partially.

Q Partially. Well, perhaps for the purpose of my questioning we can focus on the first paragraph of the Licensee's December 15th, 1977, letter where they say in response to I&E Bulletin 77-05A:

"Met Ed expanded its review of the TMI safety systems to include all connectors which are required to function to mitigate an accident where the accident itself could adversely affect the ability of the system to perform its safety function."

And then it goes on to indicate that the only such connectors are those in the control rod drive mechanisms and for the neutron detectors. We now see in response to Bulletin 79-01B that there are in fact many other connectors which are not qualified.

And my question is to you: How do you know that now Met Ed has identified all the connectors that must operate in a small break LOCA environment?

A (WITNESS ROSZTOCZY) The only assurance that we have is we have requested them to review this. We requested them to provide information in summary form, the first time they have been required to provide kind of detailed information on each equipment type and review all equipment types in the system in that manner.

We have received this and our inspectors have conducted an inspection at Three Mile Island where they selected some systems or subsystems for inspection and then they reported and they report what they found. In general, they found that there was agreement between what they found in the plant and what has been shown in appropriate

drawings.

Q Is it your testimony that no inspection was done following the response to Bulletin 77-05 and 77-05A?

A (WITNESS ROSZTOCZY) I wouldn't know that, no.

Q So you don't know whether the situation now is any different than it was when the Licensee responded to the earlier bulletins?

A (WITNESS ROSZTOCZY) Yes, but what I do know is that the Licensee has since conducted a detailed review of all the safety-related equipment, identified them and reviewed the qualification on each of them. Now, whether it was the result of this qualification review, what they have done recently, or it was the result of some other steps in between where they identified other connectors, that I wouldn't know.

But they have a complete account at the present time and right now we have no reason to believe that it is not complete as far as connectors are concerned.

Q Do you know whether the staff has instituted any enforcement proceedings against the Licensee for supplying false information in response to Bulletin 77-05A?

MR. BAXTER: Objection, Mr. Chairman. There has been no clear linkage drawn, I don't believe, between UCS Exhibits 42 and 43, which request information with respect to failures of pin and socket type electrical connectors,

with the Conax connectors which are the subject of the staff's testimony.

Mr. Pollard is assuming that the bulletin, the scope of the bulletin, is identical to the scope of the testimony on connectors that are being discussed, and I don't believe it has been established. I don't think it's true.

MR. POLLARD: That is not the case, Mr. Chairman. Bulletin 77-05 dealt with pin and socket type connectors. Bulletin 77-05A expanded it to include all types of connectors, and that is why I phrased the question for false information in response to Bulletin 77-05A.

(Pause.)

MR. BAXTER: I withdraw the objection.

CHAIRMAN SMITH: You may answer.

WITNESS ROSZTOCZY: May I have the question again, please.

MR. POLLARD: It may not come out the same way, but I'll just repeat it.

BY MR. POLLARD: (Resuming)

Q Do you know if the staff has taken any action to institute enforcement action against the Licensee for having provided false information in response to Bulletin 77-05A?

A (WITNESS ROSZTOCZY) I was not involved in the 77-05 Bulletin reviews and I have no knowledge whether

anything of that sort has been done.

Q Do you think in the case of cable connectors, where the staff in 1977 had asked the Licensee to identify those connectors which were necessary for operation and then in 1979 asked again and this time we find more connectors that need to operate, and in fact we find out that they are not qualified, would those circumstances cause you to want to do an additional depth review with respect to cable connectors or not?

A (WITNESS ROSZTOCZY) I have to answer the question with some assumptions, because I don't have knowledge of the requirement in the example and exactly what was required in '77. But if your assumption that these connectors did fall under in the '77 bulletin and they were not included in the response at that time, if that assumption is correct, and if they were found later, then that would be an indication that the initial review had not been performed to the depth as normally one would expect.

Q So what basis do you have for knowing today, for your testimony, that the connectors that are going to be used for replacements are in fact qualified?

A (WITNESS ROSZTOCZY) I don't believe that Licensee has identified yet what connectors it's going to use for replacement. But before the replacement connectors are put into the plant, the qualification has to be reviewed by the

Licensee and it has to be placed in the central file, in the Licensee's central file on qualification.

(Pause.)

A (WITNESS ROSZTOCZY) I'm sorry, I have to correct my statement. They did provide information on what they are going to use for replacement.

Q My question is, how do you know then those are qualified??

A (WITNESS ROSZTOCZY) They are required to establish the qualification of those connectors prior to placing them in the plant and maintain the qualification information in the central file.

Q So for those replacement connectors, do you plan to do anything more than review the equivalent of the work sheet, or are you going to look at the backup documentation for them?

A (WITNESS ROSZTOCZY) It is expected that they will be handled through inspection of the central files. So there will be kind of periodic inspections of the central files and some items going to be inspected. It will not be 100 percent inspection.

(Pause.)

Q On your testimony on page 4, near the bottom of the page, we had just been discussing the Conax connectors, and then you go on to discuss two Limitorque motor operators

that may become submerged and have not been qualified for submergence. Are those Limitorque operators referred to there makeup valves 2A and 2B?

A (WITNESS LaGRANGE) MOA 2A and 2B, yes.

Q Now, on page 5 you discuss the justification for these two motor operators that the Licensee has provided, which demonstrates that the motor operators will be capable of performing their containment isolation functions following this postulated event.

Did you verify that the emergency procedures require the operator to check that these valves are closed?

A (WITNESS LaGRANGE) No.

Q If the emergency procedures did not require that the operator check that the valves be closed, would that change your evaluation of the justification for restart with unqualified valves?

A (WITNESS ROSZTOCZY) It certainly would have some influence on it, yes.

Q But you didn't think it was necessary to check the emergency procedures?

A (WITNESS ROSZTOCZY) We do not have the emergency procedures. They were not required to submit the emergency procedures together with this. And again, emergency procedures are being inspected through other procedures. It was not part of this review.

Q All right. Let me go to the aspect of the Licensee's justification that once these valves are closed it is implied that they will not have to be opened again; is that correct?

A (WITNESS LaGRANGE) If they do have to be opened again for any reason, it takes the shift supervisor to make that determination, and he apparently has procedures he has to follow to make that determination.

Q That is correct, though, that the valve rotors are going to become submerged?

A (WITNESS LaGRANGE) They could become submerged, yes.

Q And that your basis for saying this is nevertheless acceptable must be an implicit assumption that they don't have to be reopened after they've been submerged; is that correct?

A (WITNESS LaGRANGE) That is correct.

Q Suppose I were to tell you that the emergency procedures specified under certain conditions that these valves should be reopened. Would that change your evaluation?

A (WITNESS LaGRANGE) Yes.

(Pause.)

MR. POLLARD: Mr. Chairman, I'm sorry for the delay. I am just trying to figure out how to -- I don't

have extra copies of Licensee's --

CHAIRMAN SMITH: Are you following up now --

MR. POLLARD: On this question of the makeup valves, why the staff thinks the justification provided by the Licensee is acceptable.

DR. JORDAN: Do you have copies of the procedures there?

MR. POLLARD: But I have only one and Mr. Cutchin informs me the staff doesn't have their copies here.

CHAIRMAN SMITH: Well, give one to the witness and see if he agrees that the procedure is as you say it is, and then have the other one to be circulated among counsel. And if we need more we'll get more.

MR. BAXTER: Which exhibits?

MR. POLLARD: Two exhibits, 48 and 51.

CHAIRMAN SMITH: You just have a single copy?

MR. POLLARD: I only have my copy.

CHAIRMAN SMITH: Just give it to the witness and we'll pause and ascertain whether the procedure is as you state, if we have to.

(Pause.)

MR. CUTCHIN: These exhibits are already in evidence, Mr. Chairman, and they will probably speak rather plainly for themselves.

CHAIRMAN SMITH: It would be helpful if it were

right here.

MR. CUTCHIN: It will help for the record, but if it is a matter of reference all he need do is cite back to those exhibits.

(Pause.)

CHAIRMAN SMITH: We'll take our mid-afternoon break of 15 minutes.

(Recess.)

MR. POLLARD: The discussion Mr. Sholly and I had was whether or not we should go through this on the record or just do it in proposed findings. So I will just put on the record what I see in the emergency procedures and then if we have any questions for the witnesses to respond to we'll see.

CHAIRMAN SMITH: I think for readability when we are reading the record maybe if you'll point to the part of the exhibits that you rely on and use your own judgment.

I'm just thinking about readability.

MR. POLLARD: That is why I thought I would summarize what I think the emergency procedure show.

Licensee Exhibit 48, which is 1202-6B, Loss of Reactor Coolant, Reactor Pressure, Small Break LOCA, Causing Automatic High Pressure Injection, at page 16 there is a table number 1 of indications the operator should check following initiation of HPI. And it lists makeup valve 2A and makeup valve 2A. It is an obvious typing error. I assume it probably should be makup valve 2B, since they are opposite sides of the indication panel.

Then, when you turn to table 2 of the same procedure, on page 16, it lists, on the righthand side under items L and M, makeup valves 2A and 2B. So we have an inconsistency. It appears on Table 1 the valves are identified as being on the left side of the status light

panel and on the right side, whereas on table 2 they are both on the right side.

The procedure that I was going to use on the requiring operation of makeup valves 2A and 2B during an accident, after they might be submerged is Licensee Exhibit 51, which is 1202-39, Inadequate Core Cooling (No LOCA). And the discussion we had at the witness table during the break was whether or not using this procedure the valves would be submerged.

And I think I'm going to have to study it some more myself, since the procedure itself does call for opening of the PORV and controlling pressure that way, which I assume would eventually lead to some water in the containment building.

But the specific place where it refers to use of these valves would be on pages 4 and 5, where the operators are instructed to throttle HPI and to establish letdown flow to gain reactor coolant system pressure flow. And the makeup valves 2A and 2B are the letdown cooler isolation valves located inside containment.

CHAIRMAN SMITH: So they have to be open.

DR. JORDAN: At least they have to be open for the procedure.

MR. POLLARD: They have to be open for that procedure 1202-39. I have to admit at this point it is not

clear in my mind whether or not following this procedure would lead to the valves being submerged, and I would just admit that after having that pointed out to me I cannot proceed along this line of questioning. I'll just have to study it and do what I can in findings.

CHAIRMAN SMITH: Mr. Baxter?

MR. BAXTER: We are engaging a little bit in proposed oral findings, I guess. I cannot respond to all Mr. Pollard's comments. I note that both of the procedures that are being discussed, at least the attachment to Licensee's Exhibit 48 and all of Licensee Exhibit 51, are not limited to small break loss of coolant accidents that are indeed in inadequate core cooling procedure for events beyond the design basis.

MR. POLLARD: That reminds me of another question, Mr. Baxter's explanation.

BY MR. POLLARD: (Resuming)

Q In deciding whether or not Three Mile Island Unit 1 should be allowed to restart, did you evaluate the environmental qualification of the instrumentation added to detect inadequate core cooling?

A (WITNESS ROSZTOCZY) One of the requirements that we have is that new instrumentation or new equipment has to be installed in the plant because of the lessons learned from Three Mile Island, must meet the appropriate

environmental qualification requirements. As part of the February 1 submittal, the Licensees were required to provide qualification information on those equipment which have already been installed at that time.

Equipment which will be installed after February 1 of 1980, the qualification has to be established prior to installation of that equipment.

Q Well, perhaps we could take an example of this, which is where I was going next anyway. Does the PORV block valve have to be qualified for restart?

A (WITNESS ROSZTOCZY) The PORV valve is not a new equipment. I thought your question was relating to new equipment which has to be installed.

Q Well, perhaps it was more generally related to lessons learned, whether or it was new equipment or old equipment.

(Pause.)

A (WITNESS ROSZTOCZY) I am not sure if the PORV block valve is on the list, but identification had to be made of those equipment they need to safely handle the plant, and if it was on the list then yes, it is required.

Q When you say the list are you referring to the Licensee's May 18 letter?

A (WITNESS ROSZTOCZY) The Licensee's January 30 submittal.

Q The PORV is clearly on the January 30 submittal. I think I can establish that. But my question was, for restart?

A (WITNESS ROSZTOCZY) No, I --

Q Licensee's May 18 letter provided the list of equipment that was required for restart.

A (WITNESS ROSZTOCZY) Correct.

Q And have you evaluated the May 18 letter and the list attached to it to make sure that all equipment necessary to cope with a small break loss of coolant accident has been included on that list?

A (WITNESS ROSZTOCZY) This is what we discussed earlier and we told you that this evaluation has been done but it was done in a different division and we just have the final statement that they agree with the data that was provided. Now if you want to check we can check whether the block valve is on that list.

Q I can do that outside the hearing, but I just want to make sure that when you say the list you are referring to the list in the Licensee's May 18 letter.

A (WITNESS ROSZTOCZY) That is correct.

Q So it is the staff position that equipment not on that list does not need to be qualified prior to restart?

A (WITNESS ROSZTOCZY) That is correct. The equipment which is not on that list must be qualified by

June '82. Should restart come after June '82 then obviously it has to be qualified.

Q So it would futile for me to keep asking more questions about whether a particular piece of equipment is qualified because someone else looked at that?

A (WITNESS ROSZTOCZY) I'm sorry, I didn't follow that.

Q What I asked you -- I asked you does the PORV block valve have to be qualified prior to restart, and you said if it was on the list it does. If it's not it doesn't.

A (WITNESS ROSZTOCZY) That's correct.

Q So that if I asked you about the saturation meter or the emergency feedwater flow indicators or the position indicators for the PORV and the safety valves, all you are going to tell me is if it's on the list, yes, and if it's not on the list, no.

A (WITNESS ROSZTOCZY) Yes, that is part of it. The other part of it is what I told you earlier, that if it is a new equipment, something new that is being put into the plant, if it was put into the plant prior to February 1, 1980, then it should be part of the February 1 submittal and will be evaluated through the review of that submittal.

If it is being put in after February 1 then the qualification has to be established before it is installed in the plant.

Q Well, we have -- I think we have on the record that the saturation meter has to be installed prior to restart. Well, let us assume that it does.

DR. JORDAN: Let's assume it does.

CHAIRMAN SMITH: It is endlessly on the record, over and over again.

BY MR. POLLARD: (Resuming)

Q Then you have reviewed the qualifications, then, for the inputs to the saturation meter, is that correct?

A (WITNESS ROSZTOCZY) No, that is not correct. The requirement is that prior to being installed it has to be properly qualified for the environment that it has to function in. And the information to establish this qualification has to be placed in the central files. The only way we would check on this is to inspect the central files.

Q Let's take a look at the work sheet on additional accident monitoring equipment -- sheets 8 to 15. An example of that is at page 72 of UCS Exhibit 39.

(Pause.)

Q Now on page 16 or 17 of Licensee's May 18 list it lists RC-5-A-TE-1 all the way through RC-5-B-TE-4, which are all listed as reactor coolant inlet temperature RTDs and the Licensee says these are qualified.

My question to you is, looking at the work sheet,

let's take, for example, work sheet 8, it identifies the function as for calculation of TSAT and it identifies the service as reactor inlet temperature. Do you believe that information is accurate?

A (WITNESS LaGRANGE) I didn't really review that information for its accuracy.

Q Well the Bulletin required the Licensee to identify the function and the service, right, but you did not consider that informaton in deciding whether or not this submittal was sufficient?

A (WITNESS LaGRANGE) No, I looked at the qualification information. I can make a determination as to whether or not it appears to be qualified regardless of what its function and service is.

Q Would it concern you that the TSAT meter does not in fact receive input for the reactor inlet temperature?

A (WITNESS LaGRANGE) Not if all the other information on here is correct. I can still make that determination as to whether it is or is not qualified.

Q Well, let's suppose the TSAT meter receives its input from reactor outlet temperature. Wouldn't that affect your determination of whether this list of equipment is adequate to justify restart?

A (WITNESS LaGRANGE) I don't know. I did not review that list and I do not know what --

Q Someone -- the staff is so huge you never have t' - right witness on the stand.

DR. JORDAN: I think it has been established that these people did not decide what goes on the list and that is another place.

BY MR. POLLARD: (Resuming)

Q Do you know what -- well, I suppose there's no point in asking. You don't know what instrument supplies the pressure input to the TSAT meter, then, do you?

A (WITNESS LaGRANGE) I don't know.

Q Do you know whether the TSAT meter and its inputs have to be qualified for restart?

A (WITNESS LaGRANGE) If it's listed here on the May 18 submittal I assume it does.

Q Did you in the course of your review for your testimony look at the extent of environmental qualification for the in-core thermocouples?

A (WITNESS LaGRANGE) Could you repeat that?

Q Did you look at the extent of environmental qualification of the in-core thermocouples?

A (WITNESS LaGRANGE) If they are listed in the May 18 submittals.

Q Did you review the adequacy of the Licensee's calculation of the flood level in containment following the small break loss of coolant accident?

A (WITNESS LaGRANGE) No.

Q You simply assumed that the flood level they stated was, in fact, the flood level?

A (WITNESS LaGRANGE) Yes.

Q Did you look at the margin between the stated flood level and the location of the equipment?

A (WITNESS LaGRANGE) In most cases no. I either have an indication of above flood level or below flood level.

Q Would you find it acceptable for restart, assuming a piece of equipment is on the May 18, for it to be located 1.38 inches above the calculated flood level?

A (WITNESS LaGRANGE) I don't believe we're adding any margin onto the calculated flood level, so I would have found that acceptable, yes.

Q Am I correct that the calculated flood level originally was five feet, nine and three-quarters inches and the Licensee now claims he has recalculated it to 5.66 feet or five feet, 7.92 inches?

A (WITNESS LaGRANGE) Yes.

Q Do you think that three significant figures is a reasonable way to specify flood level Do you think you can determine flood level that accurately?

A (WITNESS LaGRANGE) Well, I assume there are probably a lot of conservatisms in the calculation of that flood level, but I would find it hard to believe that you

can get it right down to three digits.

Q Were you aware that the flood level during the TMI-2 accident was something like eight or nine feet?

A (WITNESS LaGRANGE) Yes, I have heard that, yes.

Q And you nevertheless think that less than six feet is adequate for Three Mile Island Unit 1?

A (WITNESS LaGRANGE) I really did not review the flood level, how they calculated it.

Q But nevertheless you conclude the plant is safe enough to restart?

A (WITNESS LaGRANGE) I concluded, based on the levels specified, that the only two items of equipment that may be submerged were the two motor operators. And I took a look at those for submergence.

A (WITNESS ROSZTOCZY) Mr. Pollar in this case the assumption is that it is safety restart provided the flood level would be maintained below the specified value.

Q That was going to lead to my next series of questions. Do you think, then, it would be appropriate to have a licensing condition in this Board decision that the emergency procedures shall specify that under no circumstances should the containment level be allowed to exceed 5.94 feet or 5.66 feet, whatever the case may be?

A (WITNESS ROSZTOCZY) I'm not sure that is exactly the best way, but something of that sort I think would be

appropriate.

Q Well, you see, the thing that concerns me, Mr. Rosztoczy, is during the TMI-2 accident there is testimony on this record that the operators decided not to go into their recirculation mode and, as best I can understand the Licensee's submittals to date, if they have calculated this flood level on the assumption that as soon as there is enough water, or shortly thereafter, to provide net positive suction into the pumps that they will go into recirc.

What my concern is, that if we have another accident similar to TMI-2 and the operators decide for some reason that it is not safe or they choose not to go into recirculation, the flood level is going to be substantially higher than 5.66 feet and we have some equipment which is not qualified for submergence that is not very far above the calculated flood level.

And so what I am trying to probe, and perhaps I have the wrong witnesses again, is how you accounted for this problem, which occurred during the TMI-2 accident, in your evaluation of TMI-1 in order to conclude that this plant is safe enough to restart.

A (WITNESS ROSZTOCZY) I think I answered that. We took the calculated flood level. We based our evaluation on that flood level, and specified in our SER that our conclusions are dependent on maintaining this flood level

and the actual flood level for every plant has been put into the SER that you could not find in SERs before.

And it remains to some other means, which is beyond my responsibility, to assure that that flood level would not be exceeded.

Q Well, am I correct, then, that as far as your testimony goes that if the flood level were to exceed whatever the Licensee has specified you are unable to say whether or not the plant is safe enough to resume operation?

A (WITNESS ROSZTOCZY) That is correct.

Q Now with respect to this flood level I noted in the environmental qualification safety evaluation report at page 5 that originally the Licensee failed to identify that makeup valves 2A and 2B were below the flood level. Can you tell me of any action the staff took other than simply telling Met Ed to look again after you discovered that the valves were in fact below the flood level and had not been reported to be so by Met Ed?

I mean, did you just simply tell them to go back and look again, or did you do anything else?

A (WITNESS ROSZTOCZY) We identified in our SER that those are above and we required them to address it and take corrective action. Have we taken any other steps? I am not aware of any other steps.

Q Okay, decay heat valves DHV-1 and DHV-2 are listed

on Licensee's May 18 submittal at page six of 17. So as far as your evaluation is concerned, decay heat valves 1 and 2 are required to be environmentally qualified prior to restart, am I correct?

A (WITNESS LaGRANGE) That is correct.

Q Now did you or did anyone on the staff attempt to verify what other equipment might be necessary in order for decay heat valves 1 and 2 to be operable in the post-LOCA environment?

A (WITNESS LaGRANGE) No. I just have to say once again that review was not done by us.

Q I know, but you're here as the staff witness, so the question I'm asking is, do you know whether anyone on the staff has done any evaluation to determine whether this May 18 list of equipment is complete? That is, is there no other equipment that is required to be environmentally qualified in order to put the plant into safe shutdown condition following a small break LOCA?

A (WITNESS ROSZTOCZY) The answer is yes. The Division of System Integration has done that review.

Q And they have concluded that this list is adequate?

A (WITNESS ROSZTOCZY) Yes.

Q Okay.

(Pause.)

Q If you could turn, please, to the decay heat

removal work sheets. It is on sheet 3 and sheet 4. I'm sorry that is on the Licensee's January 30 submittal.

A (WITNESS LaGRANGE) Okay, we have --

Q If you give me a moment, I have to find the page reference in my exhibits. That is page 41 on UCS Exhibit 39. It covers decay heat valve.

Once again, if I look into the service, on the left, under equipment description it says service, decay heat removal pump A discharge valve. Did you attempt to verify whether or not this is the decay heat removal pump discharge valve?

A (WITNESS LaGRANGE) No.

Q Okay, just to save time, let me have you assume that this is in fact a valve inside containment on the suction line for the decay heat pumps which is used for the normal decay heat removal path. In the restart report, Licensee's Exhibit 1, that is figure 302-640. And on restart figure 302-640, next to decay heat valve 1 there is an indication which says this valve is interlocked with RC-3A pressure switch 2 and decay heat valve 2 is interlocked to RC-3A PS 5.

Now perhaps you will recall, Dr. Rosztoczy that on suction valves the staff requires them to be interlocked and they can't open if reactor coolant pressure is too high, is that correct?

A (WITNESS ROSZTOCZY) It's possible.

Q Well, we worked together on this and I can't even get you to agree.

DR. JORDAN: We all know that is the case.

BY MR. POLLARD: (Resuming)

Q My concern is I see nowhere in the Licensee's May 18 submittal or the January 30 submittal the fact that these pressure switches must be qualified. Now if decay heat valves 1 and 2 are required to be operable for your testimony and recommending to this Board to allow Three Mile Island to restart, and these pressure switches must be operable in order for those valves to be opened, then is it not fair to conclude that you are not yet in a position to determine whether or not Three Mile Island Unit 1 should be allowed to restart?

A (WITNESS ROSZTOCZY) If your assumptions are correct then you have a concern there and what we can do is bring your concern to the attention of those who have done the systems review.

Q Well, you see the difficulty is -- well, would I be correct, then, and perhaps you can help me write my findings, that if these pressure switches are in fact interlocked with these valves and those pressure switches are not on the Licensee's list of May 18, that then the plant should not be allowed to restart until you have

determined the environmental qualification of those pressure switches?

A (WITNESS ROSZTOCZY) If the Licensee's May 18 submittal is incorrect in some respect like, for example, it is not complete, it didn't include some pressure switches that it should have included, then yes, it would be our position that the Licensee should correct this and should provide the appropriate information for those items which are on the list.

Q I'm sorry if I keep asking the same question, but I forget sometimes. Neither of you two made an attempt to determine whether the May 18 list was complete, that is, that it included all of the equipment which had to be environmentally qualified to achieve safe shutdown following a small break LOCA?

A (WITNESS ROSZTOCZY) That is correct. That review was done in another department.

Q But there was someone on the staff whose responsibility that was?

A (WITNESS ROSZTOCZY) That is correct.

Q So it is not just the Licensee's error.

A (WITNESS ROSZTOCZY) That is correct.

DR. JORDAN: Mr. Pollard, while you are at that figure, refresh my memory. Those two valves normally closed valve and require operator action after the pressure is

reduced. Those valves must be opened.

MR. POLLARD: That is correct. These are valves, the section valves on the RHR system which are interlocked so that they cannot be opened if the reactor coolant system pressure is too high. And I don't know if it is true for Three Mile Island Unit 1, but the staff position was that the interlock should also close the valves if they are open and reactor coolant system pressure starts to increase above the limit.

DR. JORDAN: Are they manually operated valves?

MR. POLLARD: They are manually controlled valves. The operator would have to take steps to open the valves and the interlock is there to prevent him from opening them if the pressure is too high.

DR. JORDAN: Good. That helps. Thank you.

MR. POLLARD: What my concern is, if the pressure systems fail he may never be able to open the valves.

DR. JORDAN: I understand your concern. It was just an aside.

MR. CUTCHIN: Mr. Chairman, I would note again for the record that the witnesses have said that they reviewed for the capability to take the plant to safe shutdown being defined as hot shutdown. And these valves, I believe, are used to take the plant to cold.

MR. POLLARD: I believe the witnesses have also

testified that the May 18 list by the Licensee is supposed to include only that equipment necessary to cope with a small break LOCA and I keep getting that answer from these witnesses. If it is on the list it has to be qualified. If it is not on the list it doesn't have to be qualified.

CHAIRMAN SMITH: Your last question and answer poses a premise for the witnesses that there is an error both by the Licensee and by the component of the staff which reviewed it.

MR. POLLARD: Yes.

CHAIRMAN SMITH: And they seemed to accept that premise in their answer, is that your understanding?

MR. POLLARD: That was my understanding.

CHAIRMAN SMITH: Is that your understanding?

MR. POLLARD: The witness qualified it by assuming all of the things I stated were true, that in fact these are the pressure switches, that in fact they must operate in order for the valves to operate. I think he qualified it to that extent.

MR. CUTCHIN: So the record reflects, Mr. Chairman, that if there was an error it is an error involving both the Licensee and the staff.

CHAIRMAN SMITH: Thank you.

BY MR. POLLARD: (Resuming)

Q The master list for the decay heat removal system,

at page 202, identifies a junction box inside containment, junction box J-21, is that correct?

A (WITNESS LaGRANGE) I'm sorry, Mr. Pollard, where is that?

Q I'm sorry. Perhaps I went backwards. I'm on the master list for the decay heat removal system which consists of two sheets. On sheet one there is a junction box J-20 located in the primary containment and sheet 2 is a junction box J-21 located inside primary containment.

CHAIRMAN SMITH: Could you give us the exhibit number?

MR. POLLARD: I don't think I have it in my exhibit, Mr. Chairman. This is one of the sheets from the Licensee's January 30th submittal. I'm just trying to establish orally what is in that page. It may be in my Exhibit 39.

CHAIRMAN SMITH: Well, if it is not intended to be, okay. I just thought that we were referring to an exhibit.

(Pause.)

DR. JORDAN: Have you found the list?

WITNESS LaGRANGE: Oh, yes, I have.

BY MR. POLLARD: (Resuming)

Q As far as I can determine, there is no work sheet for those junction boxes. Can you describe for me what a junction box is?

A (WITNESS LaGRANGE) No.

Q And on other master lists, I can give you an example if you wish, but do you recall seeing identification of components called terminal boxes?

(Pause.)

Q You can find that an example on emergency feedwater master list, sheet 3 of 3. There are several terminal boxes listed.

A (WITNESS LaGRANGE) Okay.

Q By the way, that is page 13 of UCS Exhibit 39. Can you tell me what a terminal box is?

A (WITNESS LaGRANGE) Not in great detail, no.

Q On the Licensee's May 18th submittal, I see I cannot find any indication of either a component called the junction box or the terminal box.

MR. CUTCHIN: That may be, Mr. Chairman, because on his page 13 they are listed as outside containment. Does that mean they are in the aux building? I think we should establish where they are.

MR. POLLARD: Mr. Cutchin, I don't know whether you have any objections or not. But other components on the Licensee's May 18th list, some are inside the reactor building and some are in the auxiliary building.

MR. CUTCHIN: My only point, Mr. Chairman, is from Exhibit 13 alone and anything that has been said so far, there has been no establishment as to their location other than outside primary containment. I think unless it can be shown either through the mouths of these witnesses or by other evidence that they are in the auxiliary building, we are spending a lot of time here developing a record that is rather useless.

(Pause.)

MR. POLLARD: I'll move on, then, for the time

being. I assume from the Board's silence I must do something.

CHAIRMAN SMITH: Well, there's no objection. There's nothing for us to rule on.

BY MR. POLLARD: (Resuming)

Q So as I understand you, Mr. LaGrange, you don't know or cannot describe what a junction box is and what a terminal box is, and to the best of your recollection you have reviewed no information on the environmental qualification of those components; is that correct?

A (WITNESS LaGRANGE) Unless a terminal box is the same as a terminal block.

Q Okay. On the Licensee's letter of May 18th, on page 17 of 17, they do list terminal blocks.

CHAIRMAN SMITH: Terminal blocks?

MR. POLLARD: It says "terminal block being located in the auxiliary building" and that refers us back to the 79-01B submittal, volume 1A, common, sheet 2.

BY MR. POLLARD: (Resuming)

Q Now, from your review of this work sheet, have you decided that you agree with the Licensee that terminal blocks have been adequately qualified?

A (WITNESS LaGRANGE) For the small break LOCA, yes.

Q Could you tell me, please, what a comparison test

is?

A (WITNESS LaGRANGE) A comparison test was a listing of the different materials that make up the terminal block, and they compared the radiation and thermal aging qualification information available from various sources for that material to determine what they would be qualified for.

Q Now, in your review of the qualification of these terminal blocks, did you have occasion to look at the type of enclosure that the terminal blocks are installed in?

A (WITNESS LaGRANGE) No.

Q And this work sheet does indicate that the terminal blocks are inside containment, does it not?

A (WITNESS LaGRANGE) Yes.

Q Do you think whether or not a terminal block is in enclosure will affect whether or not it is adequately qualified?

A (WITNESS LaGRANGE) I think it would depend on the details of the enclosure.

Q Can you describe for me an acceptable enclosure?

A (WITNESS LaGRANGE) It would depend again on what parameter you were trying to claim qualification for because of the enclosure. If you have a watertight enclosure, obviously you may be qualified for submergence. If you have a thick enough enclosure, perhaps you could qualify for

radiation. Containment sray, chemical spray; if it was a watertight enclosure, you may be able to qualify or exempt the qualification for containment or chemical spray.

Q To your knowledge has the NRC done any research to determine what size of an opening in an enclosure is an acceptable opening?

A (WITNESS LaGRANGE) Not to my knowledge, no.

(Pause.)

MR. POLLARD: Mr. Chairman, I have distributed to the Board and the parties, and also loaned a copy to the witnesses, of a report numbered NUREG/CR-1682, entitled "Electrical Insulators in a Reactor Accident Environment," which was printed in January of 1981, prepared by Sandia National Laboratories for the U.S. Nuclear Regulatory Commission. Now I ask that this be marked for identification as UCS Exhibit 44.

(The document referred to was marked UCS Exhibit No. 44 for identification.)

BY MR. POLLARD: (Resuming)

Q Have either of you seen this report before?

A (WITNESS LaGRANGE) I haven't.

A (WITNESS ROSZTOCZY) I haven't, either.

Q In your capacity, Mr. LaGrange, of overseeing technical assistance contracts for equipment qualification,

how do you go about sharing with your other colleagues on the staff the results of the research that NRC is doing?

A (WITNESS LaGRANGE) My technical assistance contracts are not research-related. Mine are more casework review being done for specific plants, in which case the technical contractor is assisting me to perform our review for input to the safety evaluation report. I have never been involved in something that would result in something like this document here, that would have to be shared with other people.

A (WITNESS ROSZTOCZY) I'm not sure that question is relevant to this report, in the sense that this is not a technical assistance contract. What we are talking here, this is one of the research contracts. And the way information is being disseminated in our organization is that reports like this are available to our people. We receive copies of it.

I didn't say that I didn't receive a copy. It is very likely that I was on a distribution list and I have received a copy of this report. And they are routed to the individuals who are handling these type of previews. They read it as part of the normal daily routine, their normal duties, and then they feed it into our normal work. This is one way how it is being done.

Another way how it is being done is that

periodically we meet with the contractor who has performed the test or who had provided the report and we ask them to present the result to us, and we try to have always a number of people there from the equipment qualification area, who then listen to the presentations and thus learn about these details.

In addition to this, the research part of our organization, when some significant information has been gathered or came out of that research contractor, then they write what's called a research information letter. And then this research information letter is sent to the other divisions to have them -- and they review and their understanding of the information that was gathered.

Q Mr. LaGrange, were you the one who reviewed the Licensee's data on environmental qualification of the terminal blocks or did someone else do it?

A (WITNESS LaGRANGE) No, I reviewed that information.

Q And you did not receive a research information letter on this report?

A (WITNESS LaGRANGE) I haven't seen it, no.

A (WITNESS ROSZTOCZY) Again, let's clarify that statement. What Mr. LaGrange has done, he has performed a review for a given submittal on a given plant. And that review across the board covers all equipment types and it

covers only the summary sheets and the information provided on the summary sheets. It does not cover the backup information, the referenced information that established the qualification.

As I mentioned to you earlier, the testing reports, the backup reports, are being reviewed separately. When we conduct those reviews, those are done more along equipment types as opposed to individual plants. The outcome of those reviews for a given equipment type is summarized in a summary sheet that is fed into the computer. We have a computer assist him.

And we have an ongoing program, a program we just started after we finished these SER's, to cross-reference these and see if a certain type of equipment, like terminal blocks, have been properly qualified and have been properly identified in the various plant submittals.

Now, this part of the review is done by different people, and among those are some who are specifically keeping information on a certain equipment type. If you are interested in terminal blocks, for example, we have a gentleman working for us at the Franklin Research Institute who is following information on those, and we will be turning toward him whenever we have a question about terminal blocks.

Q Well, what I am trying to get at is to understand

how you could prepare testimony saying Three Mile Island Unit 1 is safe enough to restart without knowing whether or not the terminal blocks located inside containment, which are used in various systems needed even for just safe shutdown or hot shutdown following a small break LOCA -- when I have a report published in January 1981 which states, if you just look at the abstract: Terminal blocks are probably the weakest links in a reactor's electrical system, and concern about their presence in a safety-related circumstance is fully justified.

On page 14 of the report --

MR. CUTCHIN: Mr. Chairman, is he going to pose a question on this or is this an effort to get material into the record that can be arguably cited as evidence? Because if so, I object to these readings because there's no way to establish the truth of the matters stated within this document.

MR. POLLARD: What I was going to do was read selected segments from the report and ask the witnesses in view of such statements, do they think that they need to reassess the environmental qualification of the terminal blocks for Three Mile Island Unit 1.

CHAIRMAN SMITH: What are you going to do about the problem that Mr. Cutchin referred to? You're not, I don't think, going to --

(Pause.)

CHAIRMAN SMITH: You're going to end up with his question -- your question and his answer, but your question will not be citable, will not be a basis for findings.

MR. POLLARD: Well, first of all, I think if I can demonstrate to these witnesses that these kinds of statements -- they might at least raise reasonable doubts in these witnesses' minds that they ought to go back and look at that.

CHAIRMAN SMITH: You can try that.

MR. POLLARD: The second thing I am going to do, at the end when I move to have my exhibits introduced into evidence, if there is an objection as to we can't establish the truth of this, we have a stipulation in the past that we used for other exhibits that this is not to be for the truth of the matter, but for the fact that such a report was written and received by the agency.

And I will cite it in my findings as evidence that the staff's evaluation has not been adequate since these witnesses say they are not familiar with the report. They don't know -- they are the ones that looked at the qualification of the terminal blocks. They are ready to allow this plant to restart in the face of a lengthy research report which I think I can demonstrate shows that the probability of failure of terminal blocks inside

containment is relatively high.

CHAIRMAN SMITH: Well, you won't be able to use the report.

MR. BAXTER: Mr. Chairman, excuse me. As Mr. Pollard said, the report goes to terminal blocks inside containment. The terminal block, at least the one we referred to on page 17 of 17 in Licensee's May submittal, is in the auxiliary building.

MR. POLLARD: And it references me back to this work sheet, where the work sheet says it is inside containment.

We also have the problem, which I tried to straighten out but couldn't, when we have listed separately on the master list junction boxes, terminal boxes, and then a work sheet on terminal blocks, and I tried to get the witness to tell me what was a junction box and terminal box, and he can't. So I am somewhat at a loss as to why we have different terminology in the same submittal.

MR. CUTCHIN: Which is my very point, Mr. Chairman. It has very little evidentiary value.

CHAIRMAN SMITH: And what he hopes -- well, let's proceed. Let's take it a question at a time. I understand what your approach is going to be, and you have been warned that your questions themselves will not be citable as evidence of the statements made in those questions. But I

understand where you're going and what your approach is, and you hope to end up by demonstrating that whether the statements in the Sandia report are true or not, the failure of the witnesses to inquire into such a matter is an indication of inadequate analysis and review. Is that your point?

MR. POLLARD: Yes, sir.

CHAIRMAN SMITH: Let's see what happens.

MR. BAXTER: Mr. Chairman, I don't mean to cut off, but I am advised that the work sheet Mr. Pollard refers to is in error and that there are no terminal box and safety circuits in the TMI-1 containment building any more. So I'm just concerned that we're wasting an awful lot of time about a report that really does not apply.

CHAIRMAN SMITH: Would that make a difference in your inquiry?

DR. JORDAN: This puzzles me a little bit, because I notice that the report specifically reference the TMI-2, the weepholes and so on of the terminal blocks. This is Appendix A I was looking at.

MR. BAXTER: Well, we've done a lot of work since the accident, Dr. Jordan.

MR. POLLARD: I've also tried to establish on the record that Licensee's submittals have been in error in the past, and the staff has not looked. So the Licensee may be

in error in saying the terminal blocks are inside there.

MR. BAXTER: We have absolutely no evidence that they are, either.

CHAIRMAN SMITH: We have some evidence that they are.

MR. BAXTER: The work sheet I am advised is in error. But the evidence that we have and the staff's testimony says that it is in the auxiliary building.

MR. POLLARD: That was the Licensee's submittal.

MR. BAXTER: That's right, but that's the only thing in evidence right now.

CHAIRMAN SMITH: All right. They are in the auxiliary building. They are in the auxiliary building. Assuming that is the case, what does that do to your position?

MR. POLLARD: I don't think it does anything to my position if I succeed in getting my Exhibit 39 introduced, because there are other terminal boxes located inside containment on master lists.

CHAIRMAN SMITH: Okay, it's back to you.

MR. POLLARD: I didn't mean 39. It might be 38, the master list. I'm sorry.

Mr. Chairman, maybe I don't have to go through and ask the witnesses questions. Perhaps I could now offer into evidence UCS Exhibit No. 44 and see what's going to happen.

DR. JORDAN: But do you have already in evidence from your exhibits thus far -- do you believe you have in evidence that there are terminal blocks important to safety inside the containment building?

MR. POLLARD: Not until I introduce the other exhibits into evidence.

DR. JORDAN: That is where you're going?

MR. POLLARD: Eventually, yes, sir.

CHAIRMAN SMITH: The other exhibits that you've already identified?

MR. POLLARD: Yes, sir.

CHAIRMAN SMITH: I see no shortcut to it. You might as well begin, whichever way you wish.

MR. POLLARD: Well, did I have an objection that was sustained that I cannot read these sentences?

CHAIRMAN SMITH: No, we said that you can read sentences and base questions on them. But the sentences you read in the form of questions will not be available to you, or at least they will not be available to the Board for findings.

Then you will offer the exhibit, I guess, and then somebody is going to object. And then we will find out whether they object to the exhibit on the basis that we can't cross-examine the authors on the merits of your statements, and you will say, why, I offer it for the fact

that the report was made, and we're going from there. I can just see -- I think I can see the whole afternoon ahead of us. So you might as well get on your way.

MR. POLLARD: I expect the same thing to happen as happened with UCS 18, which is the letter from Dr. Hanauer talking about what he learned from the accident, where we introduced that not for the truth of the matter but for the fact that it was written and it said this.

CHAIRMAN SMITH: Have you gentlemen read this report that he's referring to?

WITNESS ROSZTOCZY: No.

CHAIRMAN SMITH: Were you aware of its existence?

WITNESS ROSZTOCZY: We are aware of the program that generated the information and we are aware that there are topical reports written on the program, period. I have not read this specific report. Yet I am aware that such reports are being issued.

CHAIRMAN SMITH: Are you aware that they say that terminal blocks are a big problem?

WITNESS ROSZTOCZY: We are aware that terminal blocks have been a problem for a long time. It has been considered years ahead of 79-01B Bulletin, what we are discussing here. And it has been reviewed. At that time the finding was that there were many terminal block types where were unacceptable for in-containment use and there

were also a good number of them which were acceptable. So those which were unacceptable had to be replaced or removed from the plants, and as far as I know those have been accomplished.

CHAIRMAN SMITH: So you don't believe you can just classify terminal blocks as a category of problems or non-problems? It has to be analyzed?

WITNESS ROSZTOCZY: I don't believe this report is new in the sense of it bringing attention to terminal blocks. The attention that terminal blocks have received initiated the program, an NRC program to provide additional information on terminal blocks. They are just reporting on the information that they gathered.

Whether it has any application relative to TMI-1 as it stands today I do not know. I think that depends on that one item which was brought up earlier and whether that item is inside containment or outside. If it is outside, then it is possible that the report has no relevance to TMI.

MR. POLLARD: No relevance prior to June 30th, 1982?

WITNESS ROSZTOCZY: No. If the TMI-1 as it stands today has no safety-related terminal blocks inside containment, then the report probably has no relevance to it.

BY MR. POLLARD: (Resuming)

Q To restart. But eventually aren't you going to look at the high energy line break outside containment and then it would be relevant, wouldn't it?

A (WITNESS ROSZTOCZY) That is correct.

Q That's all I was asking.

A (WITNESS ROSZTOCZY) Yes, that's correct.

(Pause.)

CHAIRMAN SMITH: So what is your plan now?

MR. POLLARD: I will just continue the way I was going, I guess.

BY MR. POLLARD: (Resuming)

Q On page 15 of the report, under conclusions and recommendations, it says: "One of the main conclusions is that in a typical small steam break accident, insulators do not cause problems if they are clean and protected by a tight box having at worst a small weephole."

In other sections of the report it identifies a small weephole as being 6 millimeters or less in diameter. On page 17 there's a restatement of what was in the abstract, in the last paragraph:

"Terminal blocks are apparently the weakest link of the electrical system inside a reactor containment building. The concern for their use in safety-related circuits is absolutely justified. While details could only

be ascertained by a circuit analysis, pre-accident replacement of the blocks in safety-related circuits at Three Mile Island doubtless prevented some circuit breakdowns and therefore made the accident less severe."

In another section of the report -- I can find it if you wish -- the report states that for the design basis LOCA about 14 percent of the protected terminals are expected to break down within the first ten minutes. The Sandia data also suggests that in the face of a design basis LOCA up to 30 percent of the unprotected terminals would experience electrical breakdowns.

Now, if these statements were true --

CHAIRMAN SMITH: Now wait. You just said in another section of the report, but did you give that page number in the report?

MR. POLLARD: No.

CHAIRMAN SMITH: Is there any reason why you wouldn't do that?

MR. POLLARD: Just to save time, if I can't get the report into evidence.

CHAIRMAN SMITH: We have not ruled that.

MR. POLLARD: I will find those pages for you.

CHAIRMAN SMITH: Well, if it is not important to your plan, okay. But -- if you don't need it, why take the time on it.

BY MR. POLLARD: (Resuming)

Q If the statements I read to you were true, would that cause you to go back and reassess the environmental qualification of the terminal blocks for Three Mile Island?

A (WITNESS ROSZTOCZY) The statements were kind of unqualified statements, in that they didn't differentiate between different type of terminal blocks. My understanding is that some of the terminal blocks were defective and they were inappropriately installed, but there were others which are appropriate. So to put all of them together and kind of make it 30 percent or 40 percent statistics is not a productive approach.

If we would learn from any source that the terminal blocks which are still in the plants and which will remain in the plants after June '82 do not measure up to the qualification standards, then yes, we would have a very serious concern.

Q Well, on page 16 of the report it states that: "Our investigation finds no clear difference in behavior for different terminal block models." So that at least for the objection you raise, the report also deals with that.

I guess what concerns me is the staff is spending money doing these research contracts, you are here testifying that Three Mile Island Unit 1 is safe enough to restart, and here seems to be a rather detailed study done

by one of your contractors which says terminal blocks are one of the weakest links. And it is not a report that you've heard about.

You appear not to want, now that I brought it to your attention, to go back and reassess, and I am having difficulty understanding why.

A (WITNESS ROSZTOCZY) Please don't misunderstand the statements that we have made. We are very aware of the program. This is a relatively recent report and there were some questions about whether we had this report. But we are aware of the program, we are aware of all of the information that is coming in. These are an important program, and as a result of these programs and some other similar programs and other information a good portion of the terminal blocks has already been removed from the plants.

So this is not something that has been taken lightly. It is not something that produced no results. It produced some very important results in the plants and those results improved the safety of the plants.

But this review, the review of the terminal blocks, was really done a number of years ago. And whatever the outcome was for a given plant and whatever the determination was, that is what the plant had to live with. Because this has been done, it has been done relatively recently, meaning a few years ago; therefore, we don't

expect to see many problems with the terminal blocks in the present, the ongoing review.

Nevertheless, through this cross-checking approach that I mentioned earlier we are going to check who has terminal blocks still in the plant and whether those terminal blocks are properly qualified for the location where they are employed.

(Pause.)

Q Now, at page 6 of your testimony and continuing, I guess, on page 7, you recommend as a condition of restart that Licensee commit to certain things, or if not that the Commission require the Licensee to do them. The first question I have is: Suppose the Licensee does commit to do the following things; do you think that that mitigates the need to have a condition specified in this for decision? In other words, how could you enforce a Licensee commitment?

A (WITNESS ROSZTOCZY) I believe those two are equal in standing. If the Licensee is committed to do certain things prior to restart and we agree to the restart based on those commitments, it accomplishes think than if we require it as a licensing condition.

CHAIRMAN SMITH: You're falling in a legal bind here.

MR. POLLARD: I just wanted to bring it up once more, because we talked about this, about commitments and

whether the staff's evaluation was based on commitments, and I just wanted to point that out with that one question. This witness seems to think they are equivalent.

CHAIRMAN SMITH: Are you aware that in earlier stages of the hearing we asked the staff about that problem?

MR. POLLARD: Yes, and that was when Ms. Weiss was here and I believe I read the transcripts of that portion. So it's just the one question, Mr. Chairman, just to point it out, and I am moving on.

BY MR. POLLARD: (Resuming)

Q Now, condition number one you said, the replacement, deals with a qualified life of 1.5 years prior to restart. How did you decide on 1.5 years, since this plant was originally licensed in 1974; isn't that correct?

A (WITNESS ROSZTOCZY) In the licensing submittal, there have been certain qualification times which have been mentioned and there has been some mention with 1.5. So we simply said all of those. This was the shortest mentioned, so we said all of those which had been identified as 1.5 automatically need to be replaced, because obviously by now the plant is beyond the 1.5 years.

Q It's close to being beyond six or seven years, isn't it?

A (WITNESS ROSZTOCZY) That is I believe one of the

follow-up points.

Q Which one?

A (WITNESS ROSZTOCZY) Number two.

A (WITNESS LaGRANGE) Number two and three, actually.

Q I guess maybe I'm not making myself clear. It appears to me that the time that restart is now envisioned, there will be equipment whose qualified life is less than six or seven years. And my only question is why in recommendation one doesn't it say at least the six years and to replace material with a qualified life of six years or less prior to restart?

A (WITNESS LaGRANGE) Because it is not clear to us -- and we haven't done any evaluation to determine -- what assumptions were used in calculating that six-year qualified life. This plant has been down now for some time and I don't know what the temperatures are, where this material is, and if the thermal aging evaluations were based on higher temperatures than seen right now you may be able to extend that six years to seven, eight, nine years. I don't know.

So we put in that item 3. And also, that the aging of the materials during this period should also be considered, and if it turns out that they have to be replaced prior to restart then they should be replaced prior

to restart.

A (WITNESS ROSZTOCZY) Mr. Pollard, we understand your concern and we share your concern. The purpose of putting items 2 and 3 there is exactly that, to take care of these items.

Q But item 3 just says "consider."

A (WITNESS ROSZTOCZY) What item 3 brings attention to is that you cannot simply take the number of years that the plant has operated and compare that to the qualified life, because the equipment ages even when the plant is not operating. So we are bringing it to the Licensee's attention that when they establish the appropriate replacement schedule they have to account for those years also when the plant was not operating.

At the same time we acknowledge that -- and I am sure you are acknowledging the same also -- that they might age with a different rate during the time when the plant is down, depending on the temperature conditions or radiation conditions. So it is not a one to one exchange. It has to be accounted for in an appropriate manner, and that is the intent of items 2 and 3.

Q Well, did you determine how long Three Mile Island Unit 1 had operated at power?

A (WITNESS ROSZTOCZY) I don't know the exact number, but I assume the Licensee knows it exactly.

Q Well, it would seem to me that it must be longer than one and a half years?

A (WITNESS ROSZTOCZY) That is correct. That is why item one is straightforward. If something was qualified only -- my recollection is -- and Bob can correct me on this, but my recollection is that there were some items which were qualified for one and a half years and there were some items which were qualified for six years, and then items which go beyond six years. And there were no or very little in between one and a half or six.

So the conclusion is all of those which were qualified only for one and a half need to be replaced prior to restart; those which were qualified for six years have to be looked at carefully, whether their six-year equivalent life has already been exceeded or would be exceeded prior to the next time when conveniently you can replace it, something like the next refueling.

And if the answer is yes, then that has to be replaced also prior to restart. If the answer is no because, let's say, the item ages -- or the aging when the plant is not operating is minimal for a given item and it still has enough life left to operate until the next refueling, then it can stay until the next refueling.

(Pause.)

Q Item 4 of your staff proposal is to require the

Licensee to complete the aging evaluations for the equipment still to be evaluated prior to exceeding five percent power operation Is there any doubt on the staff that the staff ought to review the results of that before exceeding five percent?

A (WITNESS ROSZTOCZY) It is left to us to decide to what extent do we wish to review that. This comes back to the same problem that I think we discussed a few times today. There is just no way we could review every piece of equipment in the plant. So the only thing that we are doing is an inspection or auditing type of checking on the utilities.

The requirement is that they have to complete it, they have to document it, and they have to keep it at the appropriate place in the central files. It would be left to us to decide whether we want to have, for example, an inspection prior to restart. Obviously, there would be an inspection some time in the future. Would the first inspection take place before restart or after restart; that has not been decided.

DR. LITTLE: Just a moment. When you were saying "us" do you mean you and Mr. LaGrange or "us" to be the staff.

WITNESS ROSZTOCZY: Us the staff, and I am using it especially in this area, I am using it in a broad sense,

because inspections are being done by the Inspection and Enforcement part of NRC as opposed to NRR, that we represent.

(Pause.)

Q Mr. Rosztoczy, when you were here and testifying in November you told us then that your evaluation of Three Mile Island would be based upon the response to Bulletin 79-01-B. And now we learn that your evaluation is going to be based on simply that required to cope with the loss of main feedwater, small-line-break LOCA. Was this position first suggested to you by the Licensee?

A (WITNESS ROSZTOCZY) I am sorry, the statement that you introduced the question with is not correct. I have stated in November that we are going to review the Licensee's November 1st submittal and evalute it and write an SER on that. We have done just exactly that. And that one is the SER which was issued in March. So everything that I have said we will be doing we have done, and that was issued in March.

In addition to that, for Three Mile Island, we also requested additional information on the small break. The additional information was provided more recently. The submittal discussed here, the May 18th submittal, we have evaluated this also, and we placed some additional requirement on TMI-1, in terms of the restart, saying that the small-break items must be completed prior to restart. So, if anything, the requirement for Three Mile Island 1 are somewhat more stringent than for the other plants.

Q Well, you did not send out the request for this

more stringent information, as you call it, until May 1 of 1981; is that correct?

A (WITNESS ROSZTOCZY) That is correct.

Q When did you decide? My original question was: Is this a position the Licensee suggested to you?

A (WITNESS ROSZTOCZY) No, I am not aware of any suggestion from the Licensee. It was basically initiated by the discussions which went on here as part of this hearing, some part of some other testimony on limiting the testimony to small breaks. It was the outcome of that discussion and that evaluation as some part of some other testimonies. You quoted earlier, I think, the pages or the transcript parts which address those. I am not sure exactly when it took place.

But following those discussions then we decided to prepare an additional testimony on small breaks, and that is what we have provided today.

MR. POLLARD: Mr. Chairman, I would like to at this time like to move to have my exhibits accepted into evidence. Since I anticipate some objection, should I go one by one, or shall I just name them all at once and catch all the objections at once?

CHAIRMAN SMITH: I am sure we can do it quickly. We will start with 37. Are there any objections to UCS 37?

(No response.)

CHAIRMAN SMITH: Are there any objections to UCS 38?

MR. BAXTER: One moment, Mr. Chairman, please.

CHAIRMAN SMITH: Would the parties like to have a short break to review their position on the exhibits?

MR. BAXTER: At least part of the UCS Exhibit 38 includes material that was filed for cold shutdown, which is, therefore, at least beyond the scope of the direct examination that these witnesses were given today. And we would object.

CHAIRMAN SMITH: That is 38?

MR. BAXTER: Yes. I have no objection to 37.

MR. CUTCHIN: Nor does the Staff have any objection to 37, sir. But with respect to 38, the Staff would also object to any equipment listings beyond the scope of the direct testimony.

MR. POLLARD: Mr. Chairman, perhaps I misunderstood the Board's earlier ruling was that although we could be limited to accidents with a close nexus to the TMI-2 accident, I thought you went on to say that would include cold shutdown.

MR. BAXTER: I do not recall any such ruling.

CHAIRMAN SMITH: No. What we ruled is that whether environmental qualification of equipment for hot shutdown compared to cold shutdown, it is an issue which is

legitimately within the scope of the hearing and can be argued as to sufficiency. Now, we have never ruled about the scope of examination. And this is what is before us now.

MR. POLLARD: I did ask the witnesses whether or not they had done an evaluation of the environment and evaluation of equipment to go into cold shutdown, and they said no, they have not.

What I am trying to introduc now is the Licensee's submittal which lists the equipment which they believe is necessary in order to achieve cold shutdown.

MR. BAXTER: One of the problems, Mr. Chairman, we were not presented with this exhibit before this afternoon. The January 30 submittal is a very lengthy one. Even if I accepted the purpose of Mr. Pollard's offer, I have not had the opportunity to review it and compare it against what we filed.

Are you going to agree that it is a characteristic or favor representation of what we filed on cold shutdown?

CHAIRMAN SMITH: So how should that aspect of the problem be handled?

MR. POLLARD: Mr. Chairman, all I have tried to do is -- the Licensee provided UCS with a copy of its January 30 submittal. Since it was not available in the public document room, for UCS Exhibit 38 I simply Xeroxed every single page I had that was labeled "Master List," and I

segregated them to a master list which is identified versus the master list for cold shutdown.

Now, I am certainly willing to have the Licensee go back and verify whether or not there are additional pages which I either did not receive or inadvertently were not copied as a part of this exhibit. I do not have any problem with giving them some time to verify that this is a complete list.

CHAIRMAN SMITH: So there are two bases. Let us address the first one. The first one is that we ruled that it would be in the scope of the hearing to address the adequacy of hot shutdown compared to cold shutdown. We also then ruled that you may contend with these witnesses the reasons why they are content with hot shutdown rather than cold shutdown. And you did. And you did not seem to be satisfied with that.

Now, had these proposed exhibits or the proposed pages on the exhibit support your position that cold shutdown is the correct standard for short term.

MR. POLLARD: They have the Licensee's determination of what equipment is needed to achieve cold shutdown.

CHAIRMAN SMITH: All right.

MR. POLLARD: And I believe with that information on the record, you will be able to show that this equipment

is not qualified. So all I am using this for is for the purpose of establishing that the Licensee agrees at least that this piece of equipment is necessary in order to take TMI-1 to cold shutdown.

MR. BAXTER: That is not true. That is not true, Mr. Chairman. What we are responding to is a bulletin request that we provide information of one path to cold shutdown, one path to cold shutdown.

DR. JORDAN: One what?

MR. BAXTER: Path, p-a-t-h.

DR. JORDAN: All right.

MR. BAXTER: So the filing does not represent Licensee's opinion as to what equipment is necessary to get to cold shutdown.

CHAIRMAN SMITH: That is correct. That is in your exhibits.

MR. POLLARD: I do not understand the difference between what is necessary by listing the euipment that compromises the path that is used to get to cold shutdown, how that is different than what is necessary to get to cold shutdown.

MR. BAXTER: I am sorry. It is the difference between identifying a path to cold shutdown versus -- and this is equipment that is necessary to get to cold shutdown. I cannot get it any better than that.

MR. POLLARD: Excuse me. A path which is environmentally qualified, and this is the equipment which he identified as to what would be environmentally qualified to get to cold shutdown. There may be other paths, but it is not environmentally qualified.

CHAIRMAN SMITH: Or there may be other environmentally qualified paths that they elected not to produce in response to the inquiry.

MR. POLLARD: That may be.

CHAIRMAN SMITH: But we do not know. But we do know that as far as this record is concerned there is one and only one path demonstrated, and that is the one that is attached to Exhibit 38, and you would like to be able to have a record which will support conditions imposed by the Board requiring that at least that pathway be environmentally qualified.

MR. POLLARD: Yes, sir.

CHAIRMAN SMITH: And I think that is a legitimate aspiration. Now, the question is how does he go about it. I do not really believe that he has accomplished much by way of these particular documents in his cross examination of this panel. That is the route by which they could have come in, the cold shutdown pathway.

MR. POLLARD: All I could get out of these witnesses is that they have not evaluated the cold shutdown

pathway. I do not know how much further I could go.

CHAIRMAN SMITH: Right. So how can we or should we accommodate Mr. Pollard in his objective, and, if so, how can we?

MR. BAXTER: Given Mr. Pollard's representation that he has reproduced everything that we put in our master list, I do not object to the admission, but I agree with your observation, Mr. Chairman, that the fact that we provided a list in response to a request for one does not establish at all that cold shudtdown should be the required endpoint that we need to qualify equipment to go there.

CHAIRMAN SMITH: He wants this solely for remedy, so he will have an evidentiary basis to recommend a finding by the Board, a remedy, relief.

MR. CUTCHIN: But, Mr. Chairman, he has done very little, if anything, today to demonstrate that in order for the plant to be safe you have to show how to get it to cold shutdown. And that was the latitude I thought the Board allowed earlier today.

An additional problem is this is a master list of all equipment to be qualified, and not in my view -- at least I have not been told that yet -- that it represents that master list of equipment that is necesary to go either to hot or to cold following a small-break LOCA. I am s[illegible] it includes that, but I am not sure that it is limited just

to that.

And that was the subject of the Staff's direct testimony and is the purpose which the Staff thought was served by identifying, by having the Licensee identify in that May 18 letter, the systems list of equipment and for culling out those pages from the Licensee's January 30 submittal which provided the details referred to in the 17-page attachment to the May 18th letter and that comprised the totality of the staff's direct testimony on the systems and equipment. And I think we are creating confusion, if nothing else.

CHAIRMAN SMITH: How do you intent to establish on the record that hot shutdown is insufficient?

MR. POLLARD: Do you mean how am I going to argue on my findings?

CHAIRMAN SMITH: Yes. There does seem to be a missing link. I understand what your objective is, and it is an appropriate one. But the only thing you have had so far today from these people is that they require only hot shutdown and you ask them the reason, and they say, "Well, cold shutdown will follow in a short period of time," and that is it. But you have not, as far as I can see today or any other time in this hearing, offered evidence through cross examination or affirmatively that the correct standard should be cold shutdown.

DR. JORDAN: We have had a fair amount of testimony with respect to Board Question 6 as to how the Licensee will achieve cold shutdown. In fact, one of the particular items I was after was how would they achieve cold shutdown, for example, if they were using only the feed-and-bleed mode. I have assumed here -- and perhaps again I have made a mistake today -- I have assumed when the Staff asked for the equipment required for cold shutdown and environmental qualifications for that that they meant that the Licensee should be prepared to take the plant to cold shutdown but this was --

MR. BAXTER: That is not our view.

MR. CUTCHIN: That is not our view, Dr. Jordan.

But the point is it may be safe to go to hot shutdown for some period of time and that ideally later one must eventually carry the plant to cold shutdown. But there has been no demonstration that I am aware of or that I recollect that hot shutdown is an unsafe situation and show that it is then necessary from the standpoint of safety to demonstrate the ability to go to cold shutdown in a short period of time using fully qualified equipment. It may be that there is plenty of time to repair, maintain, or whatever, before one goes to cold.

DR. JORDAN: There has been, of course, discussions about this. And as you say, the only question

is how long. You do not have to go to cold shutdown instantly, but you do have to prepare to go to cold shutdown; you cannot stay indefinitely in hot shutdown. And so you do have to have equipment for going to cold shutdown.

Now, Mr. Pollard did quiz these witnesses as to how long the equipment that was qualified for hot shutdown was prepared to stay, was prepared to operate. And we did not get a number out, whether it was one month or one year or five years, from these witnesses. And so there is no use of continuing with that.

But we all do know that you have to go to cold shutdown. And I guess I am a little startled if anyone is claiming that you do not have to or that you do not have to use qulified equipment for doing it.

MR. CUTCHIN: No, sir, we are not. The only thing is that it has not yet been demonstrated on this record, in my view, that a long-term, however long, remaining at hot shutdown is an unsafe condition. And I guess that we are getting nowhere on this.

CHAIRMAN SMITH: Well, let me ask another question. Will the Staff be taking the position in this hearing that as one of the long-term necessary actions that the Licensee demonstrate the ability to go to cold shutdown using environmentally qualified equipment?

MR. CUTCHIN: That is a requirement of 79-01-B,

that the Licensee demonstrate one pathway.

CHAIRMAN SMITH: I understand.

MR. CUTCHIN: But I guess I am not able to say what our position in this hearing is going to be with respect to 79-01-B.

CHAIRMAN SMITH: Well, soon you are going to be asked to report.

MR. CUTCHIN: I understand. But the Staff in its testimony so far has taken the position by his direct testimony that demonstration of a capability to go hot shutdown is sufficient for restart.

CHAIRMAN SMITH: For short-term restart. Are you going to leave the Board dangling as to whether it is a necessary and sufficient long-term action? Will we ever know what the Staff believes as far as the order to this Board in this hearing.

MR. CUTCHIN: I think by omission if we do not take the position that it is a necessary long-term requirement, one can conclude that it is not viewed to be for purposes of the hearing. There are a number of things that the Staff is going to require of Licensee after this hearing is over, perhaps, that have not been litigated in this hearing. And I think it goes back again to the question of on what long-term items must the Board under its charge make a finding of reasonable progress. And I view

that to be a very limited list. I am not sure if the Board agrees with me. But I view it to be those with respect to which the Commission has at some time or other issued immediately effective orders.

MR. BAXTER: Mr. Chairman, I have a letter from the Staff to all operating plant licensees and applicants and CP holders which I was going to distribute as part of my cross examination which I think contains their position on cold shutdown versus hot shutdown for environmental qualification of equpiment. If it would help the Board, I will hand it out now.

CHAIRMAN SMITH: I do not know if it will help us.

While he is doing that, what is your cross examination look like now?

MR. POLLARD: That was why I was trying to move these into evidence. I have more or less given up on my cross-examination plan.

MR. ADLER: Mr. Chairman, if it should help for planning I should note that Mr. Pollard has covered the Commonwealth's plan, so we have no more cross examination.

CHAIRMAN SMITH: I think that the problem presented by this discussion is a complicated one. I don't think that we have evidence in this hearing that I am aware of that would enable this Board to impose a long-term condition for "cold shutdown" -- I don't know whether we do or not, but I'm not aware of it -- in view of the problem that we discussed about the meaning of necessary to protect the public health and safety or to provide reasonable assurances that the public health and safety will be protected.

I mean we have had a long debate about what those standards are in this proceeding. Nevertheless I have some intuition that the evidentiary record ought to contain a pathway that the Licensee will depend upon for cold shutdown and if it comes out in the overall findings and decision that it is irrelevant, then so be it. But I just, for reasons I cannot really articulate, I just really believe that that should be in the evidentiary record and it may not be useful to us as a decision at all.

MR. CUTCHIN: Well, can we establish, then, that by admitting this to evidence it will be admitted for that purpose alone?

CHAIRMAN SMITH: It certainly is not admitted for the purpose that we must have that pathway. But it seems to me if the Licensee would like to have in this record the fact that they have indeed identified a cold pathway -- I mean a pathway for cold shutdown. Of course it goes both ways. You can't rely on it either.

Go ahead, Mr. Baxter.

MR. BAXTER: I was just going to remind you that I withdrew my objection at the same time I endorsed your assessment that I wasn't sure how much worth it was going to be.

CHAIRMAN SMITH: I'm sorry. Yes.

MR. CUTCHIN: And I'm willing to modify mine that if it is being admitted for the purpose of demonstrating that there are items of equipment needed to go cold shutdown that are not on the list to go hot shutdown and that they are purported to be listed within this document I will withdraw one objection to it.

I still have an objection with respect to whether or not this master list includes items of equipment necessary to go to hot shutdown following accidents other than a small break LOCA, are included. And that, I think, would confuse the record.

CHAIRMAN SMITH: All right, what are we going to do about that?

DR. JORDAN: We could invite the staff to go through the list and pull them out.

MR. CUTCHIN: I think that is not a very good suggestion, Dr. Jordan, because if we could agree -- maybe we don't have a disagreement. I don't know what Mr. Pollard's position is, but if we could agree that it is being admitted solely for the purpose of addressing the cold shutdown situation I will withdraw an objection.

MR. POLLARD: It is not being admitted solely for cold shutdown. But, of course, the bulk of it in fact is the master list is for hot shutdown.

MR. CUTCHIN: But for the whole panoply of accidents, not just for the small break LOCA. That is my problem.

MR. POLLARD: If I can continue, Mr. Chairman, we have also had testimony today from these witnesses that the May 18 licensing letter contains a list of equipment which is necessary for hot shutdown from a small break LOCA. Do I don't see what the problem is.

Their position is quite clear as to what they think is needed. I think between the restart report and the piping and instrumentation diagrams and the analysis in the restart report I will be able to demonstrate in findings that that list of May 18 is not adequate even to obtain a hot shutdown condition for a small break LOCA.

Now I have to have something in the record that I can cite. I would have preferred to put the Licensee's entire Janury 30 submittal on the record, but the Board had already indicated that was too big. I never understood that, given the size of the Licensee's restart report, which is an exhibit, but I accepted it.

So what I had tried to do --

CHAIRMAN SMITH: Well, you should be very fortunate that we accepted it otherwise. If you had depended upon that you would have had a very difficult time addressing this issue in proposed findings. You don't think for one minute this Board is going to independently --

MR. POLLARD: I was not arguing against accepting the restart report. I was just trying to understand why the Board did not want me to offer the whole Licensee submittal.

CHAIRMAN SMITH: And I am telling you you should be grateful we did not accept it and allow you to rest on that, because this Board would never go through the hundreds and hundreds of pages in that document.

MR. POLLARD: That is exactly why I prepared the exhibits for today. I made one exhibit out of the master lists and I made another exhibit out of a few pages from work sheets so that we would not have to offer, once again, the whole Licensee submittal.

CHAIRMAN SMITH: All right, don't we have them by

cross-check on the May 18 letter with the master list, UCS Exhibit 38 with respect to hot shutdown, the purpose and the scope of the use of UCS 38?

MR. POLLARD: We have a piece of evidence as to what the staff thinks is necessary, but we do not have yet any argument as to whether more is necessary, and that is why I wanted the master list put in.

CHAIRMAN SMITH: I see. So you want the master list in because elsewhere in the record you are going to argue that other components perhaps not even mentioned today --

MR. POLLARD: That is correct. I gave one example of this pressure switch on the RHR suction valves as an example of why I thought there was a piece of equipment that clearly, based upon the staff's testimony, clearly is needed even to obtain safe shutdown from a small break LOCA and it is not on the Licensee's May 18 list.

I would like to be able to argue that other equipment --

CHAIRMAN SMITH: Okay. Some reasonable accommodation to Mr. Pollard's objectives will be required. Otherwise I think we could have a very, very long hearing on that.

MR. CUTCHIN: I will withdraw the objection in toto, Mr. Chairman.

CHAIRMAN SMITH: All right, so we are accepting into evidence UCS 38. Do you have any objections to the limitations which were discussed between Mr. Baxter and me on how this relates to the cold shutdown?

MR. POLLARD: I didn't think I did at the time, Mr. Chairman. I can at this moment I don't really recall the discussion but I was listening to it and I didn't have any objection.

CHAIRMAN SMITH: Perhaps it would be appropriate for you to summarize what you understand to be the limitation on the portion relating to cold shutdown.

MR. BAXTER: My expression was a limitation on the use I thought could be made of it effectively, Mr. Chairman, that is, that it did not go necessarily to whether or not cold shutdown should be the objective, and, secondly, that it did not address or represent the Licensee position that this equipment was necessary to get to cold shutdown, but rather was a response to an informational request from the staff that we identify or provide information for one pathway to cold shutdown.

CHAIRMAN SMITH: All right. Mr. Pollard nodded agreement that that would be the reach of the use of that exhibit. Okay. 39?

(The document previously marked UCS Exhibit 38 for

identification was received in evidence.)

MR. BAXTER: I would appreciate from Mr. Pollard, Mr. Chairman, a description of the selection of the 84 pages of system component evaluation work sheets out of the lengthy January 30 submittal. I know we had 84 pages, but we've never had a representation as to the selection of them or what was left out and why and what was included and why.

MR. POLLARD: Before I try to answer the question, let me make sure I understand it. Do you want me to go through each page and tell you why I selected each page?

CHAIRMAN SMITH: I would hope not.

MR. BAXTER: I would hope that there's some grander scheme and plan than on a page-by-page.

CHAIRMAN SMITH: As I have heard you ask so often, Mr. Pollard, what standards did you apply in selecting these pages?

MR. POLLARD: I tried, when I went through the Licensee's January 30 submittal, I compared that submittal with the requirements of I&E Bulletin 7901B and its supplements. I also was considering the staff's March 24, 1981, safety evaluation report on environmental qualification.

And, for example, if we take an example on the first sheet on my Exhibit 39, you will recall I asked these

witnesses as to how did they decide whether a particular deficiency needed to be immediately corrected or could be postponed and be corrected. I also recall that the Commission's decision of May 23, 1980, said that when they found a piece of unqualified equipment corrective action had to be taken, that you couldn't just automatically wait until June 30 of 1982.

So this first one I chose is to illustrate the importance of these pressure switches which are the listed deficiencies in the safety evaluation report that they are not qualified for the main steam line rupture detection. Excuse me, that they are used to detect main steam line rupture and isolate feedwater.

MR. BAXTER: Mr. Baxter, I really wasn't looking for an expression of the argument Mr. Pollard would make from all this once he got it into evidence. What I am hearing is that they were all sort of good things for his purposes.

MR. POLLARD: That's right.

MR. BAXTER: As opposed to what I was hoping it might be, the work sheets from all of the equipments listed in the attachment to the staff testimony, for example, something that's rather an objective basis for a large submittal.

I would have to object to the selection on a

personal interest basis of some work sheets out of a very lengthy submittal made in response to the 7901B program, which goes beyond the testimony that these witnesses talked about, including the cross examination.

CHAIRMAN SMITH: You would have objected to the entire -- to receiving the entire report?

MR. BAXTER: Yes, I would.

MR. POLLARD: Mr. Chairman, I don't know -- I'm sure the Licensee would prefer to have control over UCS exhibits. There's no doubt in my mind. I picked examples of where I thought I could illustrate deficiencies in the staff's review, both with respect to how the information was provided, with respect to failure to comply with the requirements of the Bulletin, with respect to the number of times the Licensee has referenced telephone conversations, the purchase catalogues of various manufacturers, where their evaluation of the aging of different materials differs substantially from the appendix attached to the I&E Bulletin, where they have made mistakes in identifying the function of a component or the service of a component.

MR. BAXTER: What Mr. Pollard is failing to appreciate, I think, it is not a failure -- it is not a matter of me controlling his exhibits and him not being able to express his interest here. We are talking about him trying to get in exhibits through other witnesses, not

offering testimony that has been available for some time for us to study and cross examine on.

The witnesses are not sponsors of this evidence. It is just 84 pages that we were all handed this afternoon at the hearing. And I grant that there are 84 pages, but there has been very little examination on the totality and I don't see any basis for putting them into evidence.

CHAIRMAN SMITH: Your own description of the use of them doesn't help you very much because the justification for putting this in as an exhibit now is their use in cross examination of these witnesses and a demonstration that the witnesses' testimony is somehow inconsistent with the pages from the exhibit.

So I think your problem there is the timeliness of this submission. Now what would you have to say about that? I think as far as cross examination alone, as I understand your purposes, except for certain selected pages, that you have not established the need for these exhibits.

MR. POLLARD: Mr. Chairman, if that is going to be the nature of the objection then I will begin to question these witnesses on these important -- can I give you an example?

They have said they have evaluated a path to get to safe hot shutdown for a small break LOCA. I have included in here sheets which demonstrate the Licensee

itself has not yet determined whether some of those components are qualified. If the whole problem in getting this exhibit introduced is that I have not asked these witnesses a question on every page we can certainly do that. But I know that that would run over until tomorrow.

I am having some difficulty understanding, to be honest with you, what the objection is. This is a submittal by the Licensee in response to Bulletin 7901B. Then the staff has come in with testimony saying they are only going to look at a portion of the information which the Licensee submitted.

I am coming before you and saying I also would like to look at a portion of the information the Licensee submitted, and to argue from these examples. As I explained to you on the phone I tried to minimize the number of sheets. Where I had ten components that were identical I only put one sheet in this exhibit, because the deficiency is the same on all of the same components.

Now I don't know how I can argue in my findings that the staff's evaluation of environmental qualification is insufficient to support restart without being able to have on the record more information which the Licensee submitted to the staff which the staff chose not to consider.

CHAIRMAN SMITH: So this is both partially information germane to the cross examination and partially in rebuttal to the Staff's testimony?

MR. POLLARD: That is right.

CHAIRMAN SMITH: So we have to measure timeliness from that milestone.

MR. BAXTER: Mr. Chairman, I am not being facetitious when I say that no would ever argue that it is easy to make a case on cross examination. But I do not think that should detract from our wanting confrontation and timely opportunity to confrotn the evidence that is being offered.

CHAIRMAN SMITH: Do you agree that the problem is timeliness?

MR. BAXTER: That is certainly a big problem, yes. I have not had the opportunity to even comb through all 84 pages let alone even talk to anyone about them.

MR. POLLARD: Mr. Chairman, if I had not offered an exhibit, I would have been allowed, would I not, to have cross examined these witnesses on the Licensee's January 30 submittal; is that correct?

CHAIRMAN SMITH: It would seem to me that it would be.

MR. POLLARD: There would be no timeliness --

MR. BAXTER: There might be relevance arguments.

MR. POLLARD: There certainly would not be timeliness arguments. I could ask a question as long as it was in the scope of the hearing on any page submitted in that January 30 submittal. I mean both Licensee and the Staff have had this since January. I did not even get it until last month -- or, rather, this month.

CHAIRMAN SMITH: Well, that does not go to timeliness.

MR. POLLARD: Well, my point being, suppose I did not offer the exhibit, we would not have a timelieness argument because I could have questioned on any page. Now that I have offered this, the actual pages which I questioned on, we are having a timeliness argument.

CHAIRMAN SMITH: You are not having a timeliness argument on those pages that you have examined the witnesses on. You are having a timeliness argument problem, if any -- and I do not know -- in coming up with this as a part of your affirmative case-in-chief. That would be a big problem.

Now, my inquiry is: Since you have identified as rebuttal information, what should be the milestone on which we measure timeliness? You do not have any timeliness problem so far as cross examination of witnesses on these papers, and you did on some of them. Now we are addressing the others.

I agree that you could probably have solved the

problem, at least to the extent that you wanted to, by taking each one and examining them, and if it is relevant, probably succeed. And we appreciate your effort to cut it short.

Now, when did you first decide that you wanted these papers in evidence? When you received the supplemental testimony?

MR. POLLARD: Perhaps Mr. Baxter can help refresh my memory. Did I get the January 30 submittal from you before or after I got the Staff's testimony?

MR. BAXTER: I cannot recall. I gave it to you as soon as I heard you were in need of it.

CHAIRMAN SMITH: Well, these particular pages, you anticipated the need for he January submittal in advance of the Staff's testimony. You talked about it along time ago. And I am talking about these particular pages. When did you identify these pages?

MR. POLLARD: After we got the Staff's testimony.

CHAIRMAN SMITH: And now you are offering them to the extent that you did not use them as cross examination, you are offering them in rebuttal to the Staff's testimony? Otherwise, I do not think you have any basis to offer them.

MR. POLLARD: Well, if you say that is the only basis --

CHAIRMAN SMITH: I cannot identify any.

MR. POLLARD: I intend to use them in our findings, discussing the adequacy and the weight that ought to be accorded to the Staff's testimony today.

CHAIRMAN SMITH: I would say that the timeliness to be measured with respect to your use of this exhibit as rebuttal evidence has to go from a reasonable time from having received the Staff's testimony and heard from them with a recognition that you need these exhibits for your rebuttal case. We do not know what that is. When was this testimony?

MR. BAXTER: June 16.

CHAIRMAN SMITH: This is timely. No, that does not -- if it is indeed legitimate rebuttal documents -- we have not read them either, I do not know what this stuff is. I only read the few that he pointed out to us.

MR. BAXTER: Even 24 hours or 48 hours would make a big, big difference than 30 minutes or 40 minutes that we had today.

CHAIRMAN SMITH: I think to that we have gone over the first part of it. Now, I think it is timely.

Now, the question is it is your opportunity now to address the documents, and you have not had any occasion.

MR. BAXTER: That is correct.

MR. CUTCHIN: Mr. Chairman, if we are viewing these as to the matter of an affirmative case, and this

Intervenor has abandoned this Contention --

CHAIRMAN SMITH: Not affirmative.

MR. CUTCHIN: I keep hearing you use that word.

CHAIRMAN SMITH: I said forget affirmative. He is out of time on affirmative. But he is possibly in time -- I think he is -- on rebuttal.

I think the best way to approach this is to allow the parties adverse to Mr. Collard's position to review this exhibit and to come back in with objections as to whether it is appropriate rebuttal. And if there are some other problems tht are involved with it that you seem to conservatively want to check, but I think that you should have a time before this exhibit is in the record forever.

MR. BAXTER: One other problem, that maybe I am missing something, but I would think that rebuttal evidence would require some kind of witness.

CHAIRMAN SMITH: Not necessarily. This is an exhibit from your corporate files. And I do not think so. You may want surrebuttal, I do not know. But this is your document.

MR. BAXTER: It is selections from my document, yes.

CHAIRMAN SMITH: You cannot put the whole thing in.

MR. BAXTER: And the only explanation we got on the selection process were they were pages UCS would like to

use in its prepared findings.

CHAIRMAN SMITH: That is right.

(Pause.)

CHAIRMAN SMITH: We are going to receive it. We are going to receive it with the observation that you have not had the opportunity to address the significance of it.

MR. BAXTER: And no opportunity, Mr. Chairman, to ascertain what use is going to be made of it. Normally, at least, if you have a witness you can try and find out what the heck the argument is.

MR. CUTCHIN: And he has clearly, Mr. Chairman, gone beyond making his case on cross, because you have, I understood, said you have no problem with respect to those pages he used on cross examination, and now he is putting on -- and maybe I am wrong -- but if it is viewed as rebuttal or whatever, it has the nature of an affirmative case, and he does not have a contention on which he can put in that kind of evidence.

CHAIRMAN SMITH: Mr. Pollard was ewll on his way of listing the many reasons why he wanted to use these documents, and he was interrupted. He was requested to come up with a "grand scheme," as you called it. I suppose he could have identified, he could have done this, if he had anticipated properly, he could have put the various reasons he wants to use it and identify the documents that fit into

that reason.

He is holding a very significant threat over our heads; and that is, go through these documents with these witnesses and he will accomplish much of what he wants, or he can go on and on and on and take up each document and explain why it is being offered into evidence.

And I think you are entitled to that. But there certainly has to be a more efficient way to handle this, and nobody seems to be eager to solve our problem. We could perhaps require Mr. Pollard to forthwith -- he is going to be done, perhaps, this evening -- to submit to the parties a listing of these exhibits, pages, and the purpose for which he depends upon them for rebuttal and what they indicate to him.

I agree that proposed findings is too late to learn what use he is going to make of the 84 pages.

MR. BAXTER: The only reason I interrupted, Mr. Chairman, is it gives me much more detail than I wanted. If he said we selected those pages which we thought included some documentation is inadequate and those are the only ones we picked. But that is all I was looking for. So at least there would be some understanding of why it was there or it represented one particular accident or it represented one particular kind of defect.

CHAIRMAN SMITH: Dr. Little pointed out also we

cannot wait until proposed findings to find out what there is about each one of these documents. There are many categories of information on each one of them which you think supports your position on rebuttal and the significant item on the page. Even though this is much smaller than the original document, it still has the potential for the mischief that we identified before, and that is, we receive -- there are only 84 pages here, but there is an awful lot of information. It is like a roadmap contains a single page but it can tell you an awful lot.

There is a lot of information here, and the same problem exists so that you cannot offer into evidence a large bulk of information, then selectively go through it without notice to the parties, the reports, the parts that you are going to rely on in your proposed finding. And I see that you are prepared to do this, even on cross examination or by taking each one up. And I do not sense a sandbagging effort here, but you are going to have to address it in some manner that the parties know the purpose for which these exhibits are accepted.

MR. CUTCHIN: Could I suggest a possible alternative for exploring them here?

CHAIRMAN SMITH: Yes, please.

MR. CUTCHIN: It is not clear to me also, because I have not had the opportunity to go thorugh this list of

sheets, but the Staff, before these witnesses come off, will offer also Staff Exhibit 16 into evidence, which includes all of those worksheets that were referenced by the Licensee in his May 18 letter.

Is there any way -- or maybe Mr. Pollard could tell us now -- are any, are many, are none of these sheets duplicative of what is in Staff Exhibit 16? I just do not know.

CHAIRMAN SMITH: Well, some have to be.

MR. POLLARD: Some are duplicates.

MR. CUTCHIN: Could we have a feel of the bulk? Could we know those that are you going to look to? Because I do not think I am going to have any problem getting my exhibit into evidence.

CHAIRMAN SMITH: You hope, I assume, Mr. Pollard, to conclude this evening and not be here tomorrow?

MR. POLLARD: That is correct.

CHAIRMAN SMITH: And the same way with everybody, I think.

MR. CUTCHIN: We are prepared to stay as long as necessary, Mr. Chairman.

MR. POLLARD: Is there perhaps some alternative where the Board is going to be sitting the rest of this week, is it?

CHAIRMAN SMITH: And next week.

DR. JORDAN: I presume there would be time for the Licensee to ask questions tomorrow morning and others that you would not necessarily have to stay for that. I might have questions tomorrow morning, but I was not necessarily assuming that we had to finish everything tonight.

MR. POLLARD: The other problem was I prepared this exhibit before the Board rulings which occurred today, essentially saying you are not going to hear in this proceeding, for example, environmental qualification of equipment outside containment except as it relates to radiation.

So there is some question in my mind now -- and perhaps I should pursue further with these witnesses -- what equipment is in fact used to go hot shutdown, because many of the pages I have included in my proposed exhibit deal with equipment that is used or utilized by emergency feedwater or to remove heat from the steam generators; for example, the atmospheric dump valves are not qualified.

Excuse me, one of the sheets here pertains to the atmospheric dump valves, which shows the Licensee has not yet accumulated information to show whether those are qualified. All of the steam supply valves for the turbine-driven feedwater pump are in a similar situation.

I suppose whether or not we are going to be able to use some of the pages in this particular exhibit depends

upon whether or not we prevail on the issue of whether or not just looking at hot shutdown for small-break LOCA is necessary and sufficient to allow restart. That is a separate problem.

So what I am sort of trying to conclude here is is there any way that the Board could help me envision how I could go back and consult with Ms. Weiss on the sheets to be included in this exhibit, then give it to the Licensee and see if they have any objection, or the Staff, knowing that what I am aiming for is to develop an exhibit which conforms with the Board's rulings from which I can argue that the Staff's evaluation for restart is inadequate.

CHAIRMAN SMITH: Well, this is what we would have recommended to the parties, that you go back and negotiate and discuss and see if you cannot work out, in view of what we had to say. But since you will have to depend upon the Board ultimately to rule, this may be your last chance unless you are prepared to come back up in the event of a failure, or it is always a possibility, I suppose, that for this extremely limited argument -- and it would be an argument that we could convene in Bethesda and resolve it there if we had to -- no part of hearing has been except here, I would like to keep that record intact. But we would not bring everybody back up for the rule.

We could also rule on papers. But then there is

the problem that involves the timing and the need to get this record closed and proposed findings going.

Maybe we are just borrowing trouble. Why don't you just see if you cannot work out with the parties an acceptable basis to have this evidence put in, bearing in mind our rulings concerning the appropriateness of rebuttal and the cross examination and the timeliness which we ruled? I mean you are not timely for an affirmative case; you are timely for a rebuttal. You do not have to argue but the relevance of pages that were correctly identified or discussed in cross examination.

Now, with those rulings, would that be helpful for you to come up with something?

MR. POLLARD: Yes. I would accept that opportunity to go back and try to work it out with the parties. My concern is how much time do we have and how and when shall we get back to the Board. Can we do this by a conference call? Because I know I am not going to be able to do this by myself without consulting with Ms. Weiss.

CHAIRMAN SMITH: Well, do you have a suggestion? We are going to be busy up here through Wednesday this week, and then we are going to start again Tuesday.

MR. POLLARD: So Thursday you will be in Washington?

CHAIRMAN SMITH: Thursday we will be scattered.

We will be back here a week from Tuesday, but we will not be available as a Board until Tuesday. Dr. Little will be in Washington. I will not be available until Tuesday.

MR. POLLARD: Why don't I consult with Ms. Weiss first thing in the morning and we can get back, perhaps with a phone call to Mr. Brenner and if your other assistant is still around. We could get back to you tomorrow on how we suggest to proceed.

CHAIRMAN SMITH: If you wish.

Mr. Baxter.

MR. BAXTER: That is fine with me, Mr. Chairman. I am just still trying to grasp the concept of rebuttal here where there is no direct by UCS.

I make inquiry: Would it be an appropriate element in the discussion among the parties to consider after we have Mr. Pollard's discussion of the use that will be made of this document, because that will sort of be direct, as far as I can see, for the first time by him.

CHAIRMAN SMITH: That is a very narrow view of rebuttal. No matter what the parties have done in the past, they are bound by the evidentiary record, and they are reflected by it.

MR. BAXTER: I am just not familiar with rebuttal on the basis of cross examination alone. But the question I was going to get to ultimately was whether as the proponent

or, as we are often reminded, the party with the burden of proof, we would have the opportunity for surrebuttal?

CHAIRMAN SMITH: I agree. If you demonstrate the need for it. I just wonder if these papers are really going to be worth what we are going through on it. But since we do not know, since we have not read them, we do not know. We will just have to wait and see.

Why don't you, after we adjourn this evening or whenever, try to work out something that satisfies their objections and then get back to the Board?

MR. POLLARD: I am going to have to do that tomorrow, because I am quite clear I have to consult with Ms. Weiss. I have not the slightest idea of what most of this discussion has been about.

CHAIRMAN SMITH: All right, now, are ready for UCS Exhibit 40; that is, the SER? Are there any objections on that one?

MR. CUTCHIN: Mr. Chairman, I guess I am going to have to be the one to rise to the occasion again. I object to it as being, in some respects, redundant of what is included in the direct testimony and much broader in scope and, therefore, arguably irrelevant to the issue that is within the scope of this proceeding. Again, I will create confusion.

CHAIRMAN SMITH: It is broader in scope, as is

NUREG-0737, which is a Staff document, and it would be virtually impossible to keep that out, I don't think.

MR. CUTCHIN: I do not believe 0737 is in evidence.

CHAIRMAN SMITH: That it is cited all over the place by the staff.

DR. JORDAN: There is some citing about 0737. I'm a bit worried about how -- does that mean we have to take out all of those cites?

MR. CUTCHIN: We have extracted major portions of that for testimony, but I'm unaware of its having been put into evidence, nor has 0578, for that matter. But that really has nothing to do here. My objection is it is a staff SER and the staff has narrowed its review to what it perceives to be the scope of this proceeding and has offered direct evidence on this subject, and I think it'll be confusing.

CHAIRMAN SMITH: Confusing isn't the test.

MR. CUTCHIN: It is redundant and it is well beyond the scope of the proceeding.

DR. JORDAN: But there is much in it that is the basis, it seems to me, for the staff's testimony, that I find out really for the first time some of the reasons why staff said the things they did. Without this I would have had a real problem.

CHAIRMAN SMITH: I think Dr. Jordan has resolved that dispute, so your objection is overruled. It is, of course, received in evidence solely to demonstrate that there is such a document. But it is not received in

evidence -- we don't by receiving it in evidence, we do not thereby conclude that the items set forth in the SER were within the scope of this proceeding. Our rulings will be the traditional way we've made them.

All right, how about the next one. 41, the Sandia Laboratory.

MR. POLLARD: That was the Licensee's letter of March 12, 1981, from Mr. Hukill to Novak responding to the staff's request to review the deficiencies and conclude whether or not the plant is safe enough to restart.

MR. CUTCHIN: No objection from the staff.

MR. BAXTER: No objection.

MR. POLLARD: 42 is the December 8, 1977 --

CHAIRMAN SMITH: 41 is received.

(The document referred to, previously marked for identification as UCS Exhibit No. 41, was received in evidence.)

MR. POLLARD: I should wait for that.

42 is the December 8, 1977, letter, Met Ed's response to Bulletin 77-5.

MR. BAXTER: I would not object to either of UCS Exhibits 42 and 43, which are Licensee's responses to I&E Bulletins 77-05 and 77-05A, if UCS would stipulate to the

receipt, as soon as we can obtain copies, of the I&E Bulletings themselves to which the letters are responding.

MR. POLLARD: They want to offer the bulletins into evidence?

CHAIRMAN SMITH: The letters respond to a bulletin and they want the full context of the letter, the bulletins.

MR. BAXTER: We will provide them as soon as we get them.

DR. JORDAN: As soon as you get them?

MR. BAXTER: Obtain a copy.

MR. POLLARD: I have no objection to that proceeding.

CHAIRMAN SMITH: All right, so we receive 42 and 43 received.

(The documents referred to, previously marked for identification as UCS Exhibit Nos. 42 and 43, were received in evidence.)

MR. POLLARD: 44 was the Sandia report.

MR. BAXTER: I object to that on the basic grounds of no opportunity to confront the evidence that's being offered, Mr. Chairman, both in terms of content, relevance, and timeliness of the receipt of the document.

MR. CUTCHIN: The staff would have a similar objection to its being received for the truth of the matters asserted therein.

MR. POLLARD: First as to timeliness, I have been trying for -- since at least June 20th, when I knew of the existence of this document, to get it. It is not available in the Washington public document room. I obtained my first copy of this report Friday afternoon, last Friday, whatever the date of last Friday was. So I could not have produced it any sooner, because I made the copies before I left the office on Friday and I took them home with me to bring them here today.

Second of all, we discussed earlier, and I hope the Board can assist me, I am offering it into evidence not for whether or not the statements in it are true, but for the fact that the report was in fact sent to the NRC staff and it says the things it says, whether or not they are true.

MR. BAXTER: I find that a very unworkable distinction to be made, Mr. Chairman. I understand we sometimes receive ACRS letters just for the purpose that they were written. But to say this entire lengthy report is only going to stand for the fact that these words were said, I think the Board is going to have a terribly difficult time sorting out the use that is made of them in proposed

findings.

CHAIRMAN SMITH: I think that if we would stipulate that the sections read by Mr. Pollard to the witnesses were indeed from a Sandia report, which indeed was issued and contracted for by the NRC, we will accomplish his purposes.

MR. BAXTER: Yes, we probably would. The problem is that I haven't had the opportunity to review it and ask the witnesses to read all the good statements that undoubtedly are in here somewhere. And that is where timeliness comes in.

And I'm not saying necessarily that Mr. Pollard has been negligent in trying to get it. That does not help me in trying to confront the evidence that is being offered today.

CHAIRMAN SMITH: You want to offer the good statements in support of your position and Mr. Pollard wants to establish a very narrow thing, and that is he wants to argue, I think -- what is your point?

MR. POLLARD: My point is that when this kind of report exists and these witnesses are unaware of it and they come in here and testify that Three Mile Island 1 is safe enough to restart, I think it reflects on the weight --

CHAIRMAN SMITH: The thoroughness.

MR. POLLARD: -- the thoroughness of the review

and therefore to what extent should this Board rely upon the staff testimony.

MR. BAXTER: But Mr. Pollard got to ask the witnesses that point, and I think he got to ask them several times, and he showed them parts of the abstract and asked them why they hadn't considered it. That's different than putting the whole document into evidence.

CHAIRMAN SMITH: When I said a moment ago that your objections and Mr. Pollard's purposes would be involved, that he was indeed reading from the Sandia report --

MR. BAXTER: I'm sorry, I must have misheard you. I will stipulate that he was reading from the Sandia report and let the cross-examination stand without the whole document.

CHAIRMAN SMITH: It was such a report, that he was accurately reading from it?

MR. BAXTER: Yes.

CHAIRMAN SMITH: Does that satisfy your problems?

MR. POLLARD: I think it does.

CHAIRMAN SMITH: All right. With that stipulation, then --

MR. CUTCHIN: Staff will agree to that as well, sir.

CHAIRMAN SMITH: All right. Then let's accept the

stipulation then. Then what is the status? Do you offer the exhibit or do you want it in the rejected exhibit file?

MR. POLLARD: I think I want it in the rejected exhibit file, not withdrawn.

CHAIRMAN SMITH: Well, the Board sustains the objection on the basis that, as far as it being a prime exhibit is concerned, it simply is correct there's no opportunity to confront the authors. As far as its need is concerned for your purpose, that has been satisfied by the stipulation.

(The document referred to, previously marked for identification as UCS Exhibit No. 44, was marked as rejected and placed in the rejected exhibit file.)

CHAIRMAN SMITH: And that's it. That's your final exhibit. But it will be placed in the rejected exhibit file, UCS Exhibit 44.

MR. CUTCHIN: Mr. Chairman, it has come to my attention that for the sake of completeness, since the Board has received into evidence the March 2., '81, SER, there was a revision to appendices B and C of that document which was served on the parties on April 23rd. I happen to have only one copy here, but there are -- and I can cite the pages.

It consists of a changed page to B-1, B-2, B-6, B-8, and includes an attachment 1, which is a letter on the Foxboro Company's letterhead. I also understand there is a page C-4 as well, which I omitted reading here.

I think for the sake of completeness of the record, if we are taking in the SER it should be taken in including the revision pages 2, and they are both in the record for whatever use can be made of them.

MR. POLLARD: If it will help, I have sufficient copies for the reporter, if the staff wishes to make this a staff exhibit. I see no need for it one way or another. If the staff wants it in as evidence, I have no objection. I have copies.

CHAIRMAN SMITH: I think it correctly should be attached to your exhibits.

MR. POLLARD: Attached to my exhibits?

CHAIRMAN SMITH: Yes. Your exhibit would not get in on its own merits, anyway. It got in because of Dr. Jordan's observation.

We can even make it a Board exhibit, as far as that's concerned, if you prefer. If we do, it should be one complete exhibit.

We have never given a lot of weight as to the idea of who was actually sponsoring an exhibit. It comes up so rarely. Exhibits have to depend largely on their intrinsic

probative value.

MR. CUTCHIN: I was only interested in having the record clear as to what the status of that document was.

CHAIRMAN SMITH: Rather than confuse the record, your UCS Exhibit No. 40 should include the amendments.

MR. POLLARD: So the reporter should attach to UCS Exhibit 40 the letter dated April 23rd from Mr. Stolz to Mr. Hukill, whose subject is revision to appendices B and C of the Three Mile Island Unit 1 equipment qualification safety evaluation.

MR. CUTCHIN: And its attachments.

CHAIRMAN SMITH: Yes.

(The documents referred to were marked as attachments to UCS Exhibit No. 40 and received in evidence.)

CHAIRMAN SMITH: Anything further, Mr. Pollard?

MR. POLLARD: I have nothing further.

CHAIRMAN SMITH: I suggest we adjourn for this evening.

MR. CUTCHIN: Are we going to bring these witnesses back for tomorrow?

DR. JORDAN: Yes, I think we should bring them back. Licensee has a few questions and I would like to -- in view of what has been said today, I need to go back now.

But I am sorry --

MR. CUTCHIN: That's no problem. I just wanted to be sure whether they were leaving, so I would introduce my exhibit before they left.

CHAIRMAN SMITH: Mr. Pollard, do you recognize we are going to continue with these witnesses? This has come up before. It's your choice if you're not present.

MR. POLLARD: Yes, Mr Chairman, I understand. I do not plan to be here tomorrow.

CHAIRMAN SMITH: Then we will adjourn until 9:00 a.m.

(Whereupon, at 5:48 p.m., the hearing was recessed, to reconvene at 9:00 a.m. on Tuesday, June 30, 1981.)

* * *

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

in the matter of: METRCPOLITAN EDISON COMPANY (TMI UNIT 1)

Date of Proceeding: June 29, 1981

Docket Number: 50-289 (Restart)

Place of Proceeding: Harrisburg, Pa.

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

Alfred H. Ward

Official Reporter (Typed)

Official Reporter (Signature)

misc 4
6/29

Met-Ed / GPU

Metropolitan Edison Company
Post Office Box 480
Middletown, Pennsylvania 17057

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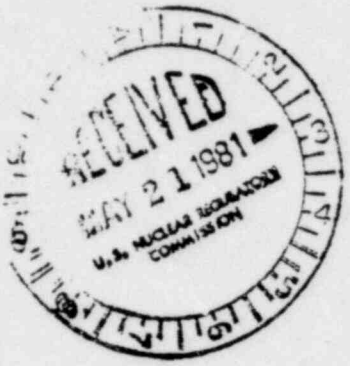

Office of Nuclear Reactor Regulation
Attn: Mr. John F. Stolz, Chief
Operating Reactors Branch No. 4
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Equipment Qualification for Small Breaks

This letter is in response to your letter dated May 1, 1981 which requested information on environmental qualification for equipment needed to respond to design basis small break loss of coolant accidents (SB LOCA). Break sizes between 0.01 FT^2 and 0.5 FT^2 have been addressed considering a loss of offsite power, loss of Main Feedwater, and a worst case single failure. The adverse environmental parameters associated with the worst case SB LOCA have also been addressed. The qualifications of the various equipment has been referenced from our response to IE Bulletin 79-01B dated January 30, 1981 (LIL 026).

Sincerely,

H. D. Hukill
Director, TMI-1

HDH:CWS:hh
Attachment
cc: L. Barrett
H. Silver
R. Jacobs

A001
S 1/1

8105220177

P

Equipment Qualification
for Small Break Loss of Coolant Accidents (SB LOCA)

The essential systems and components list consists of those Class IE electrical items, located in a SB LOCA harsh environment that are required to bring the plant to a safe shutdown. The following systems, or portions thereof, from the response to IE Bulletin 79-01B are required:

Main Steam

Makeup and Purification

Decay Heat Removal

Reactor Building Isolation

Reactor Protection

Engineered Safeguards Actuation

Reactor Building Emergency Cooling

Core Flood

Nuclear Services Closed Loop Cooling

Additional Accident Monitoring Equipment

The following systems from the response to IE Bulletin 79-01B are required but are not located in a SB LOCA harsh environment:

Emergency Feedwater

Decay Heat Closed Loop Cooling

Reactor Building Emergency Cooling River Water

The analysis has considered the worst single failure in addition to the loss of offsite power which results in a loss of Main Feedwater. The worst single failure is the loss of one emergency diesel generator. This results in only one reactor building fan coil unit being available for cooling.

The Component List Sheets are arranged by system. The equipment qualification is based upon our January 30, 1981 response to IE Bulletin 79-01B. The attached table makes appropriate reference to the submission for each component. The building location is shown for each component including the common equipment. The only harsh environments resulting from the small break LOCA are those in the Reactor Building and the Auxiliary Building. The most severe small break LOCA harsh environment is shown for each component on the Component List Sheets. For components located in the Auxiliary Building the only harsh environment is radiation. The remarks column provides qualification information in addition to that previously submitted. Where there is no comment or reference in the remarks column, the SER of March 24, 1981 indicated no deficiency that would be applicable for those small break LOCA's.

The evaluation has considered break sizes in the range from 0.01 FT^2 to 0.5 FT^2. The lower limit of 0.01 FT^2 insures that emergency feedwater will be activated, since it is required for breaks smaller than 0.02 FT^2. The most severe credible small break is that of the largest Reactor Coolant System branch line with a cross-sectional area of less than 0.5 FT^2. The sleeved 14 inch diameter core flood line which has a break area of 0.44 FT^2 is the largest such line. This break results in a reactor building peak pressure of slightly below 30 PSIG. The Reator Building Spray System will not activate until 30 psig is reached so chemical spray on the equipment is not considered. The Reactor Building pressure and temperature resulting from this 0.44 FT^2 break are assumed as an upper bound for qualification requirements for the equipment.

The calculation of the accumulated radiation dose is based on the degree of fuel failures predicted for a 0.44 FT^2 break (i.e., no fuel failures beyond those assumed in the FSAR for worst case normal operation is predicted to occur by licensing basis SB LOCA analyses). A methodology similar to that of Appendix D to NUREG 0588 was then used to evaluate the equipment radiation exposure due to the small break fuel failures. The 40 year integrated dose was added to the 180 day post accident dose to obtain the total dose.

COMPONENT LIST NOTES

Note 1 - SUBMERGENCE - Valve will perform its function of containment isolation prior to becoming submerged.

Note 2 - RADIATION DEGRADATION - DOR Guidelines Appendix C, Table C-1 were used in the evaluation conducted. Other documentation was also reviewed where DOR Guidelines did not address specific materials or where more definitive data was available elsewhere. Review was based upon 80% retention of the appropriate property based upon the prudent engineering judgement of the materials function. The January 30, 1981 submittal contains supplemental pages to each Systems Component Evaluation Worksheet where a materials evaluation was done stating the materia[illegible] the documentation reference, and the radiation valve from that refe[illegible] ence.

Note 3 - REFER TO LER 80-17 - Qualification of motor brakes for certain Limitorque operators.

Note 4 - RELOCATION - Equipment was relocated to an elevation above the calculated Flood Level. New transmitters LT-775, 776, 788 and LT-789 are being installed for control room and remote shutdown panel indication. These Rosemount 1153D type transmitters are unde[illegible]oing NUREG-0588 Cat. #1 qualification program (NRC EQ Branch participation).

Note 5 - MODEL PL-14B2 - Used on Rosemount narrow range RC pressure transmitters.

Note 6 - MODEL SA-1000 - New electrical seal assemblies are being installed on the [illegible]ther 79-01B listed transmitters, RTD(s), and pressure switches located inside containment. Qualification to 75 PSIG, 340°F, 100% humidity and 2 x 10^8R per Conax Bulletin SA-1000/IPS-409/IPS-325.

Note 7 - RB ENVIRONMENT - 30 PSIG/245°F/100% humidity/5.4 x 10^4R.

Note 8 - FOXBORO TRANSMITTER POTENTIAL DEFICIENCIES - The Foxboro transmitters used at TMI-1 are the 4-20 mA type and are not subject to the concern identified by NRC letter dated April 23, 1981 or IE Circular 81-06 for 10-50mA type transmitters.

COMPONENT LIST

System Main Steam

Plant ID No.	Description	Location	Reference to I&E 79-01B submittal	Harsh Environment	Remarks	Qualified
SP6A-PT1	OTSG Discharge Press Transmitter	RB	EDS Vol. I MS Sheet 9	Note 7	Note 8	Yes
SP6A-PT2	OTSG Discharge Press Transmitter	RB	EDS Vol. I MS Sheet 10	"	"	"
SP6B-PT1	OTSG Discharge Press Transmitter	RB	" 11	"	"	"
SP6B-PT2	OTSG Discharge Press Transmitter	RB	12	"	"	"

COMPONENT LIST

System Make-up and Purification

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
MU-P1A	Pump Motor	AB	EDS Vol. I MU Sheet 1	3.5 x 10^4R	-	Yes
MU-P1B	Pump Motor	AB	" 2	"	-	"
MU-P1C	Pump Motor	AB	" 3	"	-	"
MU-P2A	Pump Motor (Aux. Oil)	AB	" 4	"	-	"
MU-P2B	Pump Motor (Aux. Oil)	AB	" 5	"	-	"
MU-P2C	Pump Motor (Aux. Oil)	AB	" 6	"	-	"
MU-P3A	Pump Motor (Main Oil)	AB	" 7	"	-	"
MU-P3B	Pump Motor (Main Oil)	AB	" 8	"	-	"
MU-P3C	Pump Motor (Main Oil)	AB	" 9	"	-	"
MU-P4A	Pump Motor (Gear Oil)	AB	" 10	"	-	"
MU-P4B	Pump Motor (Gear Oil)	AB	" 11	"	-	"
MU-P4C	Pump Motor (Gear Oil)	AB	" 12	"	-	"
MU-V-2A	Let down cooler outlet Valve Motor Operator	RB	" 13	Note 7	Note 1	"
MU-V-2B	Letdown cooler outlet Valve Motor Operator	RB	" 14	Note 7	Note 1	"
LSA/MUV-3	Letdown cooler outlet Valve Limit Switch	AB	" 15	1.8 x 10^4R	Note 2	"

COMPONENT LIST

System Make-up and Purification

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
LSB/MUV-3	Letdown cooler outlet Valve Limit Switch	AB	EDS Vol, I MU Sheet 16	1.8 x 10^4 R	Note 2	Yes
SV/MUV-3	Letdown cooler outlet Valve Solenoid Valve	AB	" 17	"	Note 2	"
MU-V-12	Pump Suction Valve Motor Operator	AB	" 18	1.8 x 10^4 R	-	"
MU-V-14A	Pump Suction From BWST Valve Motor Operator	AB	" 19	1.8 x 10^4 R	-	"
MU-V14B	Pump Suction From BWST Valve Motor Operator	AB	" 20	1.8 x 10^4 R	-	"
MU-V16A	Pump discharge Valve Motor Operator	AB	" 21	1.8 x 10^4 R	-	"
MU-V-16B	Pump discharge Valve Motor Operator	AB	" 22	"	-	"
MU-V-16C	Pump discharge Valve Motor Operator	AB	" 23	"	-	"
MU-V-16D	Pump discharge Valve Motor Operator	AB	" 24	"	-	"
SV/MUV-18	Charging line isolation valve-Solenoid Valve	AB	" 25	"	Note 2	"

COMPONENT LIST

System Make-up and Purification

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
LSA/MUV-18	Charging Line Isolation Valve - Limit Switch	AB	EDS Vol. I MU Sheet 26	1.8 x 10^4 R	Note 2	Yes
LSB/MUV-18	Charging Line Isolation Valve - Limit Switch	AB	" 27	"	"	"
LSA/MUV-20	Seal Isolation Valve Limit Switch	AB	" 28	"	"	"
LSB/MUV-20	Seal Isolation Valve Limit Switch	AB	" 29	"	"	"
SV/MUV-20	Seal Isolation Valve Solenoid Valve	AB	" 30	"	"	"
MU-V-25	RCP Letdown Cooler Isolation Valve Motor Operator	RB	" 31	Note 7	-	"
LSA/MUV-26	RCP Letdown Cooler Isolation Valve - Limit Switch	AB	" 32	3.5 x 10^4 R	Note 2	"
LSB/MUV-26	RCP Letdown Cooler Isolation Valve - Limit Switch	AB	" 33	"	"	"
SV/MUV-26	RCP Letdown Cooler Isolation Valve - Solenoid Valve	AB	" 34	"	"	"
MU-V-36	Recirculation Valve Motor Operator	AB	" 35	1.8 x 10^4 R	-	"
MU-V-37	Recirculation Valve Motor Operator	AB	" 36	"	-	"

COMPONENT LIST

System Make-up and Purification

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
PS480A	Pressure Switch Lube Oil	AB	EDS Vol. I MU Sheet 37	3.5×10^4R	Note 2	Yes
PS480B	Pressure Switch Lube Oil	AB	" 38	"	"	"
PS480C	Pressure Switch Lube Oil	AB	" 39	"	"	"

COMPONENT LIST

System Decay Heat Removal

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
DH-P1A	Pump Motor	AB	EDS Vol. I DHR Sheet 1	1.8×10^4R	-	Yes
DH-P1B	Pump Motor	AB	" 2	"	-	"
DH-V-1	Drop line Valve Motor Oper.	RB	" 3	Note 7	-	"
DH-V-2	Drop line Valve Motor Oper.	RB	" 4	"	-	"
DH-V-3	Suction Valve Motor Oper.	AB	" 5	1.8×10^4R		"
DH-V-4A	Discharge Valve Motor Oper.	AB	" 6	1.8×10^4R	-	yes(Note 3)
DH-V-4B	Discharge Valve Motor Oper.	AB	" 7	1.8×10^4R	-	"
DH-V-5A	BWST Suction Valve Motor Operator	AB	" 8	1.8×10^4R	-	"
DH-V-5B	BWST Suction Valve Motor Operator	AB	" 9	1.8×10^4R	-	"
DH-V-6A	RB Sump Pump Suction Valve Motor Operator	AB	" 10	1.8×10^4R	-	yes
DH-V-6B	RB Sump Pump Suction Valve Motor Operator	AB	" 11	1.8×10^4R	-	"
DH-V-7A	MU System Discharge Valve Motor Operator	AB	" 12	1.8×10^4R	-	"
DH-V-7B	MU System Discharge Valve Motor Operator	AB	" 13	1.8×10^4R	-	"

COMPONENT LIST

System Reactor Building Isolation

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
LSA/AHV-1A	RB Purge Valve Limit Switch	AB	EDS Vol. I EBIS Sht.1	3.5×10^4R	Note 2	Yes
LSB/AHV-1A	RB Purge Valve Limit Switch	AB	" 2	"	"	"
SV/AHV-1A1	RB Purge Valve Solenoid Valve	AB	" 3	"	"	"
SV/AHV-1A2	RB Purge Valve Solenoid "	AB	" 4	"	"	"
CA-V-1	Pz Sample Valve Motor Oper.	RB	" 11	Note 7	-	"
LSA/CAV-2	RCS Sample Valve Limit Valve	AB	" 13	3.5×10^4R	Note 2	"
LSB/CAV-2	RCS Sample Valve Limit Valve	AB	" 14	"	-	"
SV/CAV-2	RCS Sample Valve Solenoid "	AB	" 12	"	-	"
CA-V-3	Pz Water Sample Valve Motor Operator	RB	" 15	Note 7	-	"
CA-V-4A	SG FW Isolation Valve Motor Operator	RB	" 16	"	-	"
CA-V-4B	SG FW Isolation Motor Operator	RB	" 17	"	-	"
CA-V-13	RCS Letdown Sample Valve Motor Operator	RB	" 24	"	-	"
LSA/CAV-189	Demin. Water Isolation Valve Limit Switch	AB	" 25	1.8×10^4R	Note 2	"
LSB/CAV-189	Demin. Water Isolation Valve Limit Switch	AB	" 26	"	"	"

COMPONENT LIST

System Reactor Building Isolation

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
SV/CAV-189	Demin. Water Isolation Valve Solenoid Valve	AB	EDS Vol. I RBIS Sht.27	1.8×10^4R	Note 2	"
AH-V-1B	RB Purge Valve Motor Oper.	RB	" 5	Note 7	Note 3	"
AH-V-1C	RB Purge Valve Motor Oper.	RB	" 6	"	"	"
IC-V-2	IC Closed Loop Isolation Valve Motor Operator	RB	EDS Vol. I RBIS Sht.40	"	-	"
20/ICV-3	IC Return Isolation Solenoid Valve	AB	" 41	1.8×10^4R	Note 2	"
33/ICV-3	IC Return Isolation Limit Switch	AB	" 42	"	"	"
LSB/ICV-3	IC Return Isolation Limit Switch	AB	" 43	"	"	"
WDG-V-3	RB Vent header Isolation Valve Motor Operator	RB	" 54	Note 7	-	"
SV/WDG-V4	RB Vent header Isola. Valve Solenoid Valve	AB	" 55	3.5×10^4R	-	"
LSA/WDG-V4	RB Vent header Isola. Valve Limit Switch	AB	" 56	"	Note 2	"
LSB/WDG-V4	RB Vent header Isola. Valve Limit Switch	AB	" 57	"	"	"
WDL-V-303	RCS Drain tank Outlet Isola Valve Motor Operator	RB	" 58	Note 7	-	"
LSA/WDL-V304	RCS Drain Isolation Valves Limit Switch	AB	" 59	3.5×10^4R	Note 2	"

COMPONENT LIST

System Reactor Building Isolation

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
LSB/WDL-V304	RC Drain Isolation Valve Limit Switch	AB	EDS Vol. 1 RBIS Shc. 60	3.5×10^4R	Note 2	Yes
SV/WDL-V304	RC Drain Isolation Valve Solenoid Valve	AB	" 61	"	"	"
SV/WDL-V534	RB Sump Outlet Isolation Solenoid Valve	AB	" 64	1.8×10^4R	"	"
LSA/WDL-V534	RB Sump Isolation Limit Switch	AB	" 62	"	"	"
LSB/WDL-V534	RB Sump Isolation Limit Switch	AB	RDS Vol. I RBIS Sht. 63	"	"	"
LSA/WDL-V535	RB Sump Isolation Limit Switch	AB	" 65	"	"	"
LSB/WDL-V535	RB Sump Isolation Limit Switch	AB	" 66	"	"	"
SV/WDL-V535	RB Sump Isolation Solenoid Valve	AB	" 67	"	"	"

COMPONENT LIST

System Reactor Protection

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
RC3A-PT1	RC NR Pressure Transmitter	RB	EDS Vol. 1A RPS Sht.1	Note 7	Note 2	Yes
RC3A-PT2	RC NR Pressure Transmitter	RB	" 2	"	"	"
RC3B-PT1	RC NR Pressure Transmitter	RB	" 3	"	"	"
RC3B-PT2	RC NR Pressure Transmitter	RB	" 4	"	"	"
RC4A-TE2	RC Outlet Temp RTD	RB	" 5	"	-	"
RC4A-TE3	RC Outlet Temp RTD	RB	" 6	"	-	"
RC4B-TE2	RC Outlet Temp RTD	RB	" 7	"	-	"
RC4B-TE3	RC Outlet Temp. RTD	RB	" 8	"	-	"
PS-672	RB Pressure Switch	AB	" 13	3.5×10^4R	Note 2	"
PS-673	RB Pressure Switch	AB	" 14	"	"	"
PS-674	RB Pressure Switch	AB	" 15	"	"	"
PS-675	RB Pressure Switch	AB	" 16	"	"	"

COMPONENT LIST

System Engineered Safeguards Actuation

Plant ID No.	Description	Location	Reference to I&E 73-01B Submittal	Harsh Environment	Remarks	Qualified
PS-283	RB Pressure Switch	AB	EDS Vol. IA ESAS 2	3.5×10^4R	Note 2	Yes
PS-284	RB Pressure Switch	AB	" 3	"	"	"
PS-286	RB Pressure Switch	AB	" 5	"	"	"
PS-287	RB Pressure Switch	AB	" 6	"	"	"
PS-289	RB Pressure Switch	AB	" 8	"	"	"
PS-290	RB Pressure Switch	AB	" 9	"	"	"
RC3A-PT3	RC WR Pressure Transmitter	RB	" 10	Note 7	"	"
RC3A-PT4	RC WR Pressure Transmitter	RB	" 11	"	"	"
RC3B-PT3	RC WR Pressure Transmitter	RB	" 12	"	"	"
PT-282	RB Pressure Transmitter	AB	" 1	3.2×10^5R	"	"
PT-285	RB Pressure Transmitter	AB	" 4	"	"	"
PT-288	RB Pressure Transmitter	AB	" 7	"	"	"

COMPONENT LIST

System Reactor Building Emergency Cooling

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
AH-E1A	RB Cooler Fan Motor	RB	EDS Vol. IA RB 1	Note 7	-	Yes
AH-E1B	RB Cooler Fan Motor	RB	2	"	-	"
AH-E1C	RB Cooler Fan Motor	RB	3	"	-	"

COMPONENT LIST

System Core Flood

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
CF-V-2A	CF Sample Isolation Valve Motor Operator	RB	EDS Vol. 1A CF Sht.3	Note 7	-	Yes
CF-V-2B	CF Sample Isolation Valve Motor Operator	RB	" 4	"	-	"
CF-V-3A	CF Vent Valve Motor Operator	RB	" 5	"	-	"
CF-V-3B	CF Vent Valve Motor Operator	RB	" 6	"	-	"
LSA/CFV-19A	CF Makeup Valve Limit Switch	AB	" 7	3.5×10^4 R	Note 2	"
LSB/CFV-19A	CF Makeup Valve Limit Switch	AB	" 8	"	"	"
LSA/CFV-19B	CF Makeup Valve Limit Switch	AB	" 9	"	"	"
LSB/CFV-19B	CF Makeup Valve Limitswitch	AB	" 10	"	"	"
20/CFV-19A	CF Makeup Valve Solenoid Valve	AB	" 11	"	"	"
20/CFV-19B	CF Makeup Valve Solenoid Valve	AB	" 12	"	"	"
LSA/CFV-20A	CF Sample Isolation Limit Switch	AB	" 13	"	"	"
LSB/CFV-20A	CF Sample Isolation Limit Switch	AB	" 14	"	"	"

COMPONENT LIST

System Core Flood

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
SV/CF-V20A	CF Sample Isolation Solenoid Valve	AB	EDS Vol. 1A CF Sht. 17	3.5×10^4 R	Note 2	Yes
LSA/CFV-20B	CF Sample Isolation Limit Switch	AB	" 15	"	"	"
LSB/CFV-20B	CF Sample Isolation Limit Switch	AB	" 16	"	"	"
SV/CF-V20B	CF Sample Isolation Solenoid Valve	AB	" 18	"	"	"

COMPONENT LIST

System Nuclear Services Closed Loop Cooling

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
NS-V-4	RCP Cooler Isolation Valve Motor Operator	AB	EDS Vol. 1A NSCIC Sh. 4	3.5 x 10^4 R	-	Yes
NS-V-15	RCP Cooler Inlet Isolation Valve Motor Operator	AB	" 5	"	-	"
NS-V-32	Non-nuclear Equip.Cooler Isolation Valve Motor Oper.	AB	" 6	"	-	"
NS-V-35	RCP Cooler Isolation Valve Motor Operator	RB	" 7	Note 7	Materials list not yet received from Limitorque for evaluation for radiation affects, however, radiation dose for SB LOCA is not high enough to be of concern.	"

COMPONENT LIST

System: Additional Accident Monitoring Equipment

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
SP1A-LT2	OTSG Level Transmitter	RB	EDS Vol. 1A AAME/RCS Sheet 1	Note 7	Note 4	Yes
SP1B-LT2	OTSG Level Transmitter	RB	" 2	"	"	"
RC1-LT1	PZ-Level Transmitter	RB	" 5	"	-	"
RC1-LT2	PZ Level Transmitter	RB	" 6	"	-	"
RC1-LT3	PZ Level Transmitter	RB	" 7	"	-	"
RC5A-TE1	RC Inlet Temp. RTD	RB	" 8	"	-	"
RC5A-TE2	RC Inlet Temp. RTD	RB	" 9	"	-	"
RC5A-TE3	RC Inlet Temp. RTD	RB	" 10	"	-	"
RC5A-TE4	RC Inlet Temp. RTD	RB	" 11	"	-	"
RC5B-TE1	RC Inlet Temp. RTD	RB	" 12	"	-	"
RC5B-TE2	RC Inlet Temp. RTD	RB	" 13	"	-	"
RC5B-TE3	RC Inlet Temp. RTD	RB	" 14	"	-	"
RC5B-TE4	RC Inlet Temp. RTD	RB	" 15	"	-	"
SP1A-LT4	OTSG Level Transmitter	RB	" 3	"	Note 4	"
SP1B-LT4	OTSG Level Transmitter	RB	" 4	"	"	"

COMPONENT LIST

System Common Equipment

Plant ID No.	Description	Location	Reference to I&E 79-01B Submittal	Harsh Environment	Remarks	Qualified
	Heat Shrink Tubing	RB	EDS Vol. 1A Comm. Sheet 1	Note 7	-	Yes
	Elec. Penetration Assy.	RB	" 3	"	-	"
	Instrument Cable	RB/AB	" 4	"	-	"
	Power & Control Cable	RB/AB	" 5	"		"
	Conax Connectors	RB	" 9	"	Note 5 and 6	"
	Terminal Block	AB	" 2	3.5×10^4 R	Note 2	"

Insert 5
6/79

Met-Ed / GPU

Metropolitan Edison Company
Post Office Box 480
Middletown, Pennsylvania 17057

Writer's Direct Dial Number

June 5, 1981
LIL 176

Office of Nuclear Reactor Regulation
Attn: John F. Stolz, Chief
Operating Reactors Branch No. 4
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Environmental Qualification Questions

The attached questions and answers confirm conversations between our respective staff's over the past week regarding clarification of our submittal of May 18, 1981 (LIL 161).

Sincerely,

H. D. Hukill
Director, TMI-1

HDH:EGW:lma

Attachment

cc: R. Jacobs
D. DiIanni

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Q1. For the isolation valve identified by Note 1, what are the effects after submergence?

A1. There is no affect on the contactors which energize the actuator motor. Since the contactors are located in the MCC and are not submerged they will not cause a change in valve position.

If the limit switches on the actuator are shorted by submergence the control circuit fuse should blow. This would result in a loss of valve position indicator light. This would not be a problem because the valve position is verified by the operator long before the loss of the light occurs.

The submergence of any of the electrical components in these motor operators will not affect any other electrical system because of the isolation provided by the MCC.

Q2. What is the basis for the qualification of the motor brakes in Note 3?

A2. By analysis of the materials in the motor brake that are affected by radiation. The SB LOCA could occur after 40 years of full power operation, and still have the brake operate satisfactorily.

Q3. At what level are the relocated SG level transmitters referred to in Note 4?

A3. The bottom of the transmitters are 5'9 3/4" or more above the reactor building floor.

Q4. Are the cables supplying the SG level transmitters subject to submergence?

A4. No. They feed from above.

Q5. What is the basis for the qualification of the Conax connectors referred to in Note 5?

A5. These connectors use the same materials as those in Note 6, therefore they are qualified to the same environments.

Q6. Will the Conax connectors in Note 6 be used to replace those in Vol. IA, Common, Sheets 10 and 11 of the 79-01B Submittal? If so, when will they be installed?

A6. Yes. These are the replacement connectors and they will be installed prior to restart.

Q7. To what radiation level is the Limitorque operator for NS-V-35 qualified?

A7. A minimum of 2×10^7 rads total integrated dose.

Q8. How was the flood level in the reactor building decreased from 5.94 ft. to 5.66 ft.?

A8. By using a more realistic, but still conservative model of the steam generator exterior configuration.

Q9. What dose rate was used in the reactor building to determine the normal integrated dose? How was it obtained?

A9. The dose rate used was 100mR/hr. It was obtained by actual plant measurements taken over a 4 1/2 year period.

Q10. What is the dose rate on the Decay Heat Removal Pump for SB LOCA conditions?

A10. An approximation of the dose was determined by comparing the source terms calculated in accordance with NUREG 0737 Item II.B.2, and representative source terms available in the GAISSAR Chapter 12. This comparison yielded a 10^4 difference. The corresponding NUREG 0737 dose rate calculated was reduced by the same factor of 10^4 for the initial post-accident rate.

The resultant initial dose rate was 4 Rad/hr to the pumps. This rate would then decay over the next 180 days in the same fashion as the NUREG 0737 source. At the end of 180 days the dose rate would be 4 mR/hr.

Q11. What would be the effect of a beta dose of 2.2×10^5 rads on equipment inside containment?

A11. No effect. The electrical equipment required to bring the plant to a safe shutdown is in conduit or metal enclosures.

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6/29

Met-Ed / GPU

Metropolitan Edison Company
Post Office Box 480
Middletown, Pennsylvania 17057

Writer's Direct Dial Number

June 12, 1981
L1L 180

Office of Nuclear Reactor Regulation
Attn: John F. Stolz, Chief
Operating Reactors Branch No. 4
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Environmental Qualification for Small Break LOCA

The purpose of this letter is to confirm information transmitted by telephone June 5 to June 11, 1981 for clarification of our submittal dated May 18, 1981 (L1L 161).

Sincerely,

H. D. Hukill
Director, TMI-1

HDH:CWS:lma

Enclosure

cc: R. Jacobs
D. DiIanni

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Question: What radiation levels are expected in the vicinity of Valves DH-V-4A/B and DH-V-5A/B during normal operation and during DH System operation?

Answer: General area dose rates in the vicinity of DH-V-4A/B and DH-V-5A/B are less than 100mr/hour* (and usually much less than 100mr/hr) during either normal operation or DH System operation. This is based on routine radiation surveys taken since TMI-1 began operation.

Question: Will GPU review the results of the Westinghouse tests on Reliance motors used on Limitorque actuators? Will GPU advise the NRC if those test results are applicable to TMI-1 and the effects, if any?

Answer: All information that GPU has reviewed to date indicates that the Reliance motors used in TMI-1 Limitorque actuators are qualified as specified in our 79-01B submittal.

GPU will review and comment to the NRC on the Westinghouse reports after the NRC makes the reports available to GPU.

Question: Do the failures on Foxboro transmitters, described in test report T3-1068, affect the qualification of the TMI-1 transmitters? Are these the same type of units?

Answer: All units in this report continued to function up to 7.6×10^7 R. This is orders of magnitude above the SB LOCA radiation for TMI-1. The TMI-1 transmitters are of the same type as those tested.

Question: When will the B & W Report "Evaluation of Aging of Class IE Controls and Instrumentation in B & W 177FA Scope of Supply" be completed?

Answer: B & W has stated that the report should be published by July 15, 1981. The report is being sponsored by the B & W Owners Group and its publication is under control of B & W and the Owners Group.

Question: Will all components that have exceeded their qualified life expectancy be replaced before Restart? Will a program to replace components, as needed, be in place by Restart?

Answer: Yes. The only such components identified to date are neoprene cover seal gaskets. In addition, a procedure will be implemented by criticality to replace components as needed.

*100 mr/hr may be briefly exceeded for up to 24 hours following a shutdown involving a large crud burst.