

ORIGINAL

OFFICIAL TRANSCRIPT
PROCEEDINGS BEFORE

NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

DKT/CASE NO. 50-266-OLA and 50-301-OLA
TITLE WISCONSIN ELECTRIC POWER COMPANY
(Point Beach Power Plant Units 1 and 2)
PLACE Milwaukee, Wisconsin
DATE November 18, 1982
PAGES 1804 - 1883

EVENING SESSION

TRX1
AR
ALDERSON REPORTING

8211230003 831118
PDR ADOCK 05000266
T PDR

(202) 678-9300
T STREET, N.W.
GTON, D.C. 20001

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

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

- - - - -x

In the Matter of :
WISCONSIN ELECTRIC POWER COMPANY : Docket Nos.
(Point Beach Power Plant : 50-266-CLA and
Units 1 and 2) : 50-301-CLA

- - - - -x

Room 398, Federal Building
517 East Wisconsin Avenue
Milwaukee, Wisconsin
Thursday, November 18, 1982

The hearing in the above-entitled matter
resumed, pursuant to recess, at 3:45 p.m.

BEFORE:

- PETER B. BLOCH, Chairman
Administrative Judge
- JERRY R. KLINE, Member
Administrative Judge
- HUGH C. PAXTON, Member
Administrative Judge

1 APPEARANCES:

2 On behalf of Applicant:

3 BRUCE W. CHURCHILL, Esq.

4 DELISSA A. RIDGWAY, Esq.

5 Shaw Pittman Potts & Trowbridge

6 1800 M Street, N.W.

7 Suite 900 - North

8 Washington, D.C.

9

10 On behalf of the Regulatory Staff:

11 RICHARD BACHMANN, Esq.

12 MYRON KARMAN, Esq.

13 Washington, D.C.

14

15 On behalf of Intervenor,

16 Wisconsin Environmental Decade, Inc.:

17 PETER ANDERSON, Esq.

18

19

20

21

22

23

24

25

C O N T E N T S

1				
2	<u>WITNESSES</u>	<u>DIRECT</u>	<u>CROSS</u>	<u>REDIRECT</u> <u>RECROSS</u> <u>BOARD</u>
3	Timothy G. Colburn,			
4	Conrad E. McCracken,			
5	Ledyard B. Marsh and Emmett L. Murphy			
6	By Mr. Bachmann	1813		
7	By Mr. Anderson		1829	
8	By Mr. Anderson			1858
9	Douglas Fletcher (resumed)			
10	By Mr. Churchill	1871		
11	By Mr. Anderson		1873	

E X H I B I T S

11	<u>NUMBER</u>	<u>IDENTIFIED</u>	<u>RECEIVED</u>
12	Staff 1 and 2	1811	1811

14			<u>PAGE</u>
15	Statement of professional qualifications of Timothy G. Colburn follows:.....		1813
16	The professional qualifications of Conrad E. McCracken.....		1818
17	The written testimony and professional qualifications of Mr. Ledyard Marsh follow:.....		1822
18			
19	The professional qualifications of Mr. Emmett L. Murphy....		1828

24 RECESS:

25 Afternoon - P. 1808

PROCEEDINGS (RESUMED)

1
2 MR. ANDERSON: Yesterday was left open for us
3 to ascertain what earlier discovery requests required
4 earlier notification of the IGA research program that
5 Mr. Fletcher testified to. Our files with this don't go
6 back that far. Until I get a chance to go back to the
7 office, I cannot make that determination.

8 JUDGE BLOCH: Ordinarily a claim to follow up
9 on or comply with a discovery request should be done
10 promptly, when you know about it. Obviously, if you
11 don't have the material now, you will have to accompany
12 any motion you make based on non-compliance with your
13 discovery requests accompanied by a showing of good
14 cause for late filing.

15 MR. ANDERSON: I don't know if I can establish
16 the facts unless Mr. Fletcher first testifies as to when
17 and if he transmitted information about that research
18 program to Licensee. All we know is that they have a
19 research program. Unless he transferred to Licensee, I
20 can't find out until discovery.

21 JUDGE BLOCH: I cannot allow a line of
22 questioning based on an interrogatory that we have not
23 seen. There is no way to tell if it is relevant if we
24 haven't seen the interrogatory.

25 MR. ANDERSON: Well, I come by bus, Mr.

1 Examiner. I cannot bring every piece of paper with me
2 and it's an unreasonable demand on this intervenor.
3 Until I get back to the office, I think you would have
4 to realize that there are spread resources.

5 JUDGE BLOCH: What is it that you wanted to
6 ask him that we were supposed to allow you to ask him,
7 and how do we know that it's relevant?

8 MR. ANDERSON: We won't know it's relevant
9 until we know what the interrogatory says.

10 JUDGE BLOCH: The question is not allowed.
11 Mr. Churchill, have you rested your direct
12 case?

13 MR. CHURCHILL: Yes, sir. I have no further
14 witnesses.

15 JUDGE BLOCH: Mr. Bachmann, would it be useful
16 for us to start with the Staff witnesses?

17 MR. BACHMANN: Yes, sir. However, I would
18 like approximately fifteen minutes. Perhaps we could
19 resume at 4:00.

20 JUDGE BLOCH: Off the record.

21 (A discussion was held off the record.)

22 JUDGE BLOCH: The hearing is recessed until
23 5:00. I have -- excuse me, until 4:00. I have 3:47.

24 (A brief recess was taken.)

25

1 JUDGE BLOCK: The hearing will please come to
2 order.

3 Mr. Bachmann?

4 MR. BACHMANN: Mr. Chairman, the Staff is
5 prepared now to present its direct case in this
6 proceeding.

7 The first order of business we have relates to
8 Title 10 of the Code of Federal Regulations, Section
9 2.743(g), which says in pertinent part, in any
10 proceeding involving an application, there shall be
11 offered in evidence any safety evaluation prepared by
12 the Staff and any detailed statement on environmental
13 considerations prepared also by the Staff, pursuant to
14 Part 51.

15 This is a regulatory requirement. It goes
16 beyond what has been placed at issue.

17 So at this point I would like to offer into
18 evidence the safety evaluation by the Staff, which was
19 mailed to all parties on July 8, 1982, and the
20 environmental impact appraisal prepared by the Staff and
21 mailed to all parties on June 30, 1982.

22 I would like to mark those in order, the
23 Safety Evaluation, Staff Exhibit No. 1; the
24 Environmental Impact Appraisal, Staff Exhibit No. 2.

25 The Staff does not intend to utilize either of

1 these two documents as testimony, with the exception of
2 Section 5 of the Safety Evaluation, for which we have a
3 sponsoring witness, and which that section does apply to
4 what we have at issue in this proceeding.

5 So at this point we reserve -- in other words,
6 what I'm saying is we would reserve the right to utilize
7 Section 5 as testimony, Section 5 of the Safety
8 Evaluation. The other parts are being offered into
9 evidence simply as a regulatory requirement.

10 Therefore, at this time I move that these
11 exhibits, so marked, be accepted into evidence in this
12 proceeding.

13 JUDGE BLOCK: Are there any objections to the
14 staff motions?

15 MR. ANDERSON: I'm not sure I caught all.

16 Am I correct, Mr. Buchmann, it is not for the
17 truth of the statement, it is just the fact that there
18 is a document prepared on that date with that title?

19 MR. BACHMANN: That is correct. We are not
20 prepared to sponsor the truth of the documents because
21 we feel they are not at issue, with the exception of
22 Section 5 of the Safety Evaluation, which we will
23 present a witness to attest to the truth of the matter
24 contained therein.

25 MR. ANDERSON: We have no objection, if that

1 will hold until the cross examination is over.

2 JUDGE BLOCK: That is what the Staff is
3 asking.

4 Mr. Churchill, any examination?

5 All right, there being no objection, the Staff
6 request is granted. Those documents shall be marked as
7 Staff Exhibit 1 and Staff Exhibit 2, as requested.

8 (The documents referred
9 to were marked Staff
10 Exhibits Nos. 1 and 2 for
11 identification, and were
12 received in evidence.)

13 JUDGE BLOCK: Mr. Bachmann?

14 MR. BACHMANN: Yes, sir. The Staff has now
15 assembled its witness panel. I will introduce them in
16 order, starting with the gentleman closest to the
17 Licensing Board, Mr. Ledyard B. Marsh, Mr. Timothy G.
18 Colburn, Mr. Emmett L. Murphy and Mr. Conrad E.
19 McCracken.

20 At this point, Mr. Chairman, I would like to
21 proceed through each of the different witnesses, since
22 each is here for a different purpose. But before I do
23 that, would you please swear the witnesses in?

24 Whereupon,

25 TIMOTHY G. COLBURN,

1 CONRAD E. MC CRACKEN,
2 LEDYARD B. MARSH and
3 EMMETT L. MURPHY,

4 called as witnesses by Counsel for NRC Staff, having
5 been duly sworn by the Administrative Law Judge, were
6 examined and testified as follows:

7 JUDGE BLOCK: Please proceed, Mr. Bachmann.

8 MR. BACHMANN: Yes, sir.

9 I will address my comments initially to Mr.
10 Colburn.

11 Mr. Colburn's presence here is as the project
12 manager for the Point Beach reactor. Mr. Colburn has
13 not submitted prefiled written testimony.

14 JUDGE BLOCK: Just to be clear, you say he is
15 the project manager for the Point Beach reactor or for
16 the amendment proceedings?

17 MR. BACHMANN: For the reactor. In other
18 words, any license amendments fall within his purview.

19 Mr. Colburn previously testified at the
20 hearing that was held last October, in 1981, on the
21 demonstration project. At that time, his professional
22 qualifications were bound into the record.

23 To keep this record a little bit cleaner, we
24 have provided the Court Reporter and the parties
25 additional copies of Mr. Colburn's professional

1 qualifications. We would like to have that bound into
2 the record, but first I would like to address Mr.
3 Colburn.

4 DIRECT EXAMINATION

5 BY MR. BACHMANN:

6 Q Mr. Colburn, did you prepare that statement of
7 professional qualifications you have before you?

8 A (WITNESS COLBURN) Yes, I did.

9 Q Do you have any corrections to be made to
10 those professional qualifications?

11 A (WITNESS COLBURN) I have one minor correction
12 to make. On line five of my professional
13 qualifications, I indicate that I have held the position
14 of project manager for one year. It is now two years.

15 Q Given that correction, Mr. Colburn, are your
16 professional qualifications true and correct to the best
17 of your belief?

18 A (WITNESS COLBURN) Yes.

19 MR. BACHMANN: Mr. Chairman, the Staff moves
20 that Mr. Colburn's professional qualifications be bound
21 into the record of this proceeding.

22 JUDGE BLOCK: There being no objection, they
23 may be so bound.

24 (The statement of professional qualifications
25 of Timothy G. Colburn follows:)

inv # 4

TIMOTHY G. COLBURN
DIVISION OF LICENSING
OFFICE OF NUCLEAR REACTOR REGULATION
PROFESSIONAL QUALIFICATIONS

My name is Timothy G. Colburn. I am a project manager in Operating Reactors Branch No. 3, Division of Licensing, United States Nuclear Regulatory Commission. In this position I am responsible for the technical reviews, analyses and evaluations of applications for amendments to operating reactor licenses. I have held this position for ^{Two}~~one~~ year.

I hold a Bachelor of Science degree in Mechanical Engineering from the University of Notre Dame.

I have five years of professional experience in the Navy's Nuclear Power Program. In that capacity I completed a one-year intensive program in nuclear power classroom and prototype training. I also served for four years as a qualified Engineering Officer of the Watch. I have been division officer of all shipboard engineering divisions supervising all phases of shipboard engineering operations and maintenance and have participated in an intensive non-refueling shipyard overhaul of a nuclear submarine.

I have also had two years experience with Potomac Electric Power Company, a non-nuclear utility, working in a staff function as assistant to the Manager of Production Operations.

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

JUDGE BLOCK: Off the record.
(Discussion off the record.)

1 MR. BACHMANN: The next staff witness is Mr.
2 Conrad E. McCracken. Mr. McCracken's professional
3 qualifications were provided to the Board and the
4 parties in my letter of November 2nd, 1982.

5 The purpose of Mr. McCracken's appearance here
6 is to address the Board's concern in the area of
7 corrosion. Mr. McCracken has not filed any written
8 testimony in this area. He is available for the Board's
9 questioning in the areas of their concern. I will
10 address Mr. McCracken.

11 BY MR. BACHMANN: (Resuming)

12 Q Would you state your position and duties at
13 the NRC?

14 A (WITNESS MC CRACKEN) Yes. I'm the section
15 leader of the Chemical Technology section, which
16 includes responsibility for any chemical or corrosion
17 problem associated with nuclear power plants and
18 determining that the plant complies with the regulations
19 that we have.

20 Q Mr. McCracken, you have before you a copy of
21 your professional qualifications. Did you prepare those
22 professional qualifications?

23 A (WITNESS MC CRACKEN) Yes, I did.

24 Q Do you have any corrections to be made to them?

25 A (WITNESS MC CRACKEN) No, I don't.

1 Q Are these professional qualifications true and
2 correct to the best of your knowledge and belief?

3 A (WITNESS MC CRACKEN) Yes, they are.

4 MR. BACHMANN: The staff hereby moves the
5 Board that Mr. McCracken's professional qualifications
6 be bound into the transcript.

7 JUDGE BLOCH: We would defer ruling on that
8 until after the next two people.

9 MR. BACHMANN: Yes, sir.

10 Our next witness is Mr. Ledyard B. Marsh. His
11 written testimony, including his professional
12 qualifications, were filed with the Board and parties
13 also in my letter of November 2nd, 1982.

14 The purpose of Mr. Marsh's appearance here as
15 a witness is to address the Board's concerns in its
16 October 1st, 1982 memorandum and order which encompass
17 effects of potential accidents.

18 Mr. McCracken -- excuse me -- Mr. Marsh's
19 testimony is not intended to address that which is at
20 issue in the admitted contention. He is here and his
21 written testimony is to address the Board's concerns.

22 BY MR. BACHMANN: (Resuming)

23 Q Mr. Marsh, would you state your position and
24 your duties at the NRC?

25 A (WITNESS MARSH) Yes. I am a section leader

1 in the Reactor Systems branch in the Division of System
2 Integration, and as such I am responsible for reviewing
3 the systems and associated safety programs along with
4 other sections in that branch.

5 Q Mr. Marsh, you have before you a copy of your
6 written testimony which includes a statement of
7 professional qualifications. Referring to both
8 documents, did you prepare these documents?

9 A (WITNESS MARSH) Yes, I did.

10 Q Are there any corrections you wish to make?

11 A (WITNESS MARSH) No, I don't.

12 Q Do you state that these documents are true and
13 correct to the best of your knowledge and belief?

14 A (WITNESS MARSH) Yes, I do.

15 Q Do you adopt the testimony as your testimony
16 in this proceeding?

17 A (WITNESS MARSH) Yes, I do.

18 MR. BACHMANN: Mr. Chairman, shall I refrain
19 from a motion until we finish the last witness?

20 JUDGE BLOCH: Are there going to be any
21 objections to these matters being bound in?

22 MR. ANDERSON: There are.

23 JUDGE BLOCH: Please bind in Mr. McCracken's
24 credentials.

25 (The professional qualifications of Mr. Conrad

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

insert #1

Conrad E. McCracken

Professional Qualifications

I am Section Leader of the Chemical Technology Section in the Chemical Engineering Branch of the Division of Engineering, Office of Nuclear Reactor Regulation. My responsibilities in this position include supervision of the evaluation of all PWR's for compliance with chemistry and corrosion requirements of the commission. Specifically, this includes evaluating the chemistry and corrosion control measures that are instituted to minimize corrosion of steam generator materials. I have served in this capacity since April 1982. Between February 1981 and April 1982 I served as a senior chemical engineer with the same branch, where my duties included the evaluation of steam generator chemistry and corrosion program at both operating plants and plants in the licensing process.

From 1966 to 1981 I was employed by Combustion Engineering Corporation in a variety of management and engineering positions, the last of which was Manager of Chemistry Development from 1977 to 1981. During this 15-year period, my prime technical responsibility was support to operating nuclear power plants and nuclear plants in construction in the area of chemical and radiochemical sampling, analysis, data interpretation, establishing chemistry specifications and conducting laboratory experiments to verify or support nuclear plant requirements. In this capacity I made frequent visits to nuclear power plants where I physically conducted sample and analysis programs or audited the utilities' capabilities in the chemistry and radiochemistry area. During the last twelve years at Combustion Engineering, approximately fifty percent of my time was expended in areas associated with understanding and resolving steam generator corrosion problems.

From 1958 to 1966 I served in the United States Navy where I was Qualified in submarines for all nuclear duties. For three years of this period I was an instructor, responsible for teaching office and enlisted personnel in the area of chemistry, corrosion and mechanical systems operation and control. My final duty station in the Navy was on the USS Nautilus where I was responsible for all chemistry and corrosion control and personnel radiation exposure.

Education

I attended the University of Hartford School of Engineering and completed course work in 1970. I am a Registered Professional Corrosion Engineer.

1 JUDGE BLOCH: What is the nature of your
2 objection, Mr. Anderson?

3 MR. ANDERSON: We object to the material
4 beginning on line 9, page 5, and continuing until the
5 end of page 6, moving to strike that portion of the
6 testimony on the grounds that the Board, although we
7 disagree with its ruling, has ruled that the LOCA issue
8 is not at issue in this proceeding. As a consequence,
9 we have not educed evidence. From our perspective that
10 is a very serious problem.

11 What we have here is countervailing evidence
12 to evidence which I have not been permitted to produce.
13 And while we are very gratified that staff apparently is
14 working on it, we would be very interested in talking to
15 Mr. Marsh about what he is doing in terms of the narrow
16 confines of this evidentiary proceeding. It would be
17 improper and unfair to this party to let this material
18 in after the ruling that was issued in the Board's
19 October 1st order.

20 MR. BACHMANN: Mr. Chairman, I might state
21 that the entire purpose of Mr. Marsh's testimony is to
22 address the concerns stated on page 2 of the Board's
23 October 1st memorandum and order. His testimony, as I
24 stated before, is not directed specifically at the issue
25 as the Board defined it, but at the Board's ancillary

1 concerns in this area.

2 MR. ANDERSON: I'm not faulting the staff for
3 producing it. I am saying it is unfair to us, its
4 effect it produced here.

5 MR. CHURCHILL: Could I have identified again
6 precisely which aspects of the testimony you're
7 objecting to?

8 MR. ANDERSON: Beginning on line 9 of page 5
9 and continuing to the end.

10 JUDGE BLOCH: Do you have a comment, Mr.
11 Churchill?

12 MR. CHURCHILL: Yes. I was wondering what
13 evidence it is that Mr. Anderson attempted to introduce
14 that was rejected.

15 JUDGE BLOCH: Well, frankly I don't think that
16 is relevant to the question of whether this should be
17 admitted at this time.

18 MR. CHURCHILL: Well, I am wondering because
19 that is the reason he gave. He said he wanted to
20 introduce certain evidence, and I don't recall him
21 introducing evidence. I don't think he attempted to
22 introduce any. I do think that he attempted to ask one
23 or two of the staff witnesses questions that went beyond
24 the scope of their direct.

25 JUDGE BLOCH: Applicant's witnesses.

1 MR. CHURCHILL: Applicant's witnesses, which
2 was a procedural matter.

3 JUDGE BLOCH: Mr. Anderson, we have considered
4 this material to be relevant to the Board's concerns
5 about the possible problems that might result if we
6 found that there were problems with eddy current
7 testing, and therefore, we will admit it. It therefore
8 becomes a proper question for cross examination by you.

9 MR. ANDERSON: Well, I think the rule you're
10 making now is the reason we made before, but you ruled
11 contrawise in the October 1st order, and by changing the
12 ruling in midstream it just totally is a disadvantage.
13 It makes it impossible to defend our interest. We
14 object very, very strongly, sir.

15 The ruling is on page 7 of your October 1st
16 order. It says it's irrelevant.

17 JUDGE BLOCH: We don't think there's any
18 reason to clarify that order. The irrelevance was that
19 some of your contentions, Mr. Anderson, were stated
20 without regard to the sleeving project itself. And we
21 think our order speaks for itself. And to the extent
22 that this testimony is relevant to the possible
23 implications of defects of eddy current testing or the
24 reliability of eddy current testing, it will be allowed
25 in.

1 MR. ANDERSON: I trust our objection is very
2 clear on the record.

3 JUDGE BLOCH: We have a Reporter here who's
4 taking down a verbatim transcript, Mr. Anderson.

5 MR. ANDERSON: Thank you, sir.

6 JUDGE BLOCH: The testimony may be bound in as
7 offered.

8 (The written testimony and professional
9 qualifications of Mr. Ledyard Marsh follow:)

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

A2 #2A

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
WISCONSIN ELECTRIC POWER COMPANY
(Point Beach Nuclear Plant,
Units 1 and 2)

}
Docket Nos. 50-266
50-301
(Repair to Steam Generator Tubes)

TESTIMONY OF LEDYARD B. MARSH

- Q. Please state your name and your position with the Nuclear Regulatory Commission.
- A. My name is Ledyard B. Marsh. I am presently assigned as Section Leader, Reactor Systems Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation.
- Q. Have you prepared a statement of your professional qualifications?
- A. Yes. A copy of the statement is attached to this testimony.
- Q. What is the purpose of your testimony?
- A. The purpose of my testimony is to address the Licensing Board's concern, as stated in its October 1, 1982 Memorandum and Order, with respect to undetected flaws in sleeved steam generator tubes leading to tube ruptures which could cause serious safety problems.

Q. What would be the consequences of failing to detect a defect in the sleeved portion of the steam generator tube(s)?

A. If the undetected flaw is in the tube (original) portion, then even if the flaw became a through wall defect, no leakage would occur since the sleeve serves as the reactor coolant system pressure boundary. Also, the sleeve acts as structural support for the tube and would prevent excessive movement of the tube thus minimizing the possibility of damaging adjacent tubes, or creating loose objects should a through wall tube defect occur.

If the undetected flaw is in the sleeve, then failing to detect this flaw could result in a through wall defect should the corrosion continue and if subsequent eddy current testimony (ECT) examinations fail to detect the flaw.

Q. What would be the safety significance of a through wall defect in the sleeved portion of the steam generator tubes?

A. A through wall defect in the sleeve may not result in the same leak rate as a through wall defect (of equivalent size) in an unsleeved tube. If a through wall defect in the sleeve occurs at a location hydraulically far from the original defect (presuming the tube contains a large through wall defect or rupture), then the pressure drop occurring in the small narrow sleeve-to-tube gap would act to throttle the flow. In other words, if a through wall crack in the sleeve occurred, and there was a large through wall defect in the tubing outside the sleeve, primary coolant would pass first through the sleeve, then through the annular region between the tube and the

sleeve, then through the original defect in the tube and then into the steam generator secondary. It is the existence of this torturous path that may, if the sleeving defect is far from the original defect, reduce the leak rate as compared to the leak rate for a through wall defect in an unsleeved tube. If the sleeving through wall defect occurs close to the original tube defect, then the leak rate would be no greater than for the case of an unsleeved tube with a through wall defect of the same size.

- Q. What would be the safety significance of a ruptured (i.e., double ended guillotine) steam generator tube in the sleeved portion?
- A. If the sleeved tube undergoes a double ended guillotine break in the sleeved portion, then the plant response, offsite consequences and required operator action would be about the same as for a double ended guillotine break of an unsleeved tube. However, none of the four actual steam generator tube rupture (SGTR) events have been due to double ended guillotine type breaks. The break sizes and shapes in these events have ranged from a complex defect composed of multiple cracks caused by stress corrosion (Point Beach Unit 1 SGTR) to classical tube bursts with a fish mouth opening (Prairie Island Unit 1 and Ginna SGTRs). The Ginna and Prairie Island tube rupture events resulted in the greatest primary to secondary leak rates and were caused by mechanical wear of the tube as a result of loose parts in the secondary side of the steam generators.
- If a sleeved tube were to suffer a rupture similar to the Ginna or Prairie Island type ruptures (i.e., a fish mouth opening in the

sleeve) then the sleeve and tube in tandem could afford extra mechanical support that may act to restrict the size of the opening. Therefore, the transient and offsite consequences may be less severe for the rupture of a sleeved tube than for an unsleeved tube.

There are no technical reasons why the rupture of a single sleeved tube would be more severe than the same size rupture of a single unsleeved tube. The double ended rupture of a single unsleeved steam generator tube has been evaluated in the Point Beach FSAR and has been found acceptable by the staff. Additionally, the systems performance and overall consequences of the Point Beach Unit 1 steam generator tube rupture of 1975 were evaluated by the staff in NUREG-0651, "Evaluation of Steam Generator Tube Rupture Events", and no significant deficiencies were found.

- Q. What is the possibility of excessive radiation releases or of partial or full core melt during a single steam generator tube rupture (SGTR)?
- A. In general, as discussed in NUREG-0651, and in NUREG-0909, "NRC Report on Steam Generator Tube Rupture at the Ginna Nuclear Power Plant", the past SGTRs have resulted in essentially very low offsite consequences. The combinations of prompt operator action, proper operation of the safety systems and low primary coolant activity have resulted in minimal releases. However, as a result of the Ginna SGTR, several previously uninvestigated systems performance aspects of a PWR SGTR are being studied. For example, excessive

water level in the damaged steam generator may result in radioactive releases exceeding the FSAR calculations. Also, excessive water level may pose a challenge to the integrity of the main steam lines, supports and welds. Neither of these two aspects had been specifically evaluated by the Staff or by PWR applicants or licensees. Nonetheless, while certain previously unanalyzed aspects occurred in the past SGTRs, the Staff believes that the possibility of an SGTR causing an excessive radiation release is remote.

The probability of a core melt as a result of a ruptured steam generator tube has been estimated to be very low based on preliminary risk and reliability studies performed by the Staff and Staff consultants. These studies, which are still under staff review, evaluate the probability of a core melt assuming a single fully severed steam generator tube and a variety of operator errors and equipment malfunctions.

Only limited calculations have been performed to evaluate the systems performance, offsite consequences and required operator actions assuming more than a single ruptured steam generator tube. These studies evaluate the effects of a main steam line break combined with one or five ruptured steam generator tubes, and a small break LOCA. The results of these analyses indicate that the primary coolant shrinkage, caused by overcooling, and the simultaneous loss of coolant can be compensated by the high pressure emergency core cooling system. The core remains covered with

liquid, and the primary coolant remains subcooled, except in the vessel upper head.

WMS # 20

Statement of Professional Qualifications

Ledyard B. Marsh

I am employed as a Section Leader in the Reactor Systems Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation. My responsibilities include supervising the safety reviews of the reactor coolant, emergency core cooling, accident and transient analyses as well as other reactor systems which are assigned to me during the review of nuclear power reactor license applications or safety analyses to support proposed operating reactor technical specification changes.

I graduated from the University of Oklahoma in 1970 with a Bachelor of Science in Electrical Engineering. IN 1976, I received a Masters of Science degree in Nuclear Engineering from the University of Washington.

From 1970 to 1974, I was an officer in the Navy Nuclear Power Program. I attended a year of formal training in the design and operation of the Navy surface ship nuclear propulsion plant. I was then assigned to nuclear powered heavy destroyer, USS California, where I took part in the propulsion plants construction, testing and operation.

In August, 1976 I accepted employment with the Nuclear Regulatory Commission in the Reactor Safety Branch. I reviewed safety analyses to support licensee proposed ECCS design modifications and technical specification changes. In late 1979 and early 1980 I supervised the review of the three domestic steam generator tube rupture events and was the principle author of NUREG-0651, "Evaluation of Steam Generator Tube

Rupture Events." In my present position as Section Leader in the Reactor Systems Branch, I have been involved in the review of the Ginna steam generator tube rupture event, and the development of plant specific and generic recommendations as a result of the Ginna SGTR as well as the other domestic SGTRs. I have also supervised the Division of Systems Integration review of the technical report presentation the resolution of USIs A-3, 4, 5, NUREG-0844.

1 MR. BACHMANN: The final witness is Mr. Emmett
2 Murphy. Mr. Murphy has provided testimony which is
3 being offered here. Mr. Murphy is also sponsoring
4 Section 5 of the staff evaluation, which is entitled
5 "Eddy Current Test Capabilities."

8 BY MR. BACHMANN:

7 Q Mr. Murphy, will you state your position and
8 describe your duties at the NRC?

9 A (WITNESS MURPHY) My job title is that of a
10 senior systems engineer. I am with the Operating
11 Reactors Assessment branch of the Division of Licensing,
12 NRR, at the NRC. I have been with my present
13 organization since September this year. Since this time
14 I have been involved primarily in generic activities
15 relating to steam generators which include the so-called
16 unresolved safety issues program, A3, A4, A5, steam
17 generator tube integrity.

18 Since joining the NRC in July 1979 I have been
19 involved almost exclusively in safety reviews of those
20 steam generators which have experienced significant tube
21 degradation in the last three years, including Point
22 Beach Units 1 and 2. This included technical reviews
23 and evaluations of steam generator tube in-service
24 inspection programs, eddy current test procedures being
25 employed, and steam generator tube repair programs such

1 as sleeving. I was involved in the reviews of both the
2 San Onofre and Point Beach sleeving programs.

3 Q Thank you.

4 A (WITNESS MURPHY) There is a minor error on
5 the last sentence.

6 Q Mr. Murphy, may I proceed to the next question
7 just to keep the record straight?

8 You have before you a document entitled
9 "Testimony of Emmett L. Murphy," which includes your
10 professional qualifications. They are attached to it.
11 These documents were furnished to the Board and parties
12 again in my letter of November 2, 1982. You also have
13 before you Section 5 of the staff safety evaluation
14 report which begins on page 31 of the safety evaluation.

15 Looking at these documents, did you prepare
16 your testimony, professional qualifications and Section
17 5 of the staff safety evaluation report?

18 A (WITNESS MURPHY) I did.

19 Q Do you have any corrections to be made to any
20 of these documents?

21 A (WITNESS MURPHY) Just one. To my statement
22 of personal qualifications, the last sentence, the
23 generic activities relating to the steam generators I've
24 been involved in in the past two months have been more
25 broad than just the so-called unresolved safety issues

1 program. However, it has not been solely directed to
2 the so-called unresolved safety issues program. I just
3 simply wanted to clarify that.

4 My duties have involved participation in the
5 so-called integrated program addressing steam generator
6 tube issues.

7 JUDGE BLOCH: And that is the extent of the
8 correction you have to make in these documents?

9 WITNESS MURPHY: Yes.

10 BY MR. BACHMANN: (Resuming)

11 Q Is the information contained in these
12 documents I have just named true and correct to the best
13 of your knowledge and belief?

14 A (WITNESS MURPHY) Yes.

15 Q Do you adopt these documents as your testimony
16 in this proceeding?

17 A (WITNESS MURPHY) Yes.

18 MR. BACHMANN: Mr. Chairman, the staff hereby
19 moves that the documents so named and agreed to by Mr.
20 Murphy be bound into the record as if read.

21 MR. ANDERSON: We object to the references
22 between pages 4 and 9 to the pancake probe and its use
23 in detecting defects on the following grounds.
24 Technical specifications do not require use of a pancake
25 probe. Testimony in this proceeding has shown that

1 Point Beach does not now use a pancake probe and has no
2 intention of using a pancake probe. And that testimony
3 here also shows it is still in the developmental stage.
4 It is of no relevance to the inspectability of tubes at
5 Point Beach or sleeves at Point Beach, and we ask that
6 those portions be stricken. And if you'd like, I could
7 identify the specific sentences in question.

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1 JUDGE BLOCH: Mr. Bachmann, would you
2 respond?

3 MR. BACHMANN: I think a reading of the
4 admitted contention as phrased by the Board about
5 demonstration that of adequacy of eddy current testing
6 most certainly would make a discussion by the Staff of
7 potential future refinements of that testing relevant.
8 If the Board, for instance, if the Board so directed,
9 they might decide that this improved type of probe might
10 be a condition of the license on the basis of the
11 amendment. I just use that as a hypothetical example,
12 however.

13 But certainly, any advances in the technology
14 of eddy current testing that are either available now or
15 in the future would be relevant to the issue as framed
16 by the Board.

17 JUDGE BLOCH: Mr. Churchill?

18 MR. CHURCHILL: I agree with Mr. Bachmann,
19 Your Honor. I also take issue with one or two of Mr.
20 Anderson's statements. I have no recollection at all
21 that there was any testimony that we had no intention of
22 using a pancake probe. It just was not brought out, and
23 I don't think Mr. Anderson asked any of the witnesses
24 one way or another, which he of course was free to do.

25 MR. ANDERSON: May I inquire, Mr. Chairman, if

1 it is the Board's position that it may impose a
2 condition that was opposed by one of the parties in the
3 proceeding?

4 JUDGE BLOCH: It can impose any conditions
5 necessary to ensure the safety of the sleeving project.

6 MR. ANDERSON: Then I'll withdraw the
7 objection, if that is the position of the Board.

8 JUDGE BLOCH: The testimony may be bound into
9 the record without objection.

10 Off the record.

11 (Discussion off the record.)

12 JUDGE BLOCH: Back on the record.

13 MR. BACHMANN: Mr. Chairman, I've just been
14 advised by the court reporter that the Board has not
15 ruled on the inclusion of Mr. Murphy's professional
16 qualifications in the transcript. May we have a ruling
17 on that?

18 JUDGE BLOCH: Yes, they shall also be bound in.

19 (The documents referred to follow:)

20

21

22

23

24

25

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
Wisconsin Electric Power Company
(Point Beach Nuclear Plant,
Units 1 and 2)

}
Docket Nos. 50-266
50-301

}
(Repair to Steam Generator Tubes)

TESTIMONY OF EMMETT L. MURPHY

Q. Please state your name and your position with the Nuclear Regulatory Commission.

A. My name is Emmett L. Murphy. I am presently assigned as a Senior Systems Engineer to the Operating Reactors Assessment Branch, Division of Licensing in the Office of Nuclear Reactor Regulation.

Q. Have you prepared a statement of your professional qualifications?

A. Yes. A copy of the statement is attached to this testimony.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to address the one genuine issue of material fact in this proceeding as formulated by the Licensing Board in its October 1, 1982 Memorandum and Order. The issue is:

That the license amendment should be denied or conditioned because applicant has not demonstrated that eddy current testing is adequate to detect serious stress corrosion cracking or intergranular attack, in excess of the technical specification

prohibiting more than 40 percent degradation of the sleeve wall, in sleeves that would be inserted within steam generator tubes.

- Q. What measures are being taken to ensure that sleeved tube integrity will not be impaired by intergranular attack (IGA) or stress corrosion cracking (SCC)?
- A. The sleeves are fabricated from thermally treated Inconel 600 which is expected to provide enhanced resistance to IGA and SCC as compared to the mill annealed Inconel 600 from which the original tubing was fabricated. The addition of the sleeve will also have the effect of reducing the heat flux from the primary water to the secondary water in the region above the tubesheet which further reduces the potential for IGA and SCC attack in this area. The sleeved tubes will be eddy current inspected at periodic intervals to monitor for any degradation. Tubes found to exceed the 40% plugging limit will be plugged. For Point Beach, eddy current testing (ECT) will be supplemented by system hydrostatic tests at test pressures substantially in excess of normal operating pressure and approximating those which would be expected to occur during postulated main steam line break (MSLB) and loss of coolant accident (LOCA) events. Limits on allowable primary to secondary leakage have been established such that if leaks were to occur, the unit would be shut down before the integrity of the leaking tube(s) would become sufficiently impaired so as to potentially rupture during normal operation and postulated accident conditions. Taken

together, ECT, hydrostatic testing, and leak rate limits ensure that timely detection of tube degradation will occur. Subsequent corrective actions can then be taken maintaining continued assurance of safe operation.

- Q. What is the basis for the 40% plugging limit?
- A. The 40% plugging limit is intended to ensure that degraded tubes are removed from service before they could potentially rupture during normal operating or postulated accident conditions. For conservatism, the plugging limit is determined on the basis that the tube is uniformly thinned over its length and circumference. In addition, it is assumed that there is no external constraint on the tube which could help restrain a rupture. With these assumptions, the minimum acceptable wall thickness to preclude rupture of the sleeve is calculated conservatively to be 38% for a postulated MSLB and even less for LOCA. This is equivalent to saying that the sleeve would exhibit acceptable margin against rupture during accidents for uniform wall thinning ranging to 62% of the wall thickness. The difference between 62% and the 40% plugging limit provides added structural margin including allowance for eddy current error and incremental corrosion penetration between inservice inspections.

The plugging limit is a conservative limit based upon the worst possible defect geometry and the complete absence of external constraints against burst. Operating experience, however, has

demonstrated that the likely consequence of a flaw going undetected beyond the plugging limit and proceeding completely through wall is a small leak. In addition, the plugging limit for the sleeve has taken no credit for reinforcement against burst which may be provided by the outer tube, and the fact that any leakage from the sleeve may be severely restricted by the narrow tube to tubesheet or sleeve to tube gaps. Exactly what influence the outer tube would have in providing reinforcement against tube rupture and in minimizing leakage will depend on the condition of the tube at the location of the sleeve defect, if the sleeve defect is located outside the tubesheet. If the sleeve defect were located inside the tubesheet, the tube would be very effective in both respects.

- Q. How does ECT sensitivity compare between sleeves and unsleeved tubes?
- A. Overall, the sensitivity of ECT in detecting flaws in sleeved tubes is expected to be similar to that for an unsleeved tube.

Outside the tubesheet, Westinghouse reports a reduction in signal response for the sleeve ranging from 30% for a 40% through-wall standard calibration hole to 0% for a 100% through-wall calibration hole. In our judgement, this is considered to be too small of a reduction to have a significant bearing on whether a reliable test can be performed. However, should additional test sensitivity prove necessary, this small reduction in sensitivity for the sleeve can be

more than overcome through the use of "pancake coil" probes in lieu of conventional "bobbin coil" probes.

For the section of sleeve inside the tubesheet, there will be a significant reduction of competing signal noise from the tubesheet. This is due to (1) the sleeve being further away from the tubesheet than the original tube and (2) the fact that sleeves will be inspected at a higher test frequency than the original tubes making the inspection less sensitive to objects located outside the sleeves. As a result of reduced noise from the tubesheet, the signal to noise ratio for the sleeve should actually be improved compared to an unsleeved tube in the tubesheet, thus improving the sensitivity of the test.

- Q. How reliable is ECT for detecting IGA penetrations in excess of the plugging limit?
- A. Actual IGA specimens produced in the laboratory can be detected easily by conventional ECT techniques, even for small penetrations which are on the order of 10% of the wall thickness. IGA detection has proven much more difficult in the field. A major factor behind these difficulties has been constraint conditions against radial expansion of the tubes such as that provided by packed sludge in the Point Beach tube to tubesheet crevices. By constraining the tube against radial expansion, the grains in the IGA affected area are held in physical contact such that good electrical conductivity is maintained across the grain boundary. The tube, therefore, may

exhibit no identifiable signal until sufficient dislocation or opening of the grains has occurred to interrupt the flow of eddy currents. This has resulted in an inability to detect large numbers of tubes with IGA penetrations substantially beyond 40% reduction of the wall thickness, possibly to as much as 70% to 80%.

In spite of ECT limitations for IGA detection, ECT has nonetheless been able to detect hundreds of IGA indications within the tubesheet. ECT in conjunction with other measures which have been taken to reduce the rate of attack on the tubes has permitted Point Beach Unit 1 to be operated in a relatively leak free mode since early 1980. The tight radial constraint of the tube by the tubesheet minimizes any potential for tube rupture. Further, the narrow tube to tubesheet annulus severely restricts any possible leakage from the tubes. Additional actions, including more frequent ECT inspections, periodic hydrostatic tests, and reduced primary to secondary leakage rate limits, have been taken to ensure continued safe operation of the facility.

- Q. What will be the reliability of IGA detection for the sleeves?
- A. In the absence of any significant radial constraint on the sleeves, we believe that postulated IGA penetrations of 40% of the wall thickness will be detectable. However, it is possible that the sleeves could be constrained similarly to tubes in the tube-to-tubesheet crevice if sludge is deposited into the sleeve to tube annulus. This could limit the capability of ECT to detect IGA

on the sleeves, but not to the same extent as has been the case for the unsleeved tubes. Some improvement would be expected due to the reduction or absence (outside the tubesheet) of tubesheet noise.

Additional factors which may improve the detectability of constrained IGA on the tubes would be the larger tube to sleeve gap clearances (35 mils vs. 16 mils) and that the tube can flex radially, outside the tubesheet, both of which may have a cushioning effect on the degree of restraint. Note that the inspection of sleeves outside the tubesheet is of primary interest since leakage from flaws inside the tubesheet would be significantly reduced by the narrow sleeve-to-tube and tube-to-tubesheet gaps.

To sum up, IGA detection capability is expected to be improved over the unsleeved tube case. However, we are unable to predict the threshold amount of IGA penetration at which it would become reliably detectable with ECT. This is not a concern to the Staff at this time, given the other measures being employed to reduce the potential for IGA and to ensure its early detection if it occurs. More sensitive ECT techniques can be employed at that time as necessary to provide continued assurance of safe operation.

- Q. Can IGA detection capabilities be improved?
- A. Yes, "pancake coil" probes are available for field use which can substantially improve test sensitivity for detecting IGA and SCC. Pancake probes are not yet considered practical for routine inservice

inspection due to increased cost and inspection time. Such probes have been extensively used, however, where IGA and SCC problems have developed and the added sensitivity was necessary.

Considerable improvement in ECT sensitivity has taken place and been applied to the field in recent years. The development of multi-frequency techniques has substantially improved operator capabilities to discriminate small amplitude defect signals from various noise signals. Multi-frequency techniques, ECT test probes, and data interpretation methods are continuing to undergo further improvement due to ongoing industry and NRC sponsored efforts. One area of investigation shows great promise for further improving IGA detectability. This involves a more refined method for evaluating the eddy current data produced by the test. This evaluation would look for small conductivity changes associated with the IGA which would become apparent before the grains have opened sufficiently to produce a signal detectable by conventional interpretation.

- Q. What are ECT capabilities regarding SCC detection?
- A. Based upon our experience with ECT, we believe that an adequate inspection of the sleeves can be performed for SCC detection. Conventional bobbin coils are capable of reliably detecting axially oriented 40% through-wall SCC in the absence of significant noise effects. Thus, we do not anticipate difficulties with SCC detection outside the tubesheet area. As previously discussed, noise in the

tubesheet region is expected to be less of a problem for the sleeves than for the unsleeved tubes in this region. Should future experience indicate that additional sensitivity is necessary to provide a fully reliable test in this region, this can be achieved through refinements to the test procedure. One such refinement could include use of the pancake type probe.

Stress corrosion cracks will orient themselves perpendicular to the direction of maximum tensile stress. Between the sleeve joints, the maximum tensile stresses are expected to have a circumferential orientation. Thus, any SCC on the sleeves would be expected to have an axial orientation such as was principally the case for the Point Beach tubes.

The only place on the sleeves where cracks would be expected to have a circumferential orientation (if they were to occur) would be at the expansion transitions of the joints. Routine inspections with bobbin probes generally have not been capable of detecting circumferential flaws at similar joint transitions which already exist on the unsleeved tubes. Should such cracks occur, it will likely be necessary to employ a non-standard probe such as the pancake probe to detect these cracks. Circumferential cracks at expansion transitions have not generally been of concern since (1) such cracks typically involve only a small fraction of the tube circumference before resulting in a detectable leak and (2) even if

complete severance of the tube occurred during accidents, the resulting leakage would be severely limited by the tubesheet crevice. For sleeves, the resulting leakage would be expected to be severely limited by the narrow sleeve to tube gap.

Q. Does the potential for IGA or SCC represent a safety concern?

A. No, ECT in conjunction with restrictive limits on primary to secondary leakage ensure that the occurrence of IGA and SCC will be detected and that timely diagnostic and/or corrective actions will be taken as necessary to ensure that the tubes will retain adequate integrity against rupture during normal operating and postulated accident conditions. Any leakage would be expected to be small based upon operating experience. Of over 200 leaks reported to the NRC to date, only four have involved tube ruptures. None of the rupture occurrences resulted in any unacceptable offsite radiological consequences. Single tube rupture accidents have been included in the FSAR safety analysis for Point Beach. None of the four incidents of tube rupture have involved multiple tube ruptures. The licensee is planning to perform periodic hydrostatic tests, as discussed previously, which will provide added assurance of tube integrity. Should IGA or SCC degradation occur, diagnostic actions can be taken to evaluate the nature of the problem, its safety significance, and whether there is a need to perform a more sensitive eddy current test or to refine data interpretation methods. If necessary, sleeved tubes may be removed from the steam generators for metallurgical examination to assist the evaluation of

these areas and to correlate the field ECT data with actual flaw penetrations.

EMMETT L. MURPHY

DIVISION OF LICENSING

OFFICE OF NUCLEAR REACTOR REGULATION

PROFESSIONAL QUALIFICATIONS

My name is Emmett L. Murphy. I am a Senior Systems Engineer in the Operating Reactors Assessment Branch, Division of Licensing, Office of Nuclear Reactor Regulation. I recently transferred to this position in September 1982, from the Inservice Inspection Section of the Materials Engineering Branch, Division of Engineering, Office of Nuclear Reactor Regulation.

I hold a Bachelor of Science Degree in Aerospace Engineering and a Master of Science Degree in Civil Engineering, both from the University of Maryland.

I have had a total of eleven years of professional experience of which nine years has been in the nuclear field. I was employed for almost six years as a structural engineer at the Bettis Atomic Power Laboratory by Westinghouse Corporation. During my employment at Bettis, I was involved in the structural design and analysis of core and core structural components of naval reactors.

Since joining the NRC in July 1979, I have been involved almost exclusively in the safety reviews of most of the steam generators which have experienced significant tube degradation during the past three years, including Point Beach Units 1 and 2. This has included technical reviews and evaluations of steam generator tube inservice inspection programs including eddy current test procedures being employed, and steam generator tube repair programs. Since my transfer in September 1982 to the Operating Reactors Assessment Branch, I have been involved primarily in generic activities relating to the resolution of "Unresolved Safety Issues" A-3, 4, and 5 pertaining to steam generator tube integrity.

1 MR. BACHMANN: To this point, Mr. Chairman,
2 the Staff has no additional questions to direct to the
3 Staff witnesses. So at this time I should like to
4 tender the witness panel for cross-examination and
5 questioning by the Board.

6 JUDGE BLOCH: I think we prefer to be last.
7 Mr. Anderson, do you have questions?

8 MR. ANDERSON: Just a very few.

9 CROSS-EXAMINATION ON
10 BEHALF OF INTERVENOR

11 BY MR. ANDERSON:

12 Q Mr. Marsh, looking at page 2, your first
13 answer of your prepared testimony --

14 A (WITNESS MARSH) Yes.

15 Q What would happen if the outer tube
16 surrounding a sleeve, the parent tube, had a
17 circumferential through-wall crack? Could, in the
18 accident situation, stresses impact on the sleeve and
19 cause the sleeve to be degraded?

20 A (WITNESS MARSH) Let me understand your
21 question, please. Would you state it again, please?

22 Q Sure. If the parent tube in the sleeve tube
23 has a circumferential crack through-wall and there are
24 stresses that might occur in an accident scenario -- in
25 the stresses that might occur in an accident scenario,

1 is it possible that the rattling that might occur
2 between the outer tube and the sleeve could impact on
3 the sleeve and cause it to fail?

4 A (WITNESS MARSH) I'm afraid I cannot answer
5 that question.

6 JUDGE BLOCH: Can any member of the panel
7 answer the question?

8 WITNESS MURPHY: I'll take a shot at it.

9 I would not expect rattling of the outer tube
10 against the sleeve during an accident condition to
11 affect, to adversely affect the integrity of the tube.

12 BY MR. ANDERSON: (Resuming)

13 Q Would you state why, sir?

14 A (WITNESS MURPHY) The event occurs very
15 quickly. It doesn't seem credible to me that we could
16 cause significant damage to the sleeve in a brief period
17 such as that.

18 Q Did you anticipate the kind of tube failure
19 that occurred at Cinna, where one tube ruptured and
20 rattled against another tube?

21 MR. CHURCHILL: Your Honor, may I object to
22 this? This relates to loose parts, which is irrelevant
23 to sleeving.

24 JUDGE BLOCH: Mr. Murphy, have there been
25 events that happened in steam generator that you had not

1 anticipated before they took place?

2 WITNESS MURPHY: Many of the specific
3 circumstances of the events may not have been
4 anticipated. However, certainly we have never precluded
5 the occurrence of leaks and/or occasional ruptures of
6 tubes, either as a result of corrosion or as a result of
7 wear or other mechanical processes.

8 JUDGE BLOCH: I understood the first part of
9 your question, which said basically you can't anticipate
10 everything that's going to happen. But I didn't
11 understand the second part of the answer.

12 WITNESS MURPHY: Some of the exact
13 circumstances -- for example prior to the Prairie
14 Island event we did not anticipate that a spring from a
15 piece of maintenance equipment would be left in the
16 generator and clamped in place such that it would slide
17 back and forth across the tube and cause a rupture. We
18 didn't anticipate that specific event.

19 In more general terms, we recognize the need
20 -- we recognize the potential for failures of that type
21 in the event you have foreign objects in the steam
22 generators.

23 JUDGE BLOCH: Mr. Anderson.

24 BY MR. ANDERSON: (Resuming)

25 Q Looking at page 4, the first whole answer on

1 your page, Mr. Marsh, did the Point Beach FSAR include
2 the analysis of the steam generator tube failure during
3 LOCA?

4 A (WITNESS MARSH) No, it did not.

5 Q And did the NUREG-0651 report include such an
6 analysis?

7 A (WITNESS MARSH) I heard your question to be,
8 did NUREG-0651 analyze the consequences of a steam
9 generator tube rupture and a LOCA; is that correct?

10 Q Well, let me rephrase it again. Did
11 NUREG-0651 include an evaluation of a steam generator
12 tube failure caused by a LOCA?

13 A (WITNESS MARSH) No, sir. NUREG-0651 contains
14 an evaluation of three steam generator tube rupture
15 events which had occurred before the time of that
16 report. Now, when I speak of steam generator tube
17 ruptures, I mean specifically just that, a steam
18 generator tube rupture.

19 If you are including in your definition of a
20 LOCA a tube rupture, then that is the event which is
21 analyzed. Let me be clear. NUREG-0651 evaluates only
22 those three events which had occurred previous to that
23 point in time. It does not evaluate any failures beyond
24 those which had happened.

25 Q That is what I understood to be your answer.

1 Turn to page 5 of your testimony, the last word on the
2 first paragraph, "remote."

3 A (WITNESS MARSH) Yes.

4 Q Now, if a secondary side safety valve sticks
5 open for 12 hours would the radiation releases be
6 excessive?

7 A (WITNESS MARSH) Not necessarily. What I
8 meant in this testimony is that while we have seen some
9 circumstances in some steam generator tube rupture
10 events which have not specifically been evaluated or
11 included in previous analyses, the analyses of record
12 and the standard review plan assumptions associated with
13 those analyses are sufficiently conservative to bound
14 even those events themselves.

15 Q Well, let's look at the kinds of things that
16 we talked about in the context of Ginna: the stuck-open
17 safety valve, the main line steam break from
18 overfilling, the iodine partitioning. Does the word
19 "remote" there relate to your assessment of the
20 probabilities of those events occurring or, conversely,
21 to the consequences which would occur if those events
22 did happen?

23 JUDGE BLOCH: Before you answer, please, I'd
24 like about a minute to read this passage so I can
25 understand the question.

1 (Pause.)

2 JUDGE BLOCH: If you'd like to proceed.

3 WITNESS MARSH: If you don't mind, I'd like to
4 ask you to restate the question and clarify it for me,
5 because I didn't understand all the "could be's" and
6 "may's."

7 BY MR. ANDERSON: (Resuming)

8 Q Sure, I'll try again.

9 A (WITNESS MARSH) Thank you.

10 Q I'm looking at the word "remote," and what I
11 am trying to understand is whether the word "remote"
12 applies to the possibility of the main line steam break
13 type problem occurring or does it apply to the radiation
14 releases that would occur if you did have a main line
15 steam break type problem. Is that clear?

16 A (WITNESS MARSH) Okay. If during a -- let me
17 try it this way. If during a steam generator tube
18 rupture event excessive leakage from the primary to the
19 secondary occurred beyond what is assumed in the FSAR
20 analyses and if the operator took no actions to stop
21 that leakage -- and that is another "and if" -- and if a
22 steam generator safety valve stuck open and stayed open,
23 which in the Ginna event did not happen -- you
24 understand that, in the Ginna event the safety valve did
25 not stick open -- and if there were no partitioning in

1 the steam generator, none, then there is the possibility
2 for the offsite releases to be above those which are
3 analyzed in the FSAR.

4 Now, when I say "remote" I mean when ganging
5 up all of those possibilities in a row that it is
6 possible to exceed the FSAR analyses.

7 Q Okay. Let's take them one at a time. Let's
8 assume that -- am I correct, at Ginna the power-operated
9 relief valve on the secondary side was out of
10 commission?

11 A (WITNESS MARSH) Let me clarify that. In the
12 Ginna steam generator tube rupture event, the operators
13 closed the atmospheric dump valve on the steam
14 generator, which was damaged. They closed the upstream
15 valve, which rendered that valve unable to open
16 automatically on pressure. The valve could have opened
17 had the operators so chosen. So the valve was in
18 effect, as you say, inoperable, but I want to clarify
19 for you that there are two valves involved. There is
20 the pressurizer PORV which had a problem --

21 Q You're talking about the primary side?

22 A (WITNESS MARSH) I want to make sure which
23 side we're talking about. The atmospheric dump valve on
24 the steam generator had its upstream motor-operated
25 valve closed, okay.

1 Q I understand that, that it was consciously
2 done. But I'm talking about, am I correct that the
3 steam generator at Ginna has two secondary side safety
4 valves, one is power-operated, one is not
5 power-operated?

6 A (WITNESS MARSH) It is at least that. It's at
7 least that. I think that's slightly wrong. I want to
8 clarify for you. It has an atmospheric dump valve on
9 it. It has not only one safety valve; it has a set of
10 safety valves, so that together they will limit the
11 pressure in that steam generator to less than 110
12 percent, given some design circumstances. So it doesn't
13 have just one safety valve.

14 Q Is it just one power-operated steam valve,
15 relieve valve?

16 A (WITNESS MARSH) I believe so. I believe it
17 is only one power-operated relief valve.

18 Q And was that power-operated relief valve out
19 of commission at Ginna?

20 A (WITNESS MARSH) I hesitate to use the words
21 "out of commission." The motor-operated valve upstream
22 was closed which, had it opened, it wouldn't have done
23 any good. But it was still an operable valve.

24 Q Okay. With that clarification, the
25 non-power-operated safety valve did stick open a couple

1 of times intermittently?

2 A (WITNESS MARSH) My understanding of the event
3 was the safety valve on the damaged steam generator
4 opened a number of times. It was challenged and it
5 opened a number of times. I believe that number is five
6 times. And the last time the valve did not fully close
7 and it took a number of hours thereafter to stop the
8 leakage.

9 Q Now, let's assume it stuck open. What would
10 the operator of the plant be able to do to close it?

11 A (WITNESS MARSH) When you say "stick open,"
12 fully open, locked, cannot be closed?

13 Q Well, I don't say cannot be closed. That is
14 the question. Okay, it sticks open, fully open.

15 A (WITNESS MARSH) The code safety valve by
16 itself, you cannot operate this code safety valve from
17 the control room or from anyplace else. So if the code
18 safety valve sticks open, then you must do something
19 else.

20 What the operator would have to do in this
21 circumstance is to go, make sure he depressurizes the
22 primary system as his procedures tell him to do and to
23 make sure that he gets the system pressure down to the
24 point where you stop pressurizing the damaged steam
25 generator.

1 Q Now, if the operator did that and there were
2 steam bubble problems, would that have complicating
3 effects?

4 A (WITNESS MARSH) As you know, there was a
5 steam bubble in the event itself, and that caused some
6 complications. But I must point out that the plant was
7 able to cool down. So yes, it can, the presence of a
8 steam bubble can complicate the situation. But it in
9 and of itself does not pose a safety problem.

10 Q I understand what you're saying.

11 A (WITNESS MARSH) The existence of a steam
12 bubble in the vessel upper head just acts as a
13 complication to it.

14 Q It limits the flexibility of the operator to
15 depressurize the primary side and equalize the
16 primary-secondary differential, doesn't it?

17 A (WITNESS MARSH) The plant can be
18 depressurized using the existing pieces of equipment
19 with the steam bubble in the upper head. It can be.

20 Q But the question was, it limits the
21 flexibility of the operator; is that correct?

22 A (WITNESS MARSH) When you say "flexibility"
23 what comes to my mind, the pieces of equipment that the
24 operator has available to him to depressurize the
25 plant. The operator has lost no equipment by the

1 presence of a steam bubble in the upper head. He still
2 has the same pieces of equipment. So in terms of
3 flexibility he is still just -- he has the same pieces
4 of equipment that he had without the bubble.

5 Q Let me move forward to a hypothetical so we
6 can move on as quickly as we can. If we assume that the
7 -- you had a whole chain of events that led to excessive
8 radiation. Let me reduce those chains to a fewer number
9 of items. If we assume that the iodine partitioning is
10 out and if we assume the steam generator safety valve
11 stuck open and cannot be closed, and we assume that it's
12 going to take ten hours to equalize the pressure, would
13 that lead to excessive radiation releases?

14 A (WITNESS MARSH) I can't say. I would have to
15 calculate what ten hours means and I would have to know
16 more.

17 Q Now, looking to the next paragraph on page 5,
18 the third and fourth line, when you refer to "studies,"
19 would you provide me with copies of those studies?

20 A (WITNESS MARSH) Sir, where are you?

21 Q On page 5, the next paragraph. The third and
22 fourth lines refer to certain studies which are not
23 identified. Would you provide me with a copy of those
24 studies, please, sir?

25 A (WITNESS MARSH) As I tried to indicate, these

1 are preliminary studies which are still under Staff
2 review. They have not been scrutinized and I don't have
3 them with me.

4 MR. ANDERSON: I'm going to object if we can't
5 review these studies that are being testified to.

6 MR. BACHMANN: Mr. Chairman, I must keep
7 reminding Mr. Anderson that the purpose of Mr. Marsh's
8 testimony is to respond to Board concerns, not to
9 address itself to the issue which he has raised.
10 Therefore, I don't see how he would in any way be
11 affected one way or the other, whether he had these
12 studies or not, when we consider what is at issue in the
13 issue that he has raised.

14 JUDGE BLOCH: Mr. Marsh, I take it that based
15 on this paragraph here about the preliminary nature of
16 these studies, if the Board were to conclude that there
17 was a likelihood of more than one tube rupture, you were
18 not advising that we use this paragraph to ensure the
19 public safety under those circumstances, are you?

20 WITNESS MARSH: No, sir, I'm not.

21 JUDGE BLOCH: Mr. Anderson?

22 MR. ANDERSON: Is there a stipulation that the
23 statements made here may not be used as a basis of an
24 evidentiary finding by the Board? If not, I'm going to
25 ask it to be stricken.

1 JUDGE BLOCH: The statement has told us that
2 we should not rely on this statement to ensure the
3 public safety. It seems to me that is enough to
4 accomplish your purpose. We will not be relying on this
5 statement about preliminary studies to assure the public
6 of safety.

7 MR. ANDERSON: I hope it is enough, but for
8 the record I want to make sure that my objection
9 stands.

10 BY MR. ANDERSON: (Resuming)

11 Q Did the Ginna leak rate for the type of
12 rupture that occurred in that tube that did leak, did
13 that leak rate exceed the previous projections that were
14 made for this kind of leak by the Staff?

15 A (WITNESS MARSH) No, sir, they did not.

16 JUDGE BLOCH: Are you talking about the leak
17 of radioactivity or the leak of water?

18 MR. ANDERSON: Water.

19 WITNESS MARSH: That is what I interpreted his
20 question to mean. The standard review plan analysis for
21 that plant indicated a leak rate which was experienced
22 at that plant. In other words, the Ginna event leak
23 rate through that broken tube was very close to a
24 double-ended guillotine break, and that is not
25 unexpected.

1 BY MR. ANDERSON: (Resuming)

2 Q What is the estimated double-ended guillotine
3 leak rate projection of the Staff?

4 A (WITNESS MARSH) I don't have the exact
5 number, but it was on the order of --

6 A (WITNESS COLBURN) Excuse me, Judge, but I
7 remember from my recollection that I think it was 843
8 gallons per minute in the Ginna FSAR.

9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

1 Q Thank you.

2 Did you have another part of the answer you
3 wanted to make?

4 A (WITNESS MARSH) I was going to say on the
5 order of 700 to 800 gallons a minute.

6 Q And are you saying that the rupture that
7 occurred at Ginna approximated in extent a double-ended
8 guillotine break?

9 A (WITNESS MARSH) The flow rate through the
10 broken tube at Ginna approximated the flow rate that you
11 would expect through a double-ended guillotine break.

12 Q But the actual hole opening was not
13 approximating the kind of hole opening that you would
14 have on a double-ended guillotine break, is it, sir?

15 A (WITNESS MARSH) The opening was at least as
16 large as a double-ended guillotine break. It was quite
17 long, and it was a fish mouth opening.

18 MR. ANDERSON: I have no more questions.

19 JUDGE BLOCK: Mr. Churchill?

20 MR. CHURCHILL: No questions.

21 JUDGE BLOCK: Mr. Marsh, was there any
22 testimony that you heard from Applicant witnesses with
23 which you disagreed?

24 WITNESS MARSH: No, sir, there was none.

25 JUDGE BLOCK: Mr. Colburn, was there any

1 testimony of Applicant's witnesses with which you
2 disagree?

3 WITNESS COLBURN: No, sir, there was none.

4 JUDGE BLOCK: Same question, Mr. Murphy.

5 WITNESS MURPHY: A moment of consultation.

6 I have an answer, and I'm not sure I
7 interpreted the question correctly.

8 JUDGE BLOCK: Please feel free to consult with
9 the members of the panel.

10 (Witnesses conferring.)

11 WITNESS MURPHY: I have no what in my mind I
12 would call significant disagreements with what has been
13 presented.

14 In a couple of -- I've obviously hesitated in
15 my answer. There were a couple of particular points
16 upon which I don't have as much information at my
17 disposal as did Mr. Fletcher when he gave his
18 testimony. I would therefore, when evaluating the same
19 issue, might not take as -- make the same statement that
20 he has made. I would take a somewhat more conservative
21 position based upon what I know.

22 I have no information to suggest that anything
23 he has said is incorrect.

24 JUDGE BLOCK: Could you clarify the areas?

25 WITNESS MURPHY: Yes. The two points of

1 clarification addressed by Mr. Fletcher with regards to
2 his testimony I think in response to my written
3 testimony, the first item being the allusion to the 30
4 percent reduction in sensitivity of ACT to sleeving
5 flaws with respect to inside the tube compared to a
6 similar situation where the added tube is not present.

7 In my review, it was clear to me that the 30
8 percent reduction we were talking about was not a
9 significant consideration, primarily because it was my
10 judgment that this sort of bounded the signal-to-noise
11 ratio reduction that I believe the sleeving would effect.

12 Mr. Fletcher -- Dr. Fletcher has alluded to
13 the fact that they can reset the equipment to get the
14 amplitude in the signal back up to where it was
15 previously. My judgment tells me that there's also a
16 noise melody associated with that, that while 30 percent
17 may not be indicative of the actual signal-to-noise
18 ratio reduction, I don't know where you would end up. I
19 don't have a clear picture in my mind as to where you
20 end up, are you back to where you started, or are you as
21 far down as 30 percent, as I assumed in my evaluation?

22 JUDGE BLOCK: You have a feeling there would
23 be some loss.

24 WITNESS MURPHY: But less significant. The 30
25 percent balance -- 30 percent, I think, balance

1 signal-to-noise reduction would be reasonable under the
2 circumstances.

3 JUDGE BLOCK: If there was a 40 percent
4 through-wall stress corrosion crack -- I'm sorry, a 40
5 percent penetration through-wall crack -- a 40 percent
6 through-wall stress corrosion crack, could you give us
7 an idea, depending on the volume of that crack, of the
8 likelihood that it would be detected during an eddy
9 current inspection?

10 There is some relationship between the volume
11 of the crack and the chance you're going to catch it?

12 WITNESS MURPHY: Very definitely, yes. It is
13 going to be a strong relationship between the volume of
14 the crack and its detectability. The depth is a major
15 variable, to be sure; so is the length of the flaw.

16 Have I -- I'm not sure I understand the full
17 breadth of your question.

18 JUDGE BLOCK: I wanted to know the reliability
19 with which such a 40 percent flaw can be detected.

20 WITNESS MURPHY: A 40 percent flaw of any
21 structural significance, or significance in length, such
22 that it could have a significant degrading influence on
23 the structural integrity of the tube I believe would be
24 detectable.

25 JUDGE BLOCK: Is this based on your knowledge

1 of the physical principles involved or validation
2 studies relating to the ability of people to use the
3 technique and find flaws?

4 WITNESS MURPHY: It is based upon the
5 consideration of a variety of factors, our general
6 experience with eddy current in the field, that once
7 cracks have occurred, they have become detectable, even
8 under adverse circumstances.

9 In the context in which I made the conclusion
10 that the 40 percent through-wall cracks are detectable,
11 I am talking about a situation where you would have an
12 absence of significant noise effects, you know. If they
13 are there, then you would have a different situation.

14 JUDGE BLOCK: Does the noise effects include
15 things like denting in the area, or drilling out of a
16 plug?

17 WITNESS MURPHY: Denting is certainly a strong
18 contributor to noise, if it is present.

19 JUDGE BLOCK: I said drilling out a plug
20 because we had testimony about why it was not possible
21 to identify the location of a through-wall leak in a
22 cold leg.

23 WITNESS MURPHY: Well, as earlier testimony
24 referred to, there are a number of structural
25 discontinuities in the area where the plug was removed,

1 and these discontinuities can be expected to produce
2 very strong eddy current signals that would certainly
3 impair your ability to detect a flaw.

4 JUDGE BLOCK: On a smooth, undisturbed tube,
5 you would expect very high reliability in detecting a 40
6 percent through-wall stress corrosion crack?

7 WITNESS MURPHY: Yes. As I said, I would
8 exclude the cracks of very short length which will not
9 open up appreciably. You have to expect that. The
10 ability of a crack to open up is going to be closely
11 related to the degrading effect of that crack on the
12 structural integrity of the tube. The two go hand in
13 hand.

14 JUDGE BLOCK: Was there one other area that
15 you said you were uncertain about, whether you agreed
16 with the Applicant's testimony?

17 WITNESS MURPHY: In my testimony, I testified,
18 to the best of my knowledge, that I would have little
19 basis for concluding that the detectability of what we
20 call the tube sheet crevice phenomenon is any better
21 than on the order of 70 to 80 percent today at Point
22 Beach.

23 Mr. Fletcher, I believe his position is, his
24 feeling or conclusion is that considering that IGA will
25 generally not exceed, based upon the information

1 available, will not proceed beyond 30 percent
2 through-wall or so before cracks become present, based
3 upon this, that perhaps 40 to 50 percent crevice
4 corrosion may be detectable.

5 If that is a fair representation of his
6 position, I cannot disagree with that. I wouldn't want
7 that to indicate, by not saying anything, that I would
8 necessarily support that position either. I would,
9 based upon what I know, I would feel comfortable with
10 what I said in my testimony.

11 JUDGE BLOCK: Just to refresh my memory, what
12 was that?

13 WITNESS MURPHY: The best I could feel
14 comfortable about saying is that the threshold of the
15 tube sheet crevice corrosion has been becoming
16 detectable at 70 to 80 percent through-wall. Perhaps it
17 has been becoming detectable earlier, but I have not
18 been able to give a clear and convincing case for that.

19 JUDGE BLOCK: Is it possible that it could
20 depend on how dense the crevice was packed?

21 WITNESS MURPHY: Clearly that is a major
22 aspect of the problem.

23 JUDGE BLOCK: I have one other way out
24 question I'm going to ask you that may make me look
25 foolish.

1 Some five or six years from now, is it
2 possible that corrosion of the parent sleeve could
3 proceed to the point where pieces might drop off and we
4 would have loose pieces in the steam generator?

5 MR. BACHMANN: Judge Block, did you mean
6 parent tube? You said parent sleeve.

7 JUDGE BLOCK: Parent tube.

8 WITNESS MURPHY: I would find it very -- it
9 doesn't sound very credible to me that any such
10 fragments could be of any concern on the secondary side
11 of the steam generator. Our experience is it takes a
12 good heavy hunk of foreign object material to cause the
13 sort of tube damage that can give you a tube rupture.

14 JUDGE BLOCK: Is there another panel member
15 that wanted to comment on that same question?

16 WITNESS MC CRACKEN: I would simply say that I
17 would find it highly unlikely that the parent tube would
18 continue to corrode to a point where you could have
19 pieces breaking off. Even in the unlikely event that
20 did occur, small pieces of tubing that broke off and
21 fell down as part of the sludge layer wouldn't be a
22 factor in wearing through any remaining Inconel tube.
23 They don't have enough mass to do anything.

24 JUDGE BLOCK: Mr. Murphy, do I understand
25 there were no other areas in which you disagreed with

1 Applicant's testimony?

2 WITNESS MURPHY: That is correct.

3 JUDGE BLOCK: Mr. McCracken, are there any
4 areas of Applicant's testimony with which you
5 disagreed?

6 WITNESS MC CRACKEN: No, I have no
7 disagreements with the testimony.

8 JUDGE BLOCK: Would any of you wish to comment
9 on the model which we were presented concerning the way
10 in which steam would occur in the annulus if water were
11 to leak into the annulus?

12 WITNESS MC CRACKEN: I think I was -- I was
13 hearing that testimony. I think it's important to point
14 out that you are only talking about tubes where you
15 first must penetrate the parent tube. Once you put a
16 sleeve in, you are significantly reducing the heat flux
17 above the tube sheet of the tube, so therefore you are
18 reducing the concentration effect, and there's every
19 reason to believe that you will reduce the corrosion
20 mechanism which would cause progression of the outer
21 tube or the parent tube. So the probability of that
22 occurring I think is relatively small.

23 The comment that Mr. Fletcher made about
24 getting water in and out of those, some of the cracks
25 that we are seeing here at Point Beach are very tiny.

1 The amount of water that you could get in and out I
2 would think would be relatively small. So the
3 possibility exists, but I think you can over a period of
4 time get some of these impurities in. But certainly
5 with the thermally treated Inconel 600 tubing, the rate
6 of corrosion would be less than the rate of corrosion of
7 the parent tube.

8 JUDGE BLOCK: Mr. McCracken, do you also agree
9 with Applicant's testimony that there were corrosion of
10 the annulus below the level of the tube sheet?

11 WITNESS MC CRACKEN: Based on what I've seen
12 that where the defects are, in other words, assuming
13 that through-wall penetration, if it occurred, would be
14 below the tube sheet, yes, I can't see any way it could
15 be any other way.

16 JUDGE BLOCK: Mr. Murphy, do you also agree?

17 WITNESS MURPHY: I believe Mr. McCracken is
18 far more qualified.

19
20
21
22
23
24
25

1 JUDGE BLOCH: Mr. Colburn, do you have an
2 opinion of your own on that subject? If you don't, it's
3 quite acceptable to say no.

4 WITNESS COLBURN: I don't disagree with
5 anything that Mr. McCracken has just said, or really
6 with anything Mr. Fletcher said. I had a heard time
7 during the presentation of the model visualizing
8 everything that was taking place, but I don't really
9 have any evidence to say that it wouldn't take place
10 that way.

11 It's just that some of the things were things
12 that I didn't consider were cases that would happen,
13 partly because the cracks were small. It's not like you
14 have a large hole, like a porthole or something, where
15 all the stuff comes in there. So I don't have any
16 reason to disagree with anything that has been said.

17 JUDGE BLOCH: Mr. Marsh, are you in general
18 agreement?

19 WITNESS MARSH: Yes, sir, I am.

20 JUDGE KLINE: I just want to ask Mr. Murphy
21 something related to this plugging limit on page 3 of
22 the testimony. It has to do with the margin. You set a
23 40 percent plugging limit, which is sufficiently below
24 62 percent, really, to give a significant margin of
25 safety. However, did you hear the Applicant's panel

1 this morning, the eddy current interpreters? Did you
2 hear their testimony?

3 WITNESS MURPHY: Yes, sir, I did.

4 JUDGE KLINE: And I've forgotten which one
5 testified related to a tube in Applicant's Exhibit 2 --
6 I don't know if you need that or not, but I can refresh
7 your memory -- in which he had -- he showed a tube which
8 he reported out at 89 percent indication. However,
9 under examination he said, while that is a very
10 conservative number, I really don't know how much
11 degradation there is. It might be very little or none
12 or all the way up to 89. But he reported it as a
13 conservative number.

14 My question is, did that range of uncertainty
15 span the range of your safety margin? That is to say,
16 that is bigger than your range of 40 to 62 percent?
17 Does that kind of a problem cause you a concern? And I
18 guess I would like to have that reconciled.

19 WITNESS MURPHY: Even if we blindly ignored
20 measurement error associated with SCC detection, I don't
21 think we have a significant safety problem, given the
22 overall context or the overall role that eddy current
23 plays in terms of assuring tube integrity.

24 But in fact, what data I have seen regarding
25 measurement errors associated with SCC detection

1 indicates that it may or may not be quite significant,
2 that clearly when you run into an SCC problem the thing
3 is, first you'll know you have it because you know
4 you'll have indications.

5 Clearly, careful consideration must be given
6 to measurement error in deciding what action you are
7 going to be taking.

8 JUDGE KLINE: Are you finished?

9 WITNESS MURPHY: Yes.

10 JUDGE KLINE: Let me follow on, then. This is
11 a question relating to how NRC enforces the 40 percent
12 plugging limit. Suppose that you received data in your
13 office similar to -- well, which showed an 89 percent
14 indication. However, you knew that -- now you know,
15 anyway -- that the people who read the tapes do it all
16 conservatively. And the question is, would that be a
17 sufficient basis to enforce the 40 percent plugging
18 limit, or on the basis of this single report would you
19 say, well, yes, it's now time to plug? Or would you
20 discount it?

21 Would there be subjective aspects of
22 evaluation or how would you go about, then, enforcing
23 the plugging limit?

24 WITNESS MURPHY: If they find an 80 to 90
25 percent indication, they would be required to plug it.

1 JUDGE KLINE: They would be required to plug
2 it, even granted what we heard this morning that it was
3 subject to, there was error, there was uncertainty?
4 Would you take any of that into account or would you
5 just take the bare number?

6 WITNESS MURPHY: Excuse me. I believe that
7 the tech spec, if they can call it -- it seems to me
8 that the tech spec would require them to plug that tube

9 JUDGE KLINE: Okay.

10 JUDGE BLOCH: I just have a grammatical
11 question about Section 5.0. Is that Mr. Murphy's
12 testimony or Mr. Colburn's?

13 WITNESS MURPHY: I am responsible for Section
14 5.

15 JUDGE BLOCH: I'm only interested in the first
16 full paragraph. There are a couple of sentences which
17 say, "Thus, Westinghouse has concluded," or "The
18 Westinghouse study indicates." By inserting them in
19 Section 5.0 are you indicating you agree that those
20 findings are correct, or are you just reporting that
21 someone else thinks that's correct?

22 Page 31.

23 (Pause.)

24 WITNESS MURPHY: Let me review it for a
25 minute.

1 (Pause.)

2 WITNESS MURPHY: I agree with the Westinghouse
3 conclusion.

4 JUDGE BLOCH: We're talking about the first
5 paragraph?

6 WITNESS MURPHY: I stated there -- this is the
7 first paragraph. As I have stated the conclusion at the
8 bottom sentence of the first paragraph, I would agree
9 with that statement.

10 JUDGE BLOCH: I guess I also meant the second
11 paragraph. I wasn't sure, since it's a new paragraph.
12 I guess the second paragraph also.

13 WITNESS MURPHY: This is a simple -- I was
14 simply at this point reporting the facts. This is
15 essentially a statement of what Westinghouse reported to
16 us.

17 JUDGE BLOCH: But you read the study and
18 presumably you think the study is sound and you would
19 place it in the SER, is that right?

20 WITNESS MURPHY: That is correct.

21 JUDGE BLOCH: If you have some hesitancy about
22 that --

23 WITNESS MURPHY: No, no, no, no. There's no
24 hesitancy. I was just thinking whether I ought to
25 amplify. If I see something I disagree with and I put

1 it in my SER, representing it as the Licensee's
2 position, and if I think something is difficient about
3 that, it's my obligation in my SER to point that out.

4 JUDGE BLOCH: Redirect?

5 MR. BACHMANN: I have no redirect
6 examination.

7 JUDGE BLOCH: Mr. Anderson?

8 MR. ANDERSON: I have some recross.

9 JUDGE BLOCH: And you, Mr. Churchill?

10 MR. CHURCHILL: Yes, sir.

11 JUDGE BLOCH: Do you have any recross?

12 MR. CHURCHILL: Not yet, sir.

13 JUDGE BLOCH: I think you said you had none?

14 MR. ANDERSON: I have some.

15 JUDGE BLOCH: That's true. Please proceed,
16 Mr. Anderson.

17 RECROSS EXAMINATION

18 ON BEHALF OF INTERVENOR

19 BY MR. ANDERSON:

20 Q Mr. McCracken, in answer to Mr. Bloch's
21 question, did I understand you correctly that it's your
22 statement that we will see no tube degradation above the
23 tube sheet at Point Beach for the rest of its life or
24 any tube failures above the tube sheet for the rest of
25 its life?

1 A (WITNESS McCracken) I don't believe that was
2 his question, nor was that my response.

3 Q Do you expect to see any?

4 A (WITNESS McCracken) I anticipate that any
5 material which is in a corrosive media, which is water,
6 will corrode at some rate over some period of time.

7 Q Do you believe we'll see any tube failures
8 above the tube sheet over the period of the plant life?

9 A (WITNESS McCracken) I'm not sure I know which
10 mechanism you're talking about.

11 Q Any mechanism.

12 A (WITNESS McCracken) If I had a crystal ball
13 and I could look forward and see that something were
14 going to occur, I would do my best to implement
15 something to prevent it from occurring.

16 JUDGE BLOCH: Would you expect stress
17 corrosion cracking during the remaining life of the
18 plant to penetrate the parent tube wall above the tube
19 sheet?

20 WITNESS McCracken: I would think that in the
21 areas that were sleeved the probability of that would be
22 less than the probability in tubes that are not sleeved,
23 because you have reduced heat flux in the sleeved
24 tubes.

25 JUDGE BLOCH: What would that reduced

1 probability be?

2 WITNESS McCracken: I don't think I'm prepared
3 to put an error band on that. By reducing the heat flux
4 you are reducing the concentrating mechanism. By
5 reducing the concentrating mechanism, you reduce the
6 probability of corrosion.

7 JUDGE BLOCH: Well, you can't put an error
8 band on it. Can you use words? Is it extremely
9 unlikely? Is it incredible? What kind of words would
10 you use to describe it?

11 WITNESS McCracken: Much less likely.

12 JUDGE BLOCH: Mr. Anderson?

13 MR. ANDERSON: I don't have anything further
14 for the witness. No questions.

15 JUDGE BLOCH: No further questions.

16 Mr. Churchill?

17 MR. CHURCHILL: No, sir, no questions.

18 JUDGE BLOCH: You have no more redirect?

19 MR. BACHMANN: No questions.

20 MR. ANDERSON: Before they're excused, I'd
21 like to make one point if I may, and that is in response
22 to the discovery against Staff Mr. Bachmann, I think,
23 provided a document mailed to me November 12th. For
24 whatever reason, it didn't get to me at all before I
25 left Madison to come here. I was handed it yesterday.

1 It deals with the San Onofre test results. I have not
2 yet had a chance to examine it, nor talk to the PM for
3 San Onofre.

4 I don't know what issues it may or may not
5 have raised. I just want to mention that that issue is
6 open because of that.

7 JUDGE BLOCH: You can talk to us about that in
8 the morning.

9 Mr. Churchill, would you like to comment on
10 that now?

11 MR. CHURCHILL: First let me ask what you
12 meant by talking about it in the morning?

13 JUDGE BLOCH: Well, if he reads the document
14 and he has some serious grounds that gives rise to a
15 motion, we will of course hear his motion.

16 MR. CHURCHILL: I guess I was assuming that
17 this hearing was going to be drawn to a close, and if
18 that is the case then I had better express my view on
19 that right now. Are we intending to close this hearing
20 this evening?

21 MR. ANDERSON: If you address that, I'd like
22 to speak to it if I might, maybe off the record.

23 JUDGE BLOCH: No, I think whatever we do
24 should be on the record.

25 Mr. Bachmann -- well, Mr. Bachmann, what is

1 the San Onofre document? Is there any chance that after
2 his review, that Mr. Anderson would have grounds for
3 continuing to ask questions, so that we should not now
4 close the record?

5 MR. ANDERSON: Before he does so, if I may, I
6 think it's implicated in your question. Mr. Colburn is
7 the individual who provided it. He has not read it
8 either. I don't think, even if I had a valid motion,
9 that he'd be able to answer questions with respect to it
10 tomorrow. Is that correct?

11 WITNESS COLBURN: I have not had a chance to
12 analyze or study the document.

13 MR. ANDERSON: I didn't mean to interrupt you,
14 but I thought you should know that.

15 JUDGE BLOCH: What is the relevance of the
16 document to this proceeding, Mr. Bachmann?

17 MR. BACHMANN: As far as I can tell, as far as
18 this particular evidentiary hearing there is no specific
19 relevance. The reason the document was forwarded is
20 that the Staff had made a commitment a number of months
21 ago that when this report was completed we would forward
22 the report on to Mr. Anderson.

23 The timing was such that it coincidentally
24 came at the same time as this hearing. We --

25 JUDGE BLOCH: It is not in response to a

1 specific discovery request?

2 MR. BACHMANN: No, this is in response or,
3 shall I say, this is in accordance with the informal
4 discovery where the Staff committed to provide Decade
5 with information on other plants, more or less as the
6 Board urged us to do, information on other plants as it
7 came in.

8 This is not -- I want to make it perfectly
9 clear, this was not in response to a specific discovery
10 request. We feel we have answered all of those
11 questions.

12 JUDGE BLOCH: I take it, Mr. Churchill, the
13 only motion that would be appropriate based on that
14 document would be a motion to reopen the hearing
15 record?

16 MR. CHURCHILL: Yes, sir, and it would have to
17 be well-supported by good cause.

18 MR. BACHMANN: Excuse me, Judge Bloch. The
19 Staff agrees that it should be a motion to reopen,
20 supported by good cause.

21 JUDGE BLOCH: Mr. Anderson, what is our reason
22 for not closing the record, subject only to a motion to
23 reopen?

24 MR. ANDERSON: I have no idea. I haven't read
25 it myself.

1 JUDGE BLOCH: Mr. Colburn?

2 WITNESS COLBURN: Yes, Judge Bloch. I didn't
3 have a chance to actually read the specific document. I
4 did read the headings in the table of contents relating
5 to the document, and what the documents consist of are
6 results of eddy current inspections that were done at
7 San Onofre, specifically with the three tubes that were
8 previously sleeved that had been leaking, that were
9 identified in a previous daily highlight that was
10 provided to Mr. Anderson.

11 JUDGE BLOCH: I'm pleased we had this delay,
12 because there is one question I really want to clear
13 up. I would like to know from the panel what we should
14 make of the one indication on the sleeve tube at Point
15 Beach. Is there any significance to the indication that
16 we have that it's apparently not fully resolved at this
17 time?

18 WITNESS COLBURN: Can we have a few moments to
19 discuss that amongst ourselves?

20 JUDGE BLOCH: Please.

21 (Discussion off the record.)

22 JUDGE BLOCH: Back on the record.

23 WITNESS McCracken: That one indication they
24 were talking about, one being on the primary side, we
25 would be surprised from a mechanistic point of view to

1 see that was some kind of corrosion mechanism
2 occurring. Based on a lot of other eddy current
3 indications, where you occasionally find something and
4 you go back and try to evaluate it, more than likely we
5 would think you would find that this was somehow a small
6 indentation on the tube that was there when the sleeve
7 was manufactured or when it was installed, and this
8 somehow filled with magnetite over the period of time
9 that they operated, and when they went in and tried to
10 hone it out they only went down a half a mil, they
11 probably didn't even get into the indentation.

12 JUDGE BLOCH: Do you know if the honing
13 changed the indication in any way?

14 WITNESS McCracken: They said that it didn't.
15 I think the testimony I heard yesterday said there was
16 no change in the indication as a consequence of the
17 honing. In any event, a small dent that you would have
18 had, you would have not picked up in eddy current
19 testing anyway.

20 JUDGE BLOCH: Of course, the people doing the
21 testing themselves didn't even think of the possibility
22 of a small dent, at least not during the testimony. But
23 you think --

24 WITNESS McCracken: Well, they said magnetite
25 buildup, and if it were a magnetite buildup on an

1 external surface and they honed it out, I assume it
2 probably would have gone away. At any rate, the
3 location of it, if in fact they go back and do find out
4 that it is somehow a defect of some kind, the location
5 of it, being well down in the tube sheet, would
6 certainly not give us a safety concern, because if it
7 leaked it would still have to go through the tortuous
8 slow path of getting out of the tube sheet.

9 JUDGE BLOCH: You think it's not likely that
10 upon further investigation this could prove to be
11 something that is a serious concern about the sleeving
12 process?

13 WITNESS McCracken: I would certainly not
14 think that I had enough concern to recommend that they
15 use the man-hour of exposure that it would take to pull
16 that out and examine it as an area of concern. That is
17 something of interest I would certainly want to look at
18 the next time in eddy current testing.

19 JUDGE BLOCH: You would just wait for the next
20 outage, for the next eddy current test, or would you do
21 something else to follow up on it?

22 (Pause.)

23 WITNESS McCracken: As of now my inclination
24 would be with what the Licensee is going to recommend.
25 Based on that recommendation, we go along with what they

1 want to do with it, which is typical of what they
2 recommend in these types of occasions.

3 JUDGE BLOCH: But he hasn't said yet what he
4 wants to do with it.

5 WITNESS McCracken: If he chose to pull it and
6 if he wanted to use that man-hour of exposure,
7 certainly. But we would certainly not feel strong
8 enough about that kind of an indication that we would,
9 say, order you to take it out and use the man-hour of
10 exposure that it would take to do it, because we really
11 feel from a mechanistic point of view it probably isn't
12 a corrosion mechanism.

13 It's in an unstressed area of the tube, it is
14 within the tube sheet, it's on the primary side as
15 opposed to the secondary side. So a lot of other things
16 indicate that this may be an artifact, and you do find a
17 large number of artifacts when you do eddy current
18 examinations.

19 JUDGE BLOCH: Could it be a serious weakness
20 that was built into the sleeve before it was installed,
21 a manufacturing defect that is a serious weakness?

22 WITNESS McCracken: I would seriously doubt
23 that. I would assume they examine these sleeves prior
24 to putting them into service. I don't know that for a
25 fact, but Emmett is shaking his head yes.

1 WITNESS MURPHY: If it was there last year,
2 they have means to find that out.

3 JUDGE BLOCH: Well, of course, sometimes they
4 go back and they examine the baseline and they find
5 something they didn't find the first time.

6 WITNESS MURPHY: That might suggest something
7 introduced during the installation process.

8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

1 CHAIRMAN BLOCH: Do you know if they've gone
2 back and looked at the baseline yet?

3 WITNESS MURPHY: I don't recall whether -- I
4 see Westinghouse people nodding their heads in the
5 audience. Therefore, I would say yes.

6 JUDGE BLOCH: I think I'm not prepared to
7 accept nodding heads in the audience as testimony on a
8 record yet.

9 But that would reassure you if the baseline
10 showed there were no defect at that time?

11 WITNESS MURPHY: What it does is give you
12 information of what period of time whatever is causing
13 the signal was introduced.

14 JUDGE BLOCH: Mr. Churchill, do you have any
15 more questions on this particular subject?

16 MR. CHURCHILL: Questions of the staff, sir?
17 No.

18 JUDGE BLOCH: If there are no objections, the
19 panel can be dismissed. Are there no objections? I'd
20 like to thank the panel for their assistance to the
21 board.

22 MR. BACHMANN: Judge Bloch, may the panel be
23 excused from this proceeding at this point, from this
24 phase of the proceeding?

25 JUDGE BLOCH: Presuming that they're not going

1 to be needed at the special prehearing conference.

2 (The panel was excused.)

3 Mr. Churchill, is there a simple way up to
4 clear up what the baseline data looks like on this tube?

5 MR. CHURCHILL: I'm sorry. The question is
6 have they looked at the baseline data to see if the
7 indication existed?

8 JUDGE BLOCH: Before it was installed.

9 MR. CHURCHILL: Yes. The baseline data --
10 that is, the inspection right after the sleeve is
11 installed before operations -- showed no indication.

12 JUDGE BLOCH: Is there some way to make that a
13 matter for our record through affidavit later? Is that
14 the best way to do it? Or could you take a very fast
15 question from one witness?

16 MR. CHURCHILL: Your Honor, it happens to have
17 been in the exhibit. I believe one of the examples in
18 the exhibit was that particular tube. Let me check.

19 (Pause.)

20 MR. CHURCHILL: No, I'm sorry. We don't have
21 the baseline there.

22 I would be glad to keep the Board informed. I
23 would be glad to write the Board a letter. I could
24 state that the baseline inspection showed no indication,
25 and I could keep the Board informed if it wished of the

1 ongoing investigation.

2 JUDGE BLOCH: The Board is prepared to close
3 the record subject to the receipt of an affidavit
4 concerning the baseline data on this one sleeve that
5 will assure us that there was no serious manufacturing
6 defect at the time it was installed.

7 MR. CHURCHILL: I think I could bring Mr.
8 Fletcher up here right now, and perhaps he could testify
9 to that.

10 JUDGE BLOCH: We would appreciate that.

11 MR. CHURCHILL: If we could wait a moment, I
12 think we have here the strip chart from that particular
13 tube. Meanwhile, I think I can go ahead.
14 whereupon,

15 DOUGLAS FLETCHER

16 resumed the stand and was further examined and testified
17 as follows:

18 DIRECT EXAMINATION

19 BY MR. CHURCHILL:

20 Q Mr. Fletcher, would you tell the Board what
21 the baseline indications are for the tube in question,
22 which I believe is identified as R 28 C 58? This is the
23 tube that has the sleeve with the indication indicated
24 on page 7 of Applicant's Exhibit.

25 A (WITNESS FLETCHER) It is my understanding

1 that the baseline inspection of this sleeve immediately
2 following installation --

3 MR. ANDERSON: Could you repeat that?

4 WITNESS FLETCHER: Immediately following
5 installation of the sleeve, that there was no indication
6 in that baseline as reported to me.

7 JUDGE BLOCH: And are you confident that this
8 indication has no serious safety significance for this
9 sleeve?

10 WITNESS FLETCHER: Judge Bloch, we have
11 discussed that indication at length as shown in Exhibit
12 2, and the diagnosis at the present time is that what is
13 likely responsible for that indication is a spot, if I
14 may use the term, of magnetite or crud that would have
15 collected perhaps in a small indentation in the sleeve
16 wall. An indentation could have been formed without
17 reducing the wall thickness of the sleeve, but the
18 indentation, small spot, could have been formed during
19 the sleeve installation.

20 JUDGE BLOCH: But the short answer is you see
21 no substantial reason to be concerned about public
22 safety as a result of the possible defects of the sleeve.

23 WITNESS FLETCHER: I see no reason to be
24 concerned.

25 JUDGE BLOCH: Are there questions from other

1 parties?

2 MR. ANDERSON: Yes.

3 JUDGE BLOCH: Mr. Anderson.

4 CROSS EXAMINATION

5 BY MR. ANDERSON:

6 Q Why wouldn't the indentation itself leave some
7 kind of indication on the baseline data?

8 A (WITNESS FLETCHER) I'm speaking of a very
9 small indentation on the order of 2 mills, for example,
10 that would not show up on eddy current testing where the
11 indentation or small spot would be magnetite which you
12 would expect it to be following sleeve manufacture and
13 inspection.

14 Q How many mills would the indentation have to
15 be before you could see it on the eddy current test

16 A (WITNESS FLETCHER) One or two mills. I'm
17 sorry. Let me retract that. I assumed something in
18 your question. The indentation would have to be -- it
19 would have to be larger than a spot, I'll say that.
20 I've been referring to a spot, a spot having dimensions
21 of a mill or two in diameter, for example, a mill or two
22 in depth, would be sufficient with magnetite present in
23 that small indentation to give a signal of this type.
24 And an indentation for it to show up by eddy current
25 would have to be much larger in its circumference or its

1 area. And one could then see indentations of the order
2 of one to three mills. But one has to have a large area
3 involvement.

4 Q I'm not sure the answer was clear. The latter
5 part was meant to refer to an indentation absent
6 magnetite deposit in that, is that correct?

7 A (WITNESS FLETCHER) That's correct.

8 MR. ANDERSON: Thank you.

9 JUDGE BLOCH: I take it given that size
10 indentation that the honing that was done might well have
11 missed the magnetite deposit?

12 WITNESS FLETCHER: We suspect that is what
13 happened. The hone is designed to remove only a
14 superficial amount of material from the inside of the
15 sleeve, on the order of a half a mill.

16 JUDGE BLOCH: Would swabbing it have gotten
17 the magnetite out?

18 WITNESS FLETCHER: Following the honing it is
19 swabbed.

20 JUDGE BLOCH: But that could have missed it.

21 WITNESS FLETCHER: Well, certainly if the
22 magnetite is embedded in the small spot that I'm
23 referring to.

24 JUDGE BLOCH: Any other parties have any
25 questions?

1 Thank you very much again, Mr. Fletcher.

2 (The witness was excused.)

3 JUDGE BLOCH: Are there any other witnesses to
4 be called? There being no further witnesses, the record
5 is closed.

6 MR. ANDERSON: Before we do that, I would just
7 like to renew our motion. We move that the November 6th
8 prehearing conference for destructive examination of
9 sleeve tubes I 27 C 49 and R 26 C 53 -- and the reason
10 we make that motion is I think the record demonstrates
11 that the assurance is based upon speculations in this
12 area, and we have no actual real life examination to see
13 what actually is going on in the annulus, and we think
14 that this is the best hope we have of getting that
15 information.

16 JUDGE BLOCH: That would be a proper subject
17 for you to argue for in the findings that you will be
18 filing with us. If you feel that on the state of the
19 record there is inadequate assurance of public safety
20 without such destruction tests, that would be a
21 legitimate subject on which you should file suggested
22 findings.

23 I see no reason to order that as a matter of
24 discovery at this time.

25 MR. ANDERSON: Just to be clear, I wasn't

1 arguing it as a matter of discovery. I was agreeing
2 with counsel it's not discovery if it doesn't exist.
3 We're asking the Board to require it.

4 JUDGE BLOCH: We hope you will fully brief
5 that as part of your findings.

6 MR. BACHMANN: Judge Bloch, before the record
7 is closed may we speak a moment about the schedule for
8 filing findings?

9 JUDGE BLOCH: Please.

10 MR. BACHMANN: The staff had proposed that we
11 adhere to the schedule set out in 10 CFR 2.754, and
12 assuming today is the day that the record is closed,
13 using the days given here and including the five days
14 for the use of the mails.

15 JUDGE BLOCH: Are there any objections to
16 those schedule dates?

17 MR. ANDERSON: Could you wait a moment and let
18 me check those dates?

19 MR. CHURCHILL: I'd like to discuss it a
20 little bit. On closer examination of those particular
21 schedules I think that would have the applicant's
22 findings due --

23 JUDGE BLOCH: Christmas Day, sir?

24 MR. CHURCHILL: Something like that.

25 MR. ANDERSON: The schedule is acceptable to

1 us so long as it is not concurrent with an obligation of
2 CLA-2.

3 JUDGE BLOCH: Let's have further discussion
4 off the record on the schedule.

5 (Discussion off the record.)

6 JUDGE BLOCH: Back on the record.

7 During the recess the parties discussed the
8 actual dates involved in the regulations.

9 Mr. Bachmann, would you state your
10 understanding of those dates to which the parties have
11 agreed?

12 MR. BACHMANN: Yes, Mr. Chairman. According
13 to 10 CFR 2.754 we have interpreted the dates given to
14 be the proposed findings to be filed by the applicant on
15 December 20, 1982; the intervenor to file on December
16 30, 1982; the staff to file on January 10, 1983; and any
17 reply findings the applicant may want to file would be
18 due January 20th, 1983.

19 MR. ANDERSON: We note that that gives us a
20 Christmas present we don't appreciate.

21 JUDGE BLOCH: We would like to make a brief
22 remark about the way that we see the Board's obligation
23 to decide the case, because it does have implications
24 for the kinds of findings that we would like to see from
25 the parties.

1 It is our obligation to analyze this hearing
2 record in light of the rules, regulations and staff
3 guidance, to analyze all of the facts that have been
4 presented to us that are relevant to those rules,
5 regulations and staff guidance, including the facts that
6 are adverse to a given party's position and the facts
7 that are favorable to a given party's position.

8 Now, we would urge the parties in filing
9 findings with us to try to discuss all of the facts,
10 including those that are not so comfortable for the
11 party involved. Those are the kinds of findings that
12 are most useful to the Board in reaching a reasoned
13 decision, because obviously if you seek certain
14 limitations on the license or you seek to oppose certain
15 limitations on the license, you may wish to make your
16 reasons for seeking or opposing the condition explicit.

17 In addition, if there are alternate grounds of
18 logic which might be applied to the record, the findings
19 may address those alternate grounds of logic. But we
20 are looking for reasoned documents that will help us
21 reach a reasoned decision. So that mechanical numbered
22 findings unaccompanied by reasoning will not be as
23 helpful to us as the kind of document that we are asking
24 for.

25 Mr. Churchill, you seem to have a comment.

1 MR. CHURCHILL: Yes. In your memorandum and
2 order you accompanied it with an order that was issued
3 in the Perry case, I believe.

4 JUDGE BLOCH: That attempts to outline the
5 kind of considerations we are interested in.

6 MR. CHURCHILL: The question I had is that in
7 recent cases that we have had we were given specific
8 guidance from the Licensing Boards based, I understand,
9 on a document that the boards seem to be using when they
10 request specifically numbered findings accompanied by
11 arguments or discussion. But they do want the findings
12 of fact specifically numbered. And I am wondering if
13 you are telling us not to do that?

14 JUDGE BLOCH: I am telling you we don't
15 require that. We have not in the initial decisions of
16 boards I have been chairman of used that device at all.
17 We do want careful documentation to the record, but in
18 the form of reasoned documents that will help us to
19 reach a reasoned decision. If you think it would be
20 helpful to you to list numbered findings because it will
21 help you before the Appeal Board or something of that
22 sort, you may include them to protect your rights. But
23 we don't require them, and we don't anticipate that we
24 will use them. We want the reasoned, documented
25 argument that would help us reach a reasonable

1 conclusion in this case.

2 MR. CHURCHILL: We customarily present
3 findings and conclusion, we, the law firm, in the form
4 of a proposed initial decision which some boards find
5 helpful, some don't.

6 JUDGE BLOCH: In fact, in the Big Rock Point
7 case in one instance we adopted conclusions reached
8 suggested to us by the applicant in one instance, very
9 few findings, adapted them as their own with very few
10 changes. In another instance we adopted most of the
11 findings suggested to us by the applicant and then
12 reached a contrary conclusion.

13 So, yes, we would appreciate that kind of a
14 filing, but we are going to examine very carefully the
15 reasoning and the documentation to the record ourselves.

16 I would like to thank the parties for their
17 participation. It has been a long day. We have learned
18 a great deal today, some of which was unexpected. And
19 we'd like to thank everyone for their participation, and
20 we will do our best to decide this record fully and
21 fairly to all interests.

22 Thank you.

23 We will see you in the morning at the special
24 prehearing conference at 9:00 a.m.

25 MR. ANDERSON: Could we talk about whether

1 it's scheduled to go all day, too?

2 JUDGE BLOCH: Off the record.

3 (Discussion off the record.)

4 JUDGE BLOCH: During our off the record
5 discussions the parties presented various views on the
6 schedule on the special prehearing conference for CLA-2
7 which is a related proceeding.

8 Mr. Anderson expressed a scheduling conflict
9 having to do with an important meeting that might occur
10 at 11:00 a.m. tomorrow morning. The other parties
11 prefer to start in the morning, although the applicant
12 stated that it might be willing to start meeting at 8:00
13 this evening. The staff also would be willing to meet
14 at 8:00 this evening.

15 The Board feels that the parties would be
16 fresher in the morning. We did schedule this hearing to
17 last for three and possibly three and a half days. We
18 do think it would be more orderly and more proper to
19 start at 9:00 in the morning, and we therefore order
20 that the proceeding be set for 9:00 in the morning.

21 MR. ANDERSON: Could I indicate I will have to
22 check with my office on whether I can be here? I simply
23 have that problem. I'll be glad to call you at your
24 hotel. I want to make it clear I have a very
25 substantial problem.

1 JUDGE BLOCH: The hearing was set. There's no
2 objection to the problem. This is part of a scheduled
3 proceeding. If Decade is not represented, there is a
4 good chance they will default in the proceeding.

5 MR. ANDERSON: I understand, and there are
6 conflicts with the organization, I would add, if I may,
7 Mr. Chairman, at every phase of this proceeding. The
8 applicant has rushed us, and we have always been on the
9 losing end of those rushes. We have been impaired, and
10 our ability to function has been deprived; and here now
11 is a case where we need to go -- we have had a hearing
12 scheduled to go this evening. We were all advised we
13 could go, and we think it is appropriate. We are in a
14 substantial problem because we have limited resources.
15 We don't have a set of lawyers for every proceeding and
16 a set of lobbyists for every case. We don't have that
17 kind of resources.

18 JUDGE BLOCH: Refresh my mind once again in
19 detail what this meeting is and why you waited until
20 6:00 on Thursday evening to tell the Board that you had
21 a meeting at 11:00 tomorrow morning?

22 MR. ANDERSON: It is because I got notice of
23 it at 4:30 this afternoon by telephone from my office,
24 and because the Governor-elect wasn't elected until this
25 hearing was set.

1 JUDGE BLOCH: The Governor-elect is going to
2 do what?

3 MR. ANDERSON: I don't think it is appropriate
4 for me to discuss exactly what we're doing, but the
5 question is the transition that is going on with the
6 Governor's office in Wisconsin, and we have a meeting at
7 11:00 that we -- that is the only option given to us.
8 It is not a meeting set by us, sir.

9 JUDGE BLOCH: The Board will reconsider its
10 consideration only at the request of one of the other
11 parties. There being no request, the Board's ruling
12 stands for 9:00 tomorrow morning.

13 MR. ANDERSON: Do you want me to notify you
14 when I call my office what my position will be tomorrow?

15 JUDGE BLOCH: We will be here at 9:00, and if
16 you are not, we'll proceed without you.

17 MR. ANDERSON: Thank you.

18 (Whereupon, at 6:05 p.m., the hearing was
19 recessed.)

20

21

22

23

24

25

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

in the matter of: Wisconsin Electric Power Company (Point Beach Power
Plant Units 1 & 2)

Date of Proceeding: November 18, 1982

Docket Number: 50-266-OLA and 50-301-OLA

Place of Proceeding: Milwaukee, Wisconsin

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)