

1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

3 + + + + +

4 ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

5 + + + + +

6 SUBCOMMITTEE ON PLANT LICENSE RENEWAL

7 + + + + +

8 MEETING

9 + + + + +

10 WEDNESDAY

11 MARCH 4, 2009

12 + + + + +

13 ROCKVILLE, MD

14 + + + + +

15 The Subcommittee convened in Room T2B3 in
16 the Headquarters of the Nuclear Regulatory Commission,
17 Two White Flint North, 11545 Rockville Pike,
18 Rockville, Maryland, at 8:30 a.m., Mr Otto Maynard,
19 Chair, presiding.

20 SUBCOMMITTEE MEMBERS PRESENT:

21 OTTO MAYNARD, Chair

22 JOHN STETKAR

23 MICHAEL CORRADINI

24 CHARLES H. BROWN, JR.

25 HAROLD B. RAY

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MICHAEL T. RYAN
2 MARIO V. BONACA
3 WILLIAM J. SHACK
4 DANA A. POWERS
5 J. SAM ARMIJO
6 SANJOY BANERJEE
7 JOHN D. SIEBER

8 NRC STAFF PRESENT:

9 BRIAN HOLIAN
10 KIMBERLY GREEN
11 GLENN MEYER
12 STAN GARDOCKI
13 NAEEM IQBAL
14 BARRY ELLIOT
15 SHERWIN TURK

16 ALSO PRESENT:

17 FRED DACIMO
18 TOM McCaffrey
19 GARRY YOUNG
20 ALAN COX
21 NELSON AZEVEDO
22 DON MAYER
23 REZA AHRABLI
24 PHILLIP MUSEGAAS

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

T-A-B-L-E O-F C-O-N-T-E-N-T-S

Introductory remarks	5
Staff introduction	
Brian Holian	8
Entergy -IP Renewal Application	
Background	12
Brian Holian	
Preparation of application and commitments and plans to implement	
Garry Young	24
Open Items	
Tom McCaffrey	38
Auxiliary feedwater pump fire event	
Alan Cox	44
Structural monitoring programs	
Rich Drake	50
Reactor vessel integrity and buried piping aging management program	
Nelson Azevedo	106
1973 feedwater event	118
SER Open items	133
NRC Staff Presentation	
Overview	
Brian Holian	184
Scoping and Screening results	

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1	Kim Green.....	188
2	On site inspection results	
3	Glenn Meyer.....	207
4	AMP and AMR results	
5	Kim Green.....	222
6	TLAA results	
7	Kim Green.....	228
8	Open Items	
9	Kim Green.....	241
10	Public Comment	
11	Phillip Musegaas, Riverkeeper.....	275
12	Subcommittee Discussion	291
13	Closing remarks by staff	301
14	Closing remarks by Entergy	303

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

P-R-O-C-E-E-D-I-N-G-S

8:29 a.m.

CHAIR MAYNARD: All right. The meeting will now come to order.

This is a meeting of the Plant License Renewal Subcommittee to review the Indian Point Units 2 and 3 license renewal application.

I'm Otto Maynard, Chairman of this Subcommittee.

ACRS members in attendance are Jack Sieber, Sanjoy Banerjee, Sam Armijo, Dana Powers, Bill Shack, Mario Bonaca, Michael Ryan, Harold Ray, Charles Brown and John Stetkar. We're expecting Michael Corradini to joint us in a little bit.

There are some other meetings going on today so there are occasions that some of the members may be stepping out and stepping back in.

The purpose of this meeting is to review the license renewal application for the Indian Points Units 2 and 3, the staff Safety Evaluation Report with open items and associated documents.

We will hear presentations from representatives of the Office of Nuclear Reactor Regulation and the applicant, Entergy Nuclear Operations, Incorporated.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 We also hear comments from Riverkeeper at
2 the end of the meeting.

3 The Subcommittee will gather information
4 and analyze relevant issues and facts and formulate
5 proposed positions and actions as appropriate for
6 deliberation by the full Committee. There will be no
7 decisions made as to the ACRS's rejection or
8 acceptance of any of the applicant or staff's review
9 today. This can only be done by the full Committee.

10 The rules for participation in today's
11 meeting were announced as part of the notice of this
12 meeting previously published *Federal Register* on
13 February 13, 2009.

14 We have received written comments from Ms.
15 Deborah Brancato of Riverkeeper who also requested
16 time to make oral statements regarding today's
17 meeting. We'll grant Ms. Brancato time at the end of
18 this meeting to make her statements.

19 A transcript of the meeting is being kept
20 and will be made available as stated in the *Federal*
21 *Register* notice. Therefore, we request the
22 participants in this meeting use the microphones
23 located throughout the meeting room, identify
24 themselves and speak with sufficient clarity and
25 volume so that they can be readily heard.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 We have several people on the phone bridge
2 line listening to the discussions today. To preclude
3 interruption of the meeting, the phone line is placed
4 in a listen-in mode. It's my understanding that Ms.
5 Brancato is on one of the phone lines and when it's
6 time for her comments, we'll open the bridge line so
7 we'll be able to hear and communicate with her.

8 I'm not going to go over the details of
9 the plant because I think that's going to be covered
10 by the applicant and staff in their presentations. I
11 will say that this review is a little unique in that
12 these two plants are the same NSSS design and on the
13 same site, but built and operated by two different
14 utilities and operated that way for a number of years.

15 And therefore, that has created some challenges for
16 me in just reading the document, keeping the plants
17 straight what's the same, what's the different. And
18 I'm sure that created a challenge for the staff and
19 I'm going to be interested in hearing how both the
20 applicant and the staff handled the differences and
21 the similarities for the two.

22 We have a lot of material to cover today,
23 so we've scheduled this for a full day rather than a
24 half day like we have been doing for most of the
25 applications here lately.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 We'll note also that this one come to us
2 with a few more open items then what we've seen
3 recently. I'd like to have the staff discuss that just
4 a little bit.

5 And to keep from taking up anymore time,
6 I'd like to proceed with the meeting and call on Mr.
7 Brian Holian of NRR to introduce the speakers and
8 today's talk.

9 MR. HOLIAN: Good. Thank you. And good
10 morning, ACRS.

11 My name is Brian Holian. I'm the Division
12 Director for the Division of License Renewal in NRR.

13 First, I'd like to cover some
14 introductions and then briefly comment on the schedule
15 and the application and then turn it over to the
16 utility.

17 To my right, far right, is Ms. Kimberly
18 Green. She's been the project manager for Indian Point
19 throughout. And you'll be hearing in particular from
20 her later during the staff presentation following the
21 applicant's presentation.

22 Immediately to my right is Mr. David
23 Wrona. He's the branch chief responsible for several
24 plants, including Indian Point.

25 We do have several members of the staff

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that you'll be hearing from later in the audience, but
2 in particular I'd like to recognize our regional
3 representatives here today. To my left Mr. Glenn
4 Meyer, the senior inspector from the region who you'll
5 be hearing from on a summary and inspection report.
6 And to his right Mr. Richard Conte, the branch chief
7 from the Division of Reactor Safety in Region I.

8 Just a couple of comments relating to
9 Indian Point. It has had an extended schedule, so I'd
10 like to talk about schedule in particular and as that
11 relates to the open items, as Mr Maynard had said.

12 I've been back from Region I for about
13 eight or nine months now, and one of the first actions
14 I had to do coming back was to extend the Indian Point
15 schedule by about four months last summer. There are
16 several reasons for that.

17 (1) As most people know, Indian Point is
18 in the ASLB hearing process that we have five plants
19 in license renewal in the hearing process right now.
20 That results in a number of contentions and a number
21 of issues which is a good process that provides the
22 public an opportunity to comment on individual items.

23 The impact on license renewal staff is
24 each of those items that are contentions in the
25 hearing process takes staff that are working on our

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 SER and issues there also to support OGC through that
2 deliberative process. So that's one item that effects
3 us.

4 The other item that happened probably a
5 year before the Indian Point application as it was
6 coming in was the Inspector General did a lengthy
7 review of the license renewal process at the NRC. And
8 we had a report both complimentary and critical of
9 that license renewal process that came out from the
10 Inspector General.

11 Interestingly, Indian Point the audit
12 process and the initial SER process was hitting as the
13 staff was reviewing and looking at the recommendations
14 from the Inspector General's report. And one of the
15 areas you'll see I think today is that the staff took
16 the opportunity to make some improvements in the
17 operating experience aspect: How well we look at the
18 operating experience, how well we document that. And
19 as I reviewed the Indian Point Safety Evaluation
20 Report I was glad to see a lot more material in there
21 on operating experience and how that informs our
22 process and informs our aging management reviews. So
23 you'll hear more from that later on.

24 On open items in particular that's from
25 the staff's view, you know, not good and not bad. You

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 know, I've covered both sides of that.

2 We've had a history of a number of open
3 items on several plants as I look back at the plants
4 over the last five years or so. As you go back, we
5 had a plant with up to close to 40 open items. We've
6 had plants within the range of five to eight over the
7 several years. Indian Point was centering in around
8 20 open items. A lot of that is due to schedule. You
9 know, I mentioned at some point we have to cut off our
10 Safety Evaluation Report and get the document ready
11 for publication and out to the committees. So we
12 continue to work those open items, as we call it, even
13 after we close the SER with open items and issue it to
14 the Committee. So you'll see some of that today.
15 You'll see that we've continued over the last several
16 months working with the applicant on addressing those
17 open items.

18 Even as we closed this SER out with open
19 items, we had a response from the applicant addressing
20 some of those open items. And we had some choices to
21 make, and that was to either delay the ACRS meeting
22 further or just continue to work the items. And we
23 chose that path.

24 So I think as you'll see some of the open
25 items that we go through, they're routine and aren't

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 necessarily indicative of any application
2 deficiencies, really. I would state it like that.
3 It's more an aspect of where we are in the review and
4 when we cut the open items off.

5 So with that, I'd like to turn over to the
6 Vice President of License Renewal for Entergy, Mr.
7 Fred Dacimo.

8 MR. DACIMO: Good morning.

9 Thank you, Brian.

10 Good morning, Mr. Maynard. My name is
11 Fred Dacimo. I'm Vice President for License Renewal.

12 Would you like us to get right into the
13 presentation this morning?

14 CHAIR MAYNARD: Yes, I would.

15 MR. DACIMO: Okay. Good. Thank you.
16 Okay. So if we can bring that up.

17 I'm going to introduce the people that we
18 have Entergy from this morning.

19 Joe Pollock is in the audience. Joe is our
20 site Vice President. As you mentioned, I am Vice
21 President of License Renewal, formerly site Vice
22 President.

23 John McCann is our Director of Licensing
24 from Corporate Entergy.

25 Don Mayer is our Director of Emergency

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Planning at the site.

2 Richard Burroni is our Manager of Programs
3 and Components.

4 Garry Young on my left is our Corporate
5 Manager of License Renewal.

6 Tom McCaffrey is our Manager of Design
7 Engineering.

8 John Curry is the Project Manager for
9 Licensing Renewal at Indian Point.

10 Mike Stroud is our Corporate Program
11 Manager for License Renewal from Corporate Jackson.

12 Alan Cox is our Technical Manager of
13 License Renewal.

14 Bob Walpole is our Manager of Licensing at
15 the site.

16 Rich Drake is our Supervisor of
17 Civil/Structural Engineering.

18 And Nelson Azevedo is our Supervisor of
19 Code Programs.

20 And we got a discount from Amtrak coming
21 down here this morning. That's not in scope.

22 This morning on the agenda I would like to
23 cover a little bit about the background. Because Mr.
24 Maynard, you mentioned it's an interesting background
25 with this plant having started with two owners; give

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 you an overview of the operating history.

2 We want to talk a little bit about major
3 plant improvements and give the ACRS a feel for these
4 plants from a major component perspective have largely
5 been rebuilt. Now the list that we're going to go
6 through I will not by any stretch of the imagination
7 portray to you that it is a comprehensive list, but
8 it's just to give you a general feel of the kind of
9 capital improvements that we've made.

10 We're going to have a scoping discussion.

11 We'll talk about the application NUREG-1801.

12 We want to give you a feel from the
13 commitment process that we have, because we feel that
14 we've got a very robust commitment process. Where we
15 fall through, we'll narrow things down and we're
16 watching industry very closely.

17 Obviously, we're going to discuss the
18 topics of interests, open item and issues that we are
19 aware of that you would like to discuss.

20 And certainly questions at anytime, with
21 questions at the end.

22 But that's generally our agenda this
23 morning.

24 The site, you have two Westinghouse NSSS
25 plants designed by UE&C, that's United Engineers and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 Constructors with WEDCO being the actual construction
2 entity that built the plants.

3 Indian Point 2 has Westinghouse low
4 pressure turbines, Siemens high pressure turbine and a
5 GE generator.

6 Indian Point 3 has ABB low pressure
7 turbines, Siemens HP turbine and a Westinghouse
8 generator.

9 Now that immediately brings the question
10 that you initially rose. It makes for an interesting
11 operation because the components are not exactly the
12 same. And we talk a little bit about the background
13 of the plant you'll see because it was owned by two
14 different companies, that is why you will see some
15 component differences between the two units.

16 PWR, large dry containment.

17 Both plants are licensed at 3216 megawatts
18 electric thermal. 1078 on Unit 2, 1080 on Unit 3.

19 We have once-through cooling from the
20 Hudson River. The plants do not have cooling towers.

21 We have on Unit 2 dual speed cir water
22 pumps with the state-of-the-art Ristroph screens that
23 really minimize impact to the fishery system.

24 As well as Indian Point 3 has variable
25 speed circulating water pumps with Ristroph screens.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 We have a staff complement of
2 approximately 1100 people, and that includes security.

3 A little bit on the operating history.
4 Construction permit on Unit 2 was issued in October of
5 1966 with the operating license in September of 1973.
6 You can see it went commercial operation in August of
7 '74.

8 You can see the three uprates that the
9 unit went through.

10 Indian Point 3 is similar. We received a
11 construction permit in August of '69. We received an
12 operating license in December of '75 with commercial
13 operation in August of '76. And you can see the three
14 power uprates.

15 Now here's the interesting history here of
16 Indian Point. It started out a common owner. Con
17 Edison owned both Indian Point 1, 2 and 3. Now Indian
18 Point 1 is currently in a safe-store condition. Fuel
19 has been off loaded from that facility. The fuel has
20 been removed from the spent fuel pool and the spent
21 fuel pool drained, and I'll talk about that a little
22 later on in the presentation. But there are a couple
23 of small systems that support the operation of Indian
24 Point, and we'll talk about during our course of
25 discussion this morning also.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 But Indian Point 3 was purchased from Con
2 Edison by the New York Power Authority in December of
3 1975. So that's when the plant started to -- the
4 ownership diverged.

5 Indian Point 3 was purchased by Entergy in
6 November of 2000. So you had a situation where the
7 plants operated side-by-side with Con Ed operating
8 Indian Point 2, New York Power Authority operating
9 Indian Point 3 and then in November of 2000 Entergy
10 purchased Indian Point 3.

11 In September of 2001 Entergy then went and
12 purchased Indian Point 2, and 1 came along also.

13 So you went from one owner to two owners
14 back to one owner. And that is kind of like what the
15 root cause is of some of the differences that you
16 obviously see between the two units.

17 We put our license renewal application in
18 April of 2007. And you can see the expiration dates
19 for the two units, and '13 and '15 respectively.

20 The intent here of this next slide is just
21 to give you a feel for the kind of things that have
22 been done to Unit 2. And this is really truncated
23 list. You can see we added additional station
24 batteries, new fan cool unit heat exchangers, new main
25 generator, titanium condensers. We went to 24 month

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 fuel cycles. Converted to best estimate LOCAs. Went
2 to sodium hydroid spray additive with TSP baskets in
3 containment, new low pressure turbines, new hydrogen
4 recombiners, new steam generators, new feedwater
5 heaters; a very extensive rebuild on both units to get
6 the reliability into the units that the region and the
7 company absolutely demands. And as a matter of fact,
8 in 2008 we completed the installation of a station
9 blackout Appendix Romeo diesel.

10 MEMBER SHACK: Wait. You replaced the
11 sodium hydroxide with TSP, right?

12 MR. DACIMO: That's correct.

13 MEMBER SHACK: And do you have calsil
14 insulation?

15 MR. DACIMO: Yes, we do. Yes.

16 MR. McCAFFREY: Yes, we do.

17 MR. DACIMO: And we did strain of MODs,
18 okay, and we can get into that later on, okay.

19 MR. McCAFFREY: Right. And we've also
20 upgraded from the TSP to sodium tetraborate.

21 MR. DACIMO: Right.

22 MR. McCAFFREY: And that was a recent
23 change we made as part of the buffer change up with
24 the Generic Letter 1-91 issues.

25 MR. DACIMO: So you can get a feel for

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 what we did on Unit 2.

2 On Unit 3, you can see we added a 4th
3 battery charger/inverter, new fire water tanks
4 splitting off the fire, had a system for Unit 2, new
5 SBO/Appendix Romeo diesel in '84.

6 Both plants had the control rooms rebuilt.

7 New main transformer, new titanium
8 condensers, new steam generators, new feedwater
9 heaters, new low pressure turbines.

10 Again, implemented a 24 month fuel cycle.

11 New high pressure turbines, new moisture
12 separator reheaters.

13 So very extensive, again, rebuilt on Unit
14 3.

15 Now we made significant investments in
16 upgrading the infrastructure at both plants. I'll
17 also tell we also paid a lot of attention to the site.

18 And I've a photograph I'm going to show you in a
19 minute. But in '87 a new training building was built.

20
21 We put in a new water treatment facility.

22 We built the new generation support
23 facility. We felt it was very important that the
24 people who work at the plant have very good quarters
25 to work out of, very good office quarters to work out

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 of. That was very important.

2 We initiated a dry fuel campaign for
3 Indian Point 1, as I mentioned before. We removed all
4 fuel from Indian Point 1 from the spent fuel pool in
5 Indian Point 1 and then we drained the spent fuel
6 pool. And so that's done. And those assemblies are
7 on the pad.

8 At Indian Point we have removed 96 fuel
9 assemblies. Those casks are on the pad and we are in
10 the process now of getting into the Indian Point 3
11 spent fuel pool campaign, which is actually ongoing
12 now from the standpoint of design and beginning
13 construction later on.

14 In 2008 we installed the new emergency
15 plant siren system. That is now operable. And we have
16 planned a new emergency operations facility that will
17 move into the design, procurement and build of that in
18 the near future.

19 Current plant status is both units are
20 operating this morning at 100 percent power. Unit 2
21 is online for 274 days. Unit 3 is online for 672 days.
22 Both units are running well with no significant
23 problems ahead of us.

24 Unit 3 is approaching a refuel outage next
25 week. And Unit 2 refuels in the spring of 2010.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 MEMBER SIEBER: Is that a two-year cycle?

2 MR. DACIMO: That's correct, two-year
3 cycles, Mr. Sieber. Yes.

4 This is a picture facing the river. You
5 can get a feel in the foreground of the generation
6 support building. You can Indian Point 1 is in the
7 middle. That's the pancake type down and the Hudson
8 River is in the background.

9 Next slide.

10 This is just to give you a feel for the
11 plant's operating history. The blue is when Entergy
12 purchased the plants. And so we have made some
13 significant changes in the reliability of this unit,
14 certainly due to the investment and infrastructure as
15 well as the people at that facility.

16 With that, that really completes my
17 presentation and I'm going to turn it over to Garry.
18 Mr. Young who is our Corporate Manager.

19 MEMBER SIEBER: You had a power uprate to
20 about 12 percent?

21 MR. DACIMO: Yes. We actually had the
22 power uprates on both units listed, and you can see
23 there was 10 percent on Unit 3, a 10 percent uprate in
24 '78, a 1.4 percent in 2002 and a 4.8 percent in 2005.

25 MEMBER SIEBER: Okay. So that's 14

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 percent?

2 MR. DACIMO: Right. Fifteen or so.

3 MEMBER SIEBER: What major changes did you
4 make to the plants to accommodate the uprates?

5 MR. DACIMO: New turbines, new MSRs. You
6 know, obviously, fuel load change. Okay. We also did
7 -- I'm trying to think of what else.

8 We had no issues with pumps, pumps had
9 plenty of margin. Okay. Those are the big picture
10 changes we made to the plant.

11 MEMBER BANERJEE: When did you change your
12 steam generators?

13 MR. DACIMO: On Unit 2 the steam
14 generators were changed out, I believe, it was in '99.
15 And on Unit 3 the steam generators were changed out in
16 '89.

17 MEMBER SIEBER: I take it you had
18 condensers problems at one time to the extent that you
19 had struggled with chemistry control in the steam
20 generators?

21 MR. DACIMO: The history of steam
22 generators certainly is typical what you see in the
23 industry. And that's why a lot of plants went to
24 titanium condensers. Same with, you know, minimize
25 cooper intrusion to the steam generators, absolutely.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Right.

2 MEMBER SIEBER: What did you have before?

3 MR. DACIMO: I believe it was a Admiralty
4 bronze.

5 MEMBER SIEBER: Admiralty?

6 MR. DACIMO: Yes, Admiralty bronze
7 condensers.

8 MEMBER SIEBER: Yes. Right. Okay. So you
9 didn't have failures where you were leeching the water
10 cooper?

11 MR. DACIMO: Right. Right.

12 MEMBER SIEBER: Okay. What experience
13 have you had with condenser tube leaks currently?

14 MR. DACIMO: The condensers --

15 MEMBER SIEBER: The Hudson is not perfect
16 from the standpoint of --

17 MR. DACIMO: It's brackish water. But I
18 got to tell you, the condenser reliability has been
19 very good. And we have plugged very few tubes.

20 We had one defect on Indian Point 3 a few
21 years ago. It appeared to have been an original
22 construction defect. But other than that, the
23 condensers have been very reliable.

24 MEMBER SIEBER: Your chemistry control on
25 the secondary side is moler chemistry control?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DACIMO: When you say "mole" I have--

2 MEMBER SIEBER: Mole ratio.

3 MR. DACIMO: Mole ratio?

4 MEMBER SIEBER: Is that true or not?

5 MR. DACIMO: I'll have to get an answer to
6 you. I'll have to get an answer to you.

7 MEMBER SIEBER: Okay. Yes, maybe you
8 could describe what your chemistry program is?

9 MR. DACIMO: Sure. Be happy to do that.

10 MEMBER SIEBER: Typically people went to
11 all-volatile --

12 MR. DACIMO: Other questions?

13 Okay, Garry.

14 MR. YOUNG: Okay. I'm Garry Young. And
15 I'm the Manager of the Fleet License Renewal for
16 Entergy.

17 I'm going to talk a little bit about the
18 application, the preparation of the application and
19 some background on our commitments and our plans to
20 implement our comments.

21 First of all, the application itself, this
22 will be the sixth license renewal application that we
23 brought to the NRC and to the ACRS for review. We
24 incorporated lessons learned from these previous
25 applications. And both the internal lessons learned

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that we've had with our previous projects, this
2 includes Arkansas Nuclear 1, Unit 1 and 2, Pilgrim,
3 Vermont Yankee and Fitzpatrick. But in addition to
4 that we also got lessons learned from the industry
5 through the Nuclear Energy Institute, the experiences
6 of other utilities. And we factored that into our
7 application.

8 We then did a peer review of our
9 application once it was drafted. Again, working with
10 the Nuclear Energy Institute to have other utilities
11 look at our application, utilities that were in the
12 process of preparing license renewal applications.
13 They gave us feedback and comments.

14 We had internal reviews of the application
15 by our on site and off site Safety Review Committees
16 and, of course, by our QA.

17 The application was prepared by
18 essentially the same team that's prepared the other
19 Entergy applications. It's a combination of our
20 Corporate Group that has a lot of experience with
21 doing license renewal applications. But then it was
22 supplemented heavily by people with experience at
23 Indian Point so that we got the benefit of the
24 detailed knowledge of the plant, the systems and the
25 operating experience that were factored into the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 application.

2 We then addressed all the comments
3 received from all of these sources and incorporated
4 them into the application.

5 And another item I'd like to comment here
6 is on the scoping. This was somewhat of a challenge
7 since we had two Westinghouse units but they were
8 built at different points in time. And as a result of
9 that because of some evolving licensing and industry
10 issues in the 1970s, we wound with up a very different
11 split of boundaries for systems. And the actual
12 number of components and the design of the two plants
13 are in fact very similar, but the designation of
14 system boundaries is very different.

15 And, for example, Indian Point 2 has about
16 half as many systems as Indian Point 3 in our
17 component database.

18 Another example, just to give you an idea
19 here, is the RHR system between the two units is
20 almost identical in boundaries and in the description
21 in the application. But the condensate and feedwater
22 system is an example where Indian Point 2 has two
23 systems that form the makeup of condensate and
24 feedwater and Indian Point 3 has seven systems. So
25 that's why you see such a difference in the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 application in the names of the systems and the number
2 of systems. But in reality if you just look at a
3 piping diagram, they would look very similar.

4 Okay. The next slide is on the aging
5 management reviews that were done. We used NEI 95-10,
6 which is the industry guidance document for performing
7 aging management reviews for the integrated plant
8 assessment and the time limited aging analyses.

9 The aging management review results were
10 very consistent with NUREG-1801, the GALL report. And
11 we calculated that about 90 percent of the aging
12 management review line items were what we call the
13 notes A through E, which are the notes that show
14 consistency with the GALL report, which is typical for
15 a plant. The other ten percent that did not match
16 GALL are generally unique material environment
17 combinations or components that are not addressed in
18 GALL. And, again, that's typical for plants that are
19 doing license renewal currently.

20 MEMBER SIEBER: Were you required to take
21 exceptions because of the references to code years
22 versus your licensing basis?

23 MR. YOUNG: There were a few cases of
24 that, yes. Yes.

25 MEMBER SIEBER: Is it a few or a lot, or

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 how many?

2 MR. YOUNG: I've got a later slide that
3 I'll go into that. But there were actually eight of
4 our aging management programs that we actually took
5 exceptions. And some of them were in that category,
6 certainly not all of them.

7 MEMBER SIEBER: Maybe you could tell us
8 specifically which ones were.

9 MR. YOUNG: Okay. On the next slide we
10 have 41 aging management programs that we credited for
11 license renewal. Thirty-one of these programs are
12 existing programs and 10 are new programs. The 10 new
13 programs are the ones that you typically see, which
14 include things like our non-EQ cable inspection
15 programs, buried piping inspection programs and so on.

16 In the comparison to NUREG-1801, the GALL
17 report, the breakdown we had is we had eight plant-
18 specific programs that were not GALL programs. And
19 then we had 33 programs that were GALL programs. Of
20 the 33 programs we had eight that had exceptions to
21 GALL.

22 And some of the examples of the exceptions
23 -- well, for example, we had the flow-accelerated
24 corrosion program. We used a later revision of an NSAC
25 document than the one that's in GALL. So that was an

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 exception using a newer edition of that document.

2 In some other cases we substituted some
3 inspections or some criteria; oil analysis program.
4 We do fuel dilution testing, which is different than
5 the flash point testing that's in GALL, but it is more
6 prescriptive.

7 In our fire protection program GALL
8 recommends a six month interval for inspections and
9 we're doing it on a fuel cycle basis, 24 months; 18 to
10 24 months, which again is a typical exception to GALL
11 that other utilities have taken.

12 All of these exceptions, these eight
13 exceptions that we took are similar to ones that had
14 been previously taken by other applicants. And they
15 are also being provided to the NRC staff as part of
16 the GALL revision to see if we can incorporate some of
17 these exceptions into GALL so that in the future we
18 won't have to take these exceptions because they have
19 been reviewed and accepted on other applicants as well
20 as on Indian Point.

21 Does that answer your question? Okay.

22 The next slide, our commitment process.
23 We have made at this point 38 commitments in our
24 license renewal application in the review process. We
25 have made adjustments to those commitments based on

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the NRC review of both the audits and inspection
2 process. So some of these commitments that are in the
3 application have been revised and modified as a result
4 of the ongoing review.

5 We're using the Indian Point commitment
6 management process which is the same sort of
7 commitment management process we have at our other
8 Entergy plants.

9 For example right now at Indian Point we
10 have about 10,000 commitments that are being managed
11 by this program, so these additional 38 will also be
12 managed by that same process.

13 This commitment management process is a
14 well established process and consistent with industry
15 guidance and standards. Entergy periodically does
16 inspections and self-assessments of the commitment
17 management system to ensure that it's working
18 effectively. And, again, this is the same process
19 that we used at our other Entergy plants for managing
20 our commitments.

21 MEMBER ARMIJO: Is the number of
22 commitment items for the Indian Point plants
23 consistent with the rest of the Entergy fleet?

24 MR. YOUNG: Yes.

25 MEMBER ARMIJO: Ten thousand is not an

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 unusually high number or anything like that?

2 MR. YOUNG: No. No. It's very similar.
3 Yes.

4 MEMBER ARMIJO: Thank you.

5 MR. YOUNG: That is a two unit site, so it
6 has that difference.

7 MEMBER ARMIJO: Right. Right.

8 MR. YOUNG: Yes, but on a per unit basis
9 it would be.

10 Okay. The next slide is our
11 implementation activities. WE are taking a fleet
12 approach to our implementation of these aging
13 management programs and other commitments. Again, we
14 have a lot of sites that have committed to many of
15 these same programs, but each site actually owns the
16 implementation. And then we have a corporate or fleet
17 group that helps provide oversight, consistency and
18 support for each individual site, in this case Indian
19 Point.

20 We have a fleet manager that's looking
21 overall for the implementation activities for the
22 whole fleet. But then we also have a site coordinator
23 at each site that deals with the specifics.

24 We have a schedule developed for
25 implementing these commitments and we're continually

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 updating and revising that schedule as we develop our
2 aging management programs.

3 We have several of these programs that are
4 common to the fleet, such things as the buried piping
5 inspection program, the non-EG cable inspection
6 program. We have developed in some cases a fleet
7 standard and then each site will implement that
8 incorporating the site specific differences.

9 We are still developing some of these
10 programs, some of these new programs. They're not all
11 developed yet, but we have a few that have been
12 developed. And this will continue as we approach the
13 period of extended operation.

14 Okay. And that completes that
15 presentation on the application itself and the
16 management of commitments and the implementation
17 plans.

18 The next slide we're going to get into the
19 SER open items. And as I mentioned, we have a total
20 of 20 open items in the SER. And we have been
21 providing information to the NRC staff as requested to
22 allow them to finish their review. Out of the 20
23 items at this time we believe there are 13 in which we
24 provided the information the staff requested. And it's
25 our understanding that that has addressed their open

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 item. So we put those in the category of ready to
2 close. So on this here when you see "ready," that
3 means that we have provided the information to staff.

4 The staff has indicated that at this time they don't
5 have anymore questions. So they're in the processing
6 of closing. It doesn't mean they're closed.

7 MEMBER BANERJEE: So taken an example,
8 maybe, and take us through.

9 MR. YOUNG: Well, for example, we --

10 MEMBER BANERJEE: Can you take the first
11 one, perhaps? Was it they were not part of the MR or
12 something?

13 CHAIR MAYNARD: You're going to go through
14 each one of these, aren't you?

15 MEMBER BANERJEE: Oh, you are?

16 CHAIR MAYNARD: Yes.

17 MEMBER BANERJEE: You're going to? Go
18 through each one of these open items?

19 MR. YOUNG: We were planning to focus on
20 just the ones in which the staff is still continuing
21 their review.

22 MEMBER BANERJEE: On their review?

23 MR. YOUNG: And the ones that were
24 resolved, we didn't plan to go through one-by-one.

25 CHAIR MAYNARD: So I think we still may

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 have questions on this.

2 MR. YOUNG: Yes.

3 CHAIR MAYNARD: Because while the staff
4 may be ready and they can address it --

5 MR. YOUNG: Yes.

6 CHAIR MAYNARD: We haven't really been
7 provided that information.

8 MR. YOUNG: Right.

9 CHAIR MAYNARD: So as far as we're
10 concerned they're still open.

11 MR. YOUNG: Right.

12 CHAIR MAYNARD: And we'll still need some
13 dialogue on those items.

14 MR. YOUNG: Okay. Okay.

15 MEMBER STETKAR: Otto, when is the
16 appropriate time to do that? Because I've been
17 looking forward a little bit and some of the questions
18 I had we'll get into more details, but some will
19 pertain to the ones that are tagged on this slide as
20 ready. So is it appropriate --

21 CHAIR MAYNARD: Yes. I think what I'd
22 like to do is to go ahead and let them go through the
23 presentation. We'll focus on the ones that are still
24 open and it will come back those they said ready, and
25 then we'll pick those up.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER STETKAR: Okay.

2 CHAIR MAYNARD: So I do want to save time
3 for that.

4 MEMBER STETKAR: Okay.

5 CHAIR MAYNARD: Because a number of us
6 have questions on those.

7 MR. YOUNG: Okay. Certainly, yes.

8 CHAIR MAYNARD: Again, we haven't seen the
9 staff's resolution or their finals on that.

10 MR. YOUNG: Okay. Okay. And these next
11 three slides are, again, are just a listing of the 20
12 open items and the status as we understand it at this
13 point. Again, there's seven that the NRC staff is
14 still continuing their review and then 13 which we
15 think we've provided the information that was needed
16 to close.

17 MEMBER BANERJEE: So by ready you mean the
18 staff have closed these items.

19 MR. YOUNG: No. They are not closed. The
20 staff has asked for --

21 MEMBER BANERJEE: You've sent down?

22 MR. YOUNG: We've sent the information.

23 MEMBER BANERJEE: Okay. So the staff is
24 still evaluating it?

25 MR. YOUNG: They're still evaluating. But

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 they've indicated that that information was what they
2 needed.

3 MEMBER BANERJEE: And when you mean "NRC
4 review," you haven't down, is that what it means?

5 MR. YOUNG: No. The -- on the one --

6 MEMBER BANERJEE: What's the difference
7 between "ready" and "NRC review."

8 CHAIR MAYNARD: I think they're saying
9 that out of the 20 open items seven of them I believe
10 the staff still considers open, 13 I think the staff
11 is about to close. I think the staff's going to have
12 to be the one to address that. And I think that's the
13 way they're putting it in the category is that --

14 MR. YOUNG: Yes.

15 MR. HOLIAN: That's right. That's a good
16 summary.

17 MEMBER BROWN: So we should wait to
18 address questions on those potentially being closed
19 until we hit the closed ones or --

20 MR. HOLIAN: Yes.

21 CHAIR MAYNARD: Well, why not just go
22 ahead and let them go through the presentation, focus
23 on the seven that are still open. We will come back to
24 any of them that did not get touched.

25 MR. YOUNG: Okay.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR MAYNARD: But we'll expect them to
2 address this stuff. I don't want to just wait until
3 the staff gets up here and find out they're trying to
4 address it.

5 MR. YOUNG: Okay. Again, there were three
6 slides that just listed all of the open items and the
7 status as we understand at this point.

8 On slide 24 these are the ones, the seven
9 remaining open items in which the staff is continuing
10 their review. And we've provided information on all
11 of these, but there may be additional information
12 needed by the staff to finish their review is I think
13 the way to characterize it. And what we'll do is on
14 each one of these seven items on this slide on the
15 list that we're calling remaining open items, we're
16 going to provide a more detailed discussion by the
17 experts in these areas. And then we've also got three
18 what we call topics of interest which were topics that
19 we were requested to provide a presentation on
20 involving the reactor vessel integrity, buried piping
21 program and the containment liner event that occurred
22 in 1973 and the impacts of that. So we'll have a
23 presentation on each one of these in more detail.

24 MEMBER BANERJEE: That was in OP2 the '73
25 event?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. YOUNG: Yes.

2 CHAIR MAYNARD: And again, I won't try to
3 get through this. We'll control the pace because
4 it'll probably be more by a number of questions we ask
5 on these. But we do need to have time to address
6 questions on the other 13.

7 MR. YOUNG: Yes. Certainly.

8 Okay. And with that, I'll turn it over to
9 Tom McCaffrey is going to talk about this first open
10 item on the station blackout scope.

11 MR. McCAFFREY: Thank you. I'm Tom
12 McCaffrey. I'm the Design Engineer Manager at Indian
13 Point.

14 For the station blackout scoping we have
15 complied for Unit 2 and Unit 3 meeting the 10 CFR 50.4
16 (a)(3) in the scoping. We've complied with the NUREG
17 guidance of 1800 for the alleged renewal scoping, the
18 recovery boundary for the station blackout.

19 Right now we're in compliance with the
20 draft guidelines provided by the NRC as a revision to
21 the ISG 2008-01.

22 Basically right now both of our station
23 blackout recovery paths, the primary path which is the
24 through 138 kV system and the alternate system, the
25 13.8 are also included in the scoping from The

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 Buchanan Substation to the power plant.

2 MEMBER STETKAR: Tom, do you have a
3 drawing that shows -- as I read through the SER and
4 various, there seemed to be various concepts of
5 exactly what paths were included in this evolution.

6 MR. McCAFFREY: Yes.

7 MEMBER STETKAR: Do you have a drawing
8 that shows what's currently included in your
9 application?

10 MR. McCAFFREY: Yes, we do.

11 MEMBER STETKAR: Okay.

12 CHAIR MAYNARD: You have to have a
13 microphone.

14 MR. McCAFFREY: Sorry about that.

15 Okay. So what we have here is the
16 schematic we provided in the application. We have two
17 paths of station blackout recovery. One is to our
18 normal 137 kV feeder from Buchanan Substation down to
19 the station. On the right side here is our 13.8 kV
20 alternate supply down to the nuclear power point.

21 There's two supplies and they're both
22 contained in the Buchanan Substation, the supplies.
23 That's the Con Edison Substation that contains the
24 345, 138 and 13.8 kV systems where we generate and
25 transit and get power from for the power plant.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BROWN: So they're physically
2 located contiguous to each other?

3 MR. McCAFFREY: Yes, they are. They're
4 about three quarters of a mile away from the power
5 plant, directly across the street from the entrance to
6 the --

7 MEMBER BROWN: But they're both in the
8 same location?

9 MR. McCAFFREY: Correct. The same yard.
10 Yes. The same operator who reports to that substation
11 will be operate the 345, 138 and 13.8 kV systems.

12 MEMBER SIEBER: Is that manned around the
13 clock?

14 MR. McCAFFREY: That is a manned. The
15 operator reports there. That's a reporting station but
16 does not have to be there. Con Edison has the ability
17 to remotely operate all the breakers from their
18 normally manned location in New York City.

19 MEMBER SIEBER: Okay. Their dispatch
20 office?

21 MR. McCAFFREY: Correct.

22 MEMBER STETKAR: Okay.

23 MR. DACIMO: But typically during the week
24 and most times Saturdays on the day shift there are
25 people that --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER SIEBER: But if they aren't there
2 24 hours, it's --

3 MR. McCAFFREY: They always report in
4 there. That's a typical reporting station. So the
5 operator will report there. If they need his help at
6 another substation, they might take him out of there.
7 But that is a critical substation for Con Edison from
8 just a transition flow. So they always try to keep an
9 operator in that substation.

10 MEMBER SIEBER: Okay.

11 MEMBER STETKAR: Tom, do you have any
12 other drawings that actually shows the 137 and 13.8 kV
13 -- the 3.5, 138 and 13.8 kV switchyard configurations?

14 MR. McCAFFREY: Yes.

15 MEMBER STETKAR: These kind of go off into
16 there.

17 MR. McCAFFREY: Yes. This does not show
18 the 345 kV system because that's really --

19 MEMBER STETKAR: Yes, but you're not
20 taking credit for that.

21 MR. McCAFFREY: So what we see here is the
22 highlighted lines are currently what is in scope for
23 the station blackout recovery. It's the 138 kV
24 breakers that supply the normal feed into the station
25 and would be the SBO recovery path. And the alternate

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 13.8 kV supplies into the substation down at the
2 plant.

3 MEMBER STETKAR: Let me see if I can
4 digest this for just a second. This shows both paths
5 from IP2, is that correct? It shows BT3-4 and --

6 MR. McCAFFREY: I'll walk you through it.

7 MEMBER STETKAR: Yes, if you could. That
8 would help.

9 MR. McCAFFREY: The unit 2 there, the
10 power line up in here through this, BT3-4, right?

11 MEMBER STETKAR: Okay.

12 MR. McCAFFREY: And Unit 3 is this one,
13 right. BT5-6 comes in from the side here from IP3.

14 MEMBER STETKAR: Okay.

15 MR. McCAFFREY: That's the 138 kV supplies
16 into both station.

17 MR. McCAFFREY: Now down here below --

18 MEMBER STETKAR: That shows the 13.8 down
19 below.

20 MR. McCAFFREY: -- it's the 13.8 kV
21 supply.

22 MEMBER STETKAR: Okay.

23 MR. McCAFFREY: Any connections in the
24 substation there between the 138 kV system and the
25 13.9 kV system, which is all still contained in the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Buchanan Substation, which is across the street from
2 the power plant.

3 MEMBER SIEBER: Now the equipment in the
4 Buchanan Substation is not owned by Entergy?

5 MR. McCAFFREY: And that's not true. Part
6 of the equipment owned by the substation is owned by
7 Entergy and the station is manned by Con Edison and
8 they own the majority of the equipment the substation.

9 MEMBER SIEBER: Do you down -- does
10 Entergy own or does Con Ed own the whiteout path?

11 MR. McCAFFREY: The two breakers that are
12 associated with the 13.8 kV supply alternate are
13 Entergy's feeders and breakers. The 138 kV feeders
14 and breakers are Entergy's breakers and feeders into
15 the station.

16 MEMBER SIEBER: So the answer is yes?

17 MR. McCAFFREY: Correct.

18 MEMBER SIEBER: That would have been even
19 better. Okay. In other words, you don't have
20 anything that you don't own, Entergy doesn't own as
21 part of your license renewal responsibility to
22 maintain?

23 MR. McCAFFREY: As is currently -- yes,
24 that's correct. As it's currently in the application,
25 yes.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER SIEBER: Okay. Is it going to stay
2 that way?

3 MR. DACIMO: There is no plans to sell
4 anything.

5 MEMBER SIEBER: Okay.

6 MR. McCAFFREY: Right. No plans.

7 MEMBER SIEBER: Yes, but the way you
8 phrased it --

9 MR. McCAFFREY: I'd just say there's draft
10 guidelines out that we believe that we meet compliance
11 with that based upon what I've shown you here today.

12 MEMBER SIEBER: Okay.

13 MR. McCAFFREY: The draft guidelines will
14 have to evaluate any of those changes, that change
15 then we have to see how we comply with the draft
16 guidelines.

17 CHAIR MAYNARD: I'd like to move on. We
18 have a number of issues. This is also something,
19 station blackout scoping stuff that's under review by
20 NRR. There's some more generic items here. And so I
21 think that's still under review. So I think --

22 MEMBER STETKAR: This gets to what my
23 questions were, so that's fine.

24 MR. McCAFFREY: Okay. And I'll turn it
25 over to Alan Cox.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. COX: The next topic of interest that
2 we have is the auxiliary feedwater pump room fire
3 event. And actually what this is talking about is the
4 aging management approach for systems that are relied
5 on in the event of a fire integrated in the feedwater
6 pump room.

7 MEMBER SIEBER: Now, you have two motor
8 driven and a steam driven and they're all in one room?

9 MR. COX: That's correct.

10 MEMBER SIEBER: So a fire in that room
11 wipes out that aux feed system and then you have an
12 alternate means? Okay.

13 MEMBER STETKAR: Alan, before you go into
14 the specifics for Unit 2 isn't the Unit 3
15 configuration the same? Don't you have two motor
16 driven and a turbine driven pump in the same room for
17 Unit 3?

18 MR. COX: Yes.

19 MEMBER STETKAR: Why is here not a
20 companion Unit 3 auxiliary feedwater room fire event?

21 MR. COX: Well, the Unit 3 auxiliary
22 feedwater pump has a fire suppression system installed
23 in the room, whereas the Unit 2 not.

24 MEMBER STETKAR: Okay.

25 MEMBER SIEBER: Does that count? Does

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that count as far as your fire protection program?
2 Usually you talk about barriers with suppression
3 systems --

4 MEMBER BANERJEE: These are what, Halon?

5 MR. COX: I believe it's a --

6 MR. DACIMO: The Unit 3 system is a bottle
7 system. And I believed it is Halon.

8 MEMBER SIEBER: Or whatever is successful.

9 MR. DACIMO: Right. Yes, because we
10 haven't replaced that. Okay.

11 MEMBER SIEBER: I'll have to think about
12 that.

13 MEMBER BANERJEE: I noticed that --

14 MR. COX: I would point out there's very
15 little in the way of combustible loading in the room.
16 So it's very unlikely. Basically in this event a one
17 hour period is assumed for duration when the room
18 would be inaccessible to the operators. And for that
19 a one hour period in this event we're crediting
20 normally operating secondary plant system to provide
21 the alternate flow path to get feedwater to the steam
22 generators.

23 MEMBER STETKAR: And just out of
24 curiosity, after the one hour time expires what type
25 of operator actions are you crediting after the room

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 accessible?

2 MR. COX: Well, after the room becomes
3 accessible we'd be able to restore the auxiliary
4 feedwater system from one of the other train in that
5 room to provide feedwater.

6 MEMBER STETKAR: That presumes that the
7 fire doesn't effect all of the trains that are in the
8 same room?

9 MR. COX: Right. So again --

10 MEMBER SIEBER: I also presume the staff
11 has accepted this as part -- or as part or is fire
12 modeling?

13 MR. COX: Right. This is part of the IP2
14 correlation basis, yes.

15 MEMBER SIEBER: Typically other licenses
16 have done other things, like put a pump in a different
17 room with diesel power.

18 MR. COX: Again, for license renewal we
19 basically worked with the current licensing basis and
20 this was because this was credited for compliance with
21 50.48. That's the reason we included these systems in
22 scope.

23 MEMBER SIEBER: Yes, you could.

24 MR. COX: Now the unique thing about
25 these systems, the credited systems for this event

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 perform their function, the same function during
2 normal operations as the function that they're
3 required to perform during event. So that allowed us
4 an opportunity to take just a unique but still very
5 effective approach to aging management. And that is
6 that the normal operation of the system doing its
7 intended function demonstrates that it will be
8 available for this one hour period that is required to
9 respond to this event.

10 I mentioned that this is a unique
11 approach. That while it is unique for Indian Point,
12 this approach is an approach that's fairly common for
13 the PWR plants specifically related to the main
14 condenser where acceptable performance of the main
15 condenser during normal operation has routinely has
16 been determined adequate to provide assurance that
17 that condenser remains operable to performance license
18 renewal post-accident intended functions.

19 So in essence, for IP2 operation of the
20 secondary plant system, you know, right up to the
21 initiation of this event provides the assurance that
22 those same systems are able to perform essentially
23 those same functions during an event. That is of
24 providing an alternate path of feedwater to the steam
25 generator.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 The staff did ask us for some additional
2 information. We provided to them, I believe toward the
3 end of January we gave them some more detailed
4 component information on the components that are
5 associated with these systems and also identified
6 which of the components were covered under other aging
7 management programs. Specifically since these were in
8 the turbine building we do have some safety-related
9 equipment in that turbine building. Most of the
10 secondary plant fluid field systems are in scope of
11 (a)(2) and are covered under other aging management
12 programs.

13 MEMBER BANERJEE: Are there passive
14 components? Of course there are, right?

15 MR. COX: Certainly. Okay. So piping,
16 that sort of thing, would certainly be passive
17 components that are included in this evaluation.

18 Like I say, a lot of them were included
19 for (a)(2) and, of course, the steam systems that are
20 involved in this are part of the --

21 MEMBER BANERJEE: So how are you, Garry,
22 going to manage the aging, these passive systems?

23 MR. COX: Again, in this case the normal
24 operation of the plant is putting these systems
25 through their paces under the same design basis

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 conditions that they will see for this one hour
2 period. So that we basically determined there is no
3 conditional aging management program required for
4 these components because of that demonstration.

5 MEMBER BANERJEE: And the staff agrees
6 with that?

7 MR. YOUNG: That is still under review.

8 MEMBER BANERJEE: Okay. Is that still one
9 of the open items?

10 MR. COX: The concept they've agreed with,
11 again on the BWR side of things, for the main
12 condenser which is credited for a function of hold up
13 and plate out --

14 MEMBER SIEBER: Until they write it down,
15 they don't agree.

16 MEMBER BANERJEE: Okay. That is fine. Go
17 ahead.

18 MR. YOUNG: Okay. The next subject Rich
19 Drake will provide the discussion.

20 MR. DRAKE: I am Rich Drake. I'm the
21 Civil/Structural Engineering Supervisor at Indian
22 Point. And I'm responsible for the structural
23 monitoring programs.

24 IP2 reactor cavity structural integrity.
25 The stainless steel liner leakage occurs -- has

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 started occurring during the outages starting in the
2 1970s and then mole leaks started to increase more
3 significantly into 1990s. The refueling cavity is
4 only flooded approximately two weeks every two years
5 during the outages.

6 Three areas in 1993 were examined with
7 core bore samples in several locations and an area of
8 concrete reenforcing was opened up behind the liner.
9 The evaluation of the concrete samples concluded that
10 the concrete and rebar behind the cavity liner was
11 fully capable of meeting its intended design function
12 for the license renewal period. Minimal effects on
13 the reenforcing was found. The borated water
14 penetration was determined to be less than a half inch
15 into the concrete. And the concrete typically has over
16 two inches of concrete cover over the reenforcing
17 steel.

18 MEMBER SIEBER: What impact has the
19 borated water have on the strength of the concrete?
20 Will it spall off?

21 MR. DRAKE: No. It was determined that it
22 had very little effect to the concrete.

23 MEMBER SIEBER: And how did you determine
24 that?

25 MR. DRAKE: We did core bore samples into

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the concrete behind the liner.

2 MEMBER SIEBER: So you cut holes in the
3 liner?

4 MR. DRAKE: Cut holes in the liner, took
5 some core bores and we exposed an area of the
6 reenforcing steel.

7 MEMBER SIEBER: What does the sampling
8 program look like?

9 MR. DRAKE: We took several core bores and
10 we took some breaks and they also did some sampling to
11 determine the extent that borated water would actually
12 penetrate into the concrete. And it was much less than
13 a half inch into the concrete. So it never reached the
14 reenforcing steel through the normal path.

15 MEMBER SIEBER: So far? So far.

16 MR. DACIMO: Well, we also have extensive
17 experience from Indian Point 1 where the Indian Point
18 1 spent fuel pool, which we mentioned, was drained.
19 That pool did not have a liner at all.

20 MEMBER SIEBER: Yes. It was like shipping
21 port.

22 MR. DACIMO: Right, exactly. So, you
23 know, and there were some investigations there that
24 indicated that indicated wearing issues.

25 MR. DRAKE: We've done other --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER SIEBER: That wasn't borated,
2 though, was it?

3 MR. DACIMO: At one point in time it was.
4 Absolutely.

5 MR. DRAKE: Yes.

6 MEMBER SIEBER: Okay.

7 MEMBER BANERJEE: What caused the leakage
8 to start in the '70s? Do you recall, do you remember?

9 MR. DRAKE: It's through some pinhole
10 leaks in plug welds or also some porosity in the welds
11 themselves. The areas that have been identified have
12 been plug welds and the weld seams. Typically the
13 leakage occurs midway up on the liner in the weld
14 area. That's where some of the biggest concerns are.
15 And then the plug welds.

16 We've taken remedial action. Over the
17 course of the year we've used ceramalite coatings over
18 these identified locations. We use an instacoat
19 strippable coating during the refuel outages. And the
20 areas that have been coated are varied with different
21 success levels.

22 MEMBER SIEBER: In other words, it didn't
23 work?

24 MR. DRAKE: We're still trying to narrow
25 down all the locations.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER SIEBER: Did you ever consider
2 rewelding the areas that are bad, and is that
3 possible?

4 MR. DRAKE: It would be a very dose
5 concentration area.

6 MEMBER SIEBER: Well, you could -- a lot
7 of people have put strippable paint on those --

8 MR. DRAKE: Well, that's what we did. We
9 did strippable coating and the --

10 CHAIR MAYNARD: But even with that you
11 failed to correct?

12 MR. DRAKE: Yes, we've had limited --
13 we've had some success with that. And then the liner
14 during the hydrostatic pressure will deflect slightly
15 in certain locations at the mid height. And that with
16 the strippable coating when we had the ceramalite
17 coating, which is very rigid, we actually had like a
18 knife edge and it cut it and then we started leaking
19 on that.

20 CHAIR MAYNARD: How are you identifying
21 the leakage?

22 MR. DRAKE: It drips down into the 46 foot
23 elevation, which is our bottom elevation normally. And
24 it's captured within the side crane wall. I have
25 another slide I could get to and I could show you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that.

2 MEMBER STETKAR: Before we get to the flow
3 path, what was your experience in the 2008 outage?
4 Did you have a leak in 2008 also?

5 MR. DRAKE: We did still have leakage.

6 MEMBER STETKAR: Okay.

7 MEMBER SIEBER: What's troublesome here is
8 that you have a defective condition that you say today
9 is okay but you're asking for 28 years more of a
10 defective condition that can get worse at anytime?

11 MR. DRAKE: Yes, and we know.

12 MEMBER SIEBER: To me that's troublesome.

13 MR. DRAKE: Yes. We are -- presume we are
14 looking at new processes to go. We are pursuing an
15 ARVA process which has had success both overseas and
16 the United States, which is a flexible silicone with a
17 stainless steel backing to it, which we're going to
18 apply.

19 We're also looking at Westinghouse
20 processes which are still in the commercial
21 development stage. But we are looking at other
22 processes.

23 MR. DACIMO: But I think to answer your
24 question directly we don't see that while it is a
25 troublesome condition and doesn't meet our

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 expectations, it doesn't effect structural integrity
2 of anything that it impacts --

3 MEMBER SIEBER: Today?

4 MR. DACIMO: -- both in the short term and
5 as we extrapolate it out in the long term --

6 MEMBER SIEBER: I --

7 MR. DACIMO: Just let me finish. Based on
8 our experience and investigation, we don't think it's
9 going to effect the long term structural integrity
10 either based on our investigation.

11 MR. DRAKE: We've also made a commitment
12 to do --

13 MR. DACIMO: Right.

14 MR. DRAKE: -- extra in upcoming outages
15 to do more core bore samplings and expose another area
16 of reenforcement to determine that.

17 MR. DACIMO: And we will continue to look
18 at this on a going forward basis. And we have a
19 formal commitment to do that while we pursue -- as a
20 matter of fact it's quite active, a different repair
21 methodology.

22 MR. DRAKE: Before we do a repair
23 methodology we're going to examine that area first and
24 then do the repair.

25 MEMBER SIEBER: The staff has an open item

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 and is considering, right?

2 MR. DRAKE: Yes.

3 MEMBER SIEBER: I'll wait until you make
4 the decision.

5 MEMBER BANERJEE: You were going to show
6 us the flow path.

7 MR. COX: This is Alan Cox.

8 I might add that at the time that we do we
9 have a commitment to do these additional core bore
10 samples. At that time we will have had over 30 years
11 of operation with this condition. So we feel like
12 that's a pretty good indication of what we can expect
13 going forward. We're going to have a long history of
14 this condition. We'll be evaluating it at the end of
15 that 30 year period.

16 MR. DACIMO: And then when you factor in
17 some of the industry OE there is also a significant
18 body of experience that's out there upon which we can
19 draw upon for similar conditions.

20 MEMBER BANERJEE: Could we get copies of
21 these backup slide that you're showing us now.

22 MR. DRAKE: This one here is the --

23 MEMBER BANERJEE: Oh, it is in there.

24 MR. DRAKE: This is on the next page.

25 So what I'd like to show here --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR MAYNARD: And anything they use as a
2 backup slide, that gets into the record and we'll get
3 copies.

4 MR. DRAKE: So our next slide, basically
5 this is a cross section length wise through the
6 reactor activity and the refueling --

7 MEMBER BANERJEE: It's hard to read the
8 lettering here.

9 MR. DRAKE: Yes, I'm sorry about that.
10 It's really just for schematics here.

11 So this is here the cavity length of some
12 of the areas that are leaking in particular, the welds
13 about midway high up in the cavity. And then most of
14 it drips down through construction joints or cracks
15 and it's inside the crane wall. And here is the trench
16 inside the crane wall that will then take it to the
17 reactor sumps, containment sumps. There is all coated
18 with coatings for decon purposes and it capture the
19 water.

20 The containment liner is way outside and
21 through several other concrete barriers. And this is
22 all captured inside the crane wall, that's where the
23 reactor cavity is. So we capture some here that goes
24 to the containment sump and there's some down below
25 the reactor in the reactor cavity sump down here.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR MAYNARD: Okay. Now you say it only
2 occurs when you get like above half?

3 MR. DRAKE: That's when we can see that
4 it'll be about half way up. And then it starts leaking
5 instantaneously and then we start draining down, when
6 we get below that point it stops almost
7 instantaneously. It has -- there must be a small
8 annulus behind the liner that allows it freely flow.

9 CHAIR MAYNARD: And how much volume?

10 MR. DRAKE: I don't know. It's varied
11 every year during the sump mod --

12 CHAIR MAYNARD: Is it --

13 MR. DACIMO: Well, it's in the area -- in
14 the area -- when you fully flow we've seen about 4 gpm
15 is on the outside.

16 MR. DRAKE: Yes, that was the worst case.

17 MEMBER STETKAR: Explain to me a little
18 bit. This in the cross section is a little bit. But
19 how is the water getting -- I reckon it comes through
20 the liner --

21 MR. DRAKE: Yes.

22 MEMBER STETKAR: -- but does it then seep
23 into concrete and essentially seep out of concrete
24 down at the 46 foot levels?

25 MR. DRAKE: Yes. Basically there's

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 construction joints and there's some cracks in the
2 concrete that will allow it to come through.

3 MEMBER STETKAR: Now I'm curious about the
4 fact that you said the boric acid is only been -- I
5 don't remember what you said, a half inch or an inch?

6 MR. DRAKE: A half inch into the concrete.

7 MEMBER STETKAR: Because if the water is
8 flowing through several feet of concrete, couldn't it
9 be distributed throughout the entire length of
10 whatever crack system it's flowing through?

11 MR. DRAKE: It's at -- well, the bottom
12 portions there. And it pretty much comes straight
13 down through the -- into the -- inside the crane wall.

14 MEMBER STETKAR: Where is the construction
15 joint?

16 MR. DRAKE: Well, there's several. You
17 can't see them on here. But there's cracks that come
18 through the base underneath the fuel pool.

19 MEMBER BROWN: So it's crack leakage, not
20 diffusion for the concrete?

21 MR. DRAKE: No, no, no. It comes through
22 the construction cracks.

23 MR. DACIMO: The space between the liner,
24 the liner butts up against the concrete wall. When
25 the water penetrates the liner through a defect, okay,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 and that's where it's flowing down. It flows down
2 against the outside of that wall to a joint at the
3 bottom where a horizontal wall meets a vertical wall.

4 And it ends up in the -- when you go down to the
5 basement of the vapor containment, you can see it
6 coming out of those joints. And then it's captured in
7 a sump that's coated with an epoxy paint.

8 MEMBER STETKAR: You know those are flow
9 paths --

10 MR. DACIMO: We have a general -- a very
11 good understanding of the flow path and then we have a
12 good capture mechanism and we get a correlation
13 between the makeup related to the pool as well as
14 the--

15 MEMBER STETKAR: No. I was just more
16 interested as long as you know what that flow path
17 rather than a --

18 MEMBER SHACK: No, but at 40 gpm you're
19 certainly going to have that annulus full. And if
20 there are cracks, it's going to diffuse through. Now
21 I can believe that it only goes a half an inch through
22 anyplace that you have integral concrete. But I would
23 also think that it would follow any crack.

24 MR. DACIMO: Yes. And that's why you see
25 it coming out of more than one location.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DRAKE: Yes. And it goes -- it's got a
2 free path to go straight down. So it --

3 MEMBER SHACK: Yes, but at 40 gpm --

4 MEMBER SIEBER: That's a lot of water.

5 MEMBER SHACK: -- you know, it's not as
6 though it's a drip sort of rolling down that wall. I
7 mean that annulus is full and it's going to go
8 whichever way happens to be the easiest way to go.

9 MEMBER BANERJEE: So the surface of these
10 cracks, would the effect go in from -- let's say you
11 have a system of cracks, and cracks in this medium,
12 would the effect be felt half an inch from the surface
13 of the cracks or is it just half an inch from the
14 surface?

15 MR. DRAKE: Well, we looked at it from the
16 surface of behind the plate. But, I mean --

17 MEMBER BANERJEE: But if you look around
18 the cracks, let's see to the sample around the crack,
19 will you find some permeation or is that not?

20 MR. DRAKE: Well, we've done other
21 sampling in other places in the plant where we've had
22 such -- we'll talk about spent fuel pool later, and
23 we've actually examined those cracks and the rebar
24 there and found that they do very well. There's been
25 studies to show that concrete will protect the rebar

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 even --

2 MEMBER BANERJEE: So let's say you had a
3 crack in the concrete, does the water diffuse or
4 whatever mechanism it is, penetrates on both sides of
5 the crack to within half an inch or --

6 MR. DRAKE: It probably could.

7 MEMBER BANERJEE: Could?

8 MR. DRAKE: We evaluated the rebar also
9 assuming certain thing with that and it still meets
10 design function.

11 MEMBER BANERJEE: So if the rebar, is
12 there any cracks which are in the vicinity of rebar,
13 like cracks going through the system or --

14 MR. DRAKE: Yes.

15 MEMBER BANERJEE: Okay. So the effect
16 could reach the rebar?

17 MR. DRAKE: Yes. No. And that was
18 evaluated from that respect also.

19 MEMBER BANERJEE: Right. So even if it
20 reaches the rebar, nothing happens to the rebar?

21 MR. DRAKE: The rebar still should be in
22 good shape. And we've had other studies in other
23 locations in the plant which show where we saw we had
24 water coming through, we opened up those cracks. And
25 the rebar was found to be in very good shape.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BANERJEE: So the rebar was exposed
2 to the water then?

3 MR. DRAKE: Yes.

4 MEMBER SHACK: But that probably wasn't
5 borated water?

6 MR. DRAKE: It was borated, too.

7 MEMBER BROWN: And so it's got acid? So
8 the boric acid doesn't attack the rebar?

9 MR. DRAKE: This is Alan Cox.

10 I've seen numbers quoted where full
11 leakage borated water has caused corrosion rates on
12 the order of five mils per year.

13 MR. DRAKE: Yes.

14 MR. COX: It does have some effect, but
15 it's pretty minimal.

16 MR. DRAKE: And part of the evaluation was
17 based on industry reports and evaluations from that.

18 MEMBER ARMIJO: I'm trying to understand
19 this leakage rate and the source. And you mentioned
20 pinhole leakage in defective welds and maybe some
21 other defects. But is this liner getting progressively
22 worse or is it the same leakage but year after year
23 after year?

24 MR. DRAKE: There have been no --

25 MEMBER ARMIJO: And do you know where it

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 all is, all those leaks are?

2 MR. DRAKE: There's no aging degradation
3 effects here. This is all original workmanship.

4 MEMBER ARMIJO: So do you know where these
5 leak locations are?

6 MR. DACIMO: We do not have each one of
7 the leaks in the liner.

8 MEMBER SIEBER: That's what we issue tests
9 on.

10 MR. DRAKE: That's been one of the
11 problems. That's what we've been trying to do where
12 we've been trying to seal up certain areas to see if
13 we could --

14 MEMBER ARMIJO: See if you can find the
15 major ones and eventually find them all.

16 MR. DRAKE: Right. And we've coated a
17 large section of the liner with the pinholes and the
18 joints and the seams and the corners with the
19 ceramalite coating and that hadn't solved the problem
20 from two points.

21 MEMBER ARMIJO: Okay.

22 MR. DRAKE: Mainly because that ceramalite
23 coating was too rigid and it didn't hold up the way
24 we'd like to. Water was getting behind it still.

25 MEMBER ARMIJO: But just to make sure I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 understand. Your intent is as soon as you have a
2 process for sealing the liner that's reliable--

3 MR. DRAKE: Yes.

4 MEMBER ARMIJO: -- you're going to do it?

5 MR. DRAKE: We're going to try to correct.

6 Right.

7 MR. DACIMO: That's correct. And
8 unfortunately the processes that we have tried have
9 not been as successful as they need to be.

10 MEMBER ARMIJO: Okay.

11 MR. DRAKE: So we're going to a different
12 way --

13 MEMBER ARMIJO: Yes, you're going to try--

14 MR. DRAKE: -- a better -- which has been
15 successful in other plants inside and outside the
16 United States. And we're going to start going that in
17 certain sections and see if that works better. And
18 then if that shows promise, we'll start going --

19 CHAIR MAYNARD: I'm just trying to
20 understand what you're currently committing to.
21 You're committed to pursuing the modification and some
22 type of monitoring? I'd like to kind of summarize
23 what you're --

24 MR. DRAKE: We have made a commitment to
25 do some core bores and to open up some more areas of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 reenforcement steel to determine that the
2 reenforcement holds up.

3 MEMBER BANERJEE: I just want to
4 understand the potential for corrosion of the rebar.
5 What's the typical dimension compared to the corrosion
6 rate? In other words --

7 MR. DRAKE: For the size of the rebar?

8 MEMBER BANERJEE: Yes. The cross section.

9 MR. DRAKE: I believe these are a half
10 inch or more.

11 MEMBER BANERJEE: Okay. So half inch. And
12 what is your typical corrosion rate in borated water?

13 MR. DRAKE: Five mils.

14 MEMBER BANERJEE: So how many years before
15 you get significant corrosion?

16 MR. DRAKE: I mean if you go 40/60 years,
17 you would still be marginally attacking that. And we
18 do have margin in these walls.

19 CHAIR MAYNARD: I'd like to move on. This
20 is an important topic and it's one that I know we're
21 going to want to talk about in more detail at the next
22 meeting and everything. It is an open item. I'm
23 going to be interested to hear what the staff has to
24 say also. But since it is an open item, it's still
25 being reviewed, I'd like to move on.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 It is an important topic and it is
2 something we're going to be following very closely and
3 want more information on it.

4 MR. COX: Well, before you go, one last
5 comment. The safety year that we talked about for
6 this last time was -- you have to remember that this
7 is only leaking during refueling outage. So it's
8 basically a two week period very two years.

9 MR. DRAKE: Right. And then it's very
10 hard.

11 MR. COX: And then it's pretty hot in this
12 area, so it's going to tend to dry out any --

13 MEMBER BANERJEE: Leaving the boron
14 behind?

15 MR. DRAKE: Boron, from typical reports
16 and industry events says it has to be a moist -- Boron
17 only effects -- it corrodes when it's moist. It's got
18 to be like in a moist pool. A poultice type effect to
19 really start to do that. This would be a very dry
20 environment most of the time.

21 MEMBER RYAN: And if you want to defer
22 until later, Mr. Chairman, that's fine. But I'd like
23 to hear a little bit more about the groundwater
24 monitoring and the exterior wall --

25 MR. DRAKE: We'll be talking about that in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the next topic.

2 MEMBER RYAN: Very well. Very good.

3 MR. DACIMO: This here has no impact on
4 groundwater. Okay. This is captured within in the
5 vapor containment and pumped the wa --

6 MEMBER RYAN: Okay. I am just curious how
7 you tied in that monitoring that you mention in this
8 last bullet that's up there now.

9 MR. DACIMO: Okay.

10 MEMBER SIEBER: It's not related.

11 MEMBER BANERJEE: Not related.

12 MR. DACIMO: It's the next topic.

13 MR. DRAKE: Okay. And this is the IP2
14 spent fuel pool issue of structural integrity. The
15 spent fuel pool is located in the fuel storage
16 building which has six foot three inch thick
17 reenforced concrete walls.

18 The pool liner leakage was first
19 identified in 1992. The pool liner leakage was
20 identified on the exterior and was determined from an
21 18 month's earlier event in 1990 during the reracking
22 modifications when a worker removed an attachment from
23 the line. During that event in 1992 several core bore
24 samples were taken in five separate locations 60
25 inches deep and the samples were then tested and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 examined. Again, we still had over 3000 psi strength
2 for these samples.

3 In 2005 during excavation of the dry fuel
4 storage building for the installation of the --

5 MEMBER SHACK: That repair that you talk
6 about there, you rewelded?

7 MR. DACIMO: Yes, that's correct.

8 MR. DRAKE: It was repaired in 1992, yes.

9 MEMBER SHACK: This is a thicker liner so
10 you can do the rewelding successfully?

11 MR. DRAKE: Yes, I believe it's a three
12 eights inch stainless steel liner.

13 In 2005 during excavation for the dry fuel
14 storage an exterior concrete shrinkage vac in the
15 concrete wall was found. It was previously
16 underground.

17 During extended conditions after that of
18 the liner we determined a leak was found in the fuel
19 transfer canal. This is now a normally dry area.

20 No. In 2005 we also took several more
21 core bores in the area of the crack that showed a
22 moist spot underneath the crack. And we exposed some
23 rebar. And, again, that rebar was in excellent
24 condition and the concrete was acceptable.

25 As extended conditions, we did the further

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 inspections. We found a leak in the transfer canal
2 that was done by extensive UT and visual inspections
3 in the transfer canal and vacuum box tests on the back
4 of the transfer canal. And there was a small pinhole
5 in a plug weld that was also repaired. We found two
6 very minor indications in welds, these were none
7 leaks, they passed vacuum box. But they were just
8 indications in the weld and they were excavated and
9 repaired also.

10 So to date we've done inspections of all
11 accessible portions of the spent fuel pool, that
12 includes 100 percent of the liner above the fuel, 100
13 percent of the transfer canal and a 100 percent of the
14 CASS wash pit.

15 The transfer canal extensive inspection
16 proved that the spent fuel pool liner is sound by both
17 visual inspections and by UT. There are no aging
18 degradation related events observed.

19 All structural evaluations have concluded
20 that the concrete and rebar remain capable of
21 performing its intended functions. The aging
22 management inspection programs will continue. We do
23 spent fuel pool monitoring. We do shiftly inspections
24 of the pool elevations. And we also are monitoring the
25 groundwater near the spent fuel pool on the outside of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 the wall. And to date our monitoring program supports
2 that there is no current leak from the pool.

3 MEMBER STETKAR: I wanted to follow-up on
4 that last statement you made. I think I read
5 somewhere that after you discovered the indications on
6 the exterior you installed some sort of collection
7 system that would route water back --

8 MR. DRAKE: Yes.

9 MEMBER STETKAR: -- into the primary
10 auxiliary building.

11 MR. DRAKE: Yes. What we did was the crack
12 that was --

13 MR. DACIMO: This was a shrinkage crack.

14 MR. DRAKE: This was a shrinkage crack, it
15 was a construction shrinkage crack. Still very tight.
16 We did some excavations. But this location was going
17 to be below the new floor that we were installing. So
18 what we did was we installed a stainless box around
19 the whole crack.

20 MEMBER STETKAR: Yes.

21 MR. DRAKE: We didn't want to just seal up
22 the crack; we wanted to be able to monitor it. We
23 installed a stainless steel box with a line that goes
24 into the primary auxiliary building. So any moisture
25 venue that came out of that crack would be captured

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 and then be able to be monitored.

2 MEMBER STETKAR: Have you seen any
3 moisture?

4 MR. DACIMO: It's reduced greatly. Don, I
5 don't know, you want to address this?

6 MR. MAYER: I can --

7 MR. DACIMO: Yes, why don't you do that.

8 CHAIR MAYNARD: Can you come up to the
9 microphone and identify yourself?

10 MR. MAYER: Sure. All right. Hello. I am
11 Don Mayer, Director of Emergency Planning and also
12 Special Projects at Indian Point.

13 I was responsible, actually, for the
14 groundwater investigation associated with this leak.
15 So what I can tell you is that the crack collection
16 box that Rich talked about at the peak when we first
17 identified the issue, we had about 1½ to 2 liters per
18 day that we were collecting for, you know, over the
19 course of a month or two. Okay.

20 MEMBER STETKAR: And you know it was spent
21 fuel pool water?

22 MR. MAYER: That's correct. Yes, we knew
23 that it had been spent fuel pool water, yes.

24 And at the present time, like for instance
25 the last couple of months, what we collect in that box

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 is anywhere between zero to 50 mLs of water. So it's
2 very low that enters into the box.

3 MEMBER SIEBER: Per day?

4 MR. DACIMO: Per day.

5 MR. MAYER: Per day. I'm sorry. Yes, per
6 day. And it was 1½ to 2 liters per day.

7 MEMBER STETKAR: And the current water is
8 also the spent fuel pool water?

9 MR. MAYER: The current water is still
10 indicating elevated levels of tritium. It's about 25
11 percent of that what's in the pool. So it's
12 definitely reducing as you would expect, and there's
13 no indication -- you know, let me put it to you this
14 way: If there was a leak that was active, okay, we
15 would expect to see not zero, we'd expect to see some
16 elevated level with some precipitation related input
17 going forward, and we don't see that. So we're seeing
18 about zero to 50 mLs per day. We do see some peaks
19 which we believe are precipitation related.

20 MEMBER BANERJEE: What do you mean by
21 precipitation?

22 MR. MAYER: What we see -- we're still
23 trying to get our arms around this fully. But we've
24 retained a hydrologist on this from the beginning.
25 And there's an interstitial space -- this liner does

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 not have a tell-tale system. Unit 3 does, this liner
2 doesn't. And so what we believe has occurred here is
3 there's an interstitial space between the stainless
4 steel liner and the concrete that still has a residual
5 level of tritium that is just being held in that
6 interstitial space. It's tritiated water, okay? And
7 what happens is through precipitation events, snow
8 melt, et cetera, it doesn't take a whole lot of water
9 to come in and influence zero to 50 mLs per day on
10 average.

11 And so over time, and we do see a
12 relationship in the springtime when we'll see elevated
13 peak that then will tail off. So the explanation that
14 we have is that it appears to be precipitation and
15 groundwater run-off based because the pool is above
16 the groundwater table, okay?

17 MEMBER BANERJEE: So something is getting
18 in?

19 MR. MAYER: Some small amount has to be
20 getting in.

21 MEMBER BANERJEE: From somewhere else?

22 MR. MAYER: And causing the concentration
23 to be lowering over time, which is what you would
24 expect as this things proceeds.

25 MEMBER BANERJEE: So as the top end it's

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 open to the environment somewhere?

2 MR. MAYER: Well, as we indicated, Rich
3 better can better describe, but you know shrinkage
4 cracks in concrete are not uncommon. And so what we
5 fully expect is that there may be some other shrinkage
6 crack locations where water can get in as well as get
7 out.

8 MR. DRAKE: But we have a picture of the
9 spent fuel pool here. This is the Unit 2 spent fuel
10 pool building. And basically the 1992 leak that was
11 observed was up in this area here. And it because of
12 an attachment that was removed from the wall in this
13 area here when it was observed and we took core bore
14 samples there.

15 The 2005 crack was actually below this
16 floor that is now there. It was below the ground level
17 in that area here. And that crack now has been sealed
18 by the stainless steel box and is now monitored.

19 MEMBER RYAN: But the groundwater is
20 relatively close to the surface, I would guess, for
21 most of the year, is that right?

22 MR. DRAKE: Do you know the hydrology?

23 MR. MAYER: I don't exactly how deep it
24 is. It's below the bottom of the pool, I don't know
25 how many feet.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DRAKE: Yes. The bottom of the pool is
2 down here. The crack was still higher than that. Yes.
3 The crack is still 68 foot or something like that. So
4 it was higher up, about eight to ten feet up from the
5 bottom of the pool.

6 MR. MAYER: Yes, and one point, Mike, I
7 think I know where you may be going or you may be
8 asking. Is the site is actually elevated. The site at
9 this location is at the 70 to 80 foot elevation and
10 then it drops down to the river elevation at about the
11 five to ten foot elevation. Okay. So the groundwater
12 itself typically runs down around the 20 foot
13 elevation as it moves into the river, and this is well
14 above that. So what happens is the water comes --

15 MEMBER RYAN: So well above, five feet,
16 two feet, three feet?

17 MR. MAYER: I'm sorry, say again?

18 MEMBER RYAN: Well above is how many feet?

19 MR. MAYER: I'd have to go back and double
20 check our drawings. It's at least 20 feet above.

21 MEMBER RYAN: The reason I'm asking this
22 is sometimes, you know in these systems particularly
23 with wintertime events with snow melt and all the
24 things you've mentioned, you know you can get water
25 coming back down and it sort of oscillates for a while

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 as it's making its way down. And if it's contacting
2 stuff that's accumulating during a dryer period, you
3 can have these pulses.

4 MR. MAYER: We do see that.

5 MEMBER RYAN: You do see that?

6 MR. MAYER: We do see that to a certain
7 degree on some of the welds.

8 MEMBER RYAN: So surface water
9 infiltration is probably more important to think about
10 the groundwater level itself?

11 MR. MAYER: For this particular situation,
12 yes.

13 MEMBER RYAN: Okay.

14 MR. MAYER: That's correct.

15 MEMBER SIEBER: You're doing some external
16 monitoring for tritium, right, weld monitoring?

17 MR. MAYER: Yes, sir, that's correct.

18 MEMBER SIEBER: And you haven't found
19 anything?

20 MR. MAYER: No, we have found tritium in
21 the weld water.

22 MEMBER SIEBER: Oh, you have?

23 MR. MAYER: Yes, we have. In fact --

24 MEMBER SIEBER: That you attribute to the
25 plant?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. MAYER: Yes. That's correct.

2 MEMBER SIEBER: Okay.

3 MR. MAYER: That was the principle reason
4 behind the large investigation that we conducted. We
5 did identify that this 1992 leak that was referenced
6 by Rich we believe is the principle source of the
7 subsurface tritium that we identified. Because it was
8 a fairly large volume of water over about an 18 month
9 period that did provide a source term.

10 The pinhole that we identified we also
11 know we believe did contribute some smaller portion.
12 That was stopped in 2007. And so, you know, we expect
13 and we do in fact see a downward trend in treating
14 concentrations in the pool as a result of those
15 repairs.

16 MEMBER RYAN: Is that over several cycles
17 of the seasonal cycles and all that?

18 MR. MAYER: Yes, sir.

19 MEMBER RYAN: So it's a very long term
20 trend.

21 MR. MAYER: It's very long.

22 MEMBER RYAN: Including the oscillations--

23 MR. MAYER: That's correct. That's an
24 excellent point, and I'd just like to elaborate
25 slightly on that.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 The investigation started formally in
2 October of 2005. Okay. So in hydrologist terms --

3 MEMBER RYAN: You're just getting started.

4 MR. MAYER: -- that's not a lot of time.
5 Exactly. But we do have -- you know, we have retained
6 a good hydrology engineering outfit and we do look at
7 their data closely. And we do have enough data that
8 the hydrologist feels comfortable and confident that
9 we are seeing over these least 2½/3 years a general
10 downward trend in plume concentrations consistent with
11 what we believe has occurred, which is stopping the
12 leak.

13 MEMBER RYAN: And I guess I'd assume your
14 plans that are continuing to do that monitoring to
15 really develop that trend with a little bit more data
16 or --

17 MR. MAYER: Yes, sir. We actually have a
18 program in place. We call it the long term groundwater
19 monitoring program. It's essentially codified in our
20 procedural processes and that's a life-of-plant
21 commitment.

22 MEMBER BANERJEE: Does it mean that you're
23 actually making sufficient measurements to map the
24 plume?

25 MR. MAYER: Yes, it does.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DACIMO: Which we have done. We
2 actually have done that.

3 MR. MAYER: We have done that.

4 MEMBER RYAN: That would be helpful for us
5 to see what other force you have in that area that
6 could us better understand that.

7 MR. MAYER: Sure.

8 MEMBER SIEBER: Now the drinking water
9 limits, what 20,000?

10 MR. MAYER: 20,000.

11 MEMBER SIEBER: What's the highest
12 concentration? It seems to me I read something like
13 200?

14 MR. DACIMO: Very low.

15 MR. MAYER: No. Actually, what we saw
16 near the fuel pool we saw levels that were in the
17 neighborhood of 400 to 500,000 picocuries per liter.

18 MEMBER SIEBER: Okay.

19 MR. MAYER: So we did substantially
20 elevated in excess of the groundwater concentrations.

21 MEMBER SIEBER: Okay.

22 MR. MAYER: Since that initial situation
23 was discovered, levels near the pool are down closer
24 to, you know, 100,000/200,000. So we've seen a
25 definite drop. Okay. The last datapoint, in fact,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 near the pool is about 95,000.

2 Down by the -- the way the plume -- you
3 know, if you think about this in terms of macroscopic
4 flow, because we did -- in answer to your question, we
5 did a very detailed hydrological study. It's been well
6 documented. In fact, it's on the public docket. We
7 provided it to the NRC --

8 MEMBER BANERJEE: Just the XY dimensions
9 or you got the Z as well?

10 MR. MAYER: No, it's X,Y and Z. And we
11 mapped the entire site. We have transducers in
12 service that give us level and other important
13 information. We sample it for chemicals. We've got the
14 whole gamut.

15 Got an excess. We've got 40 wells. Most
16 of these wells are multilevel wells. So we have -- in
17 fact, you know, it's not something that I'm
18 particularly happy about, but the fact of the matter
19 is we probably have one of the most intensive thorough
20 groundwater monitoring programs in the United States
21 as a result of some of the issues we dealt with.

22 Down by the river the concentrations are
23 significantly less. The wells that are closest to the
24 river are in the 200 to 100,000 range. Near the
25 discharge canal we did levels -- we have seen levels

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 and still do see levels in the several thousand up to
2 maybe 20,000. But it's lower. And, you know, by the
3 river it's very low.

4 MEMBER SIEBER: Have you found any levels
5 above 20,000 that are outside the protected area?

6 MR. MAYER: No.

7 MEMBER SIEBER: Or the owner controlled
8 area?

9 MR. MAYER: Not outside the owner
10 controlled area, no.

11 MEMBER RYAN: But this big change from,
12 say, the river back up to these protected area wells
13 that you have makes sense. Because if it's a very
14 small volume that's leaking and that tritium is going
15 to distribute very, very rapidly in any hydrogen pool
16 it sees in water.

17 MR. MAYER: Exactly.

18 MEMBER RYAN: So that further confirms
19 that the volume leaving, you know, the areas that
20 you've discussed in the cracks has got to be small.

21 MR. MAYER: Correct.

22 MEMBER BANERJEE: So you've got a point
23 source of tritium, which is varying with time, let's
24 say?

25 MR. MAYER: Yes, that's correct.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BANERJEE: And what this is doing
2 is it's mixing into the groundwater by some form of
3 dispersion because it's porous media?

4 MR. MAYER: That's correct.

5 MEMBER BANERJEE: That's what's causing
6 the diffusion of this?

7 MEMBER SIEBER: Right.

8 MEMBER RYAN: Well, the tritium exchange
9 very rapidly in any hydrogen pool.

10 MEMBER SIEBER: Yes. It's tritium in
11 water.

12 MR. MAYER: It turns out that the tritium
13 as it leaves the reactor is very quickly converted
14 into water.

15 MEMBER BANERJEE: Well the entrance of
16 this plume --

17 MEMBER SIEBER: It's water. It's water,
18 it does what water does.

19 MEMBER BANERJEE: -- which is what is
20 reaching the river?

21 MR. MAYER: Right. That's correct.

22 MEMBER SIEBER: It doesn't concentrate?

23 MR. MAYER: It does not concentrate.

24 MEMBER SIEBER: So you have -- it can go--

25 MEMBER RYAN: I think it's independent of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the flow -- you know, by hydrogen exchange, it will
2 just uniformly seek the hydrogen pool that is
3 available.

4 MEMBER SIEBER: Now the way we used to
5 think of it is --

6 CHAIR MAYNARD: What you're interested in
7 his the point characterization?

8 MEMBER BANERJEE: Yes. I think where it
9 is, what's happening.

10 MEMBER SIEBER: The way for me to think of
11 it is --

12 MEMBER BANERJEE: But they don't have it
13 over time, but they have it now.

14 MEMBER SIEBER: -- the leak is stopped and
15 you're monitoring for it and continuing the corrective
16 action. And you have no evidence that you've ever
17 exceeded the drinking water standard --

18 MR. MAYER: Yes. Let me characterize it
19 the way that we characterize it for the Commission.

20 As it turns out, and this is just a
21 regulatory fact of the business, there are no drinking
22 water supplies. We take no drinking water from the
23 site and there are no nearby supplies of drinking
24 water near the site.

25 Your statement is absolutely correct. We

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 have not identified any above that level, but we don't
2 utilize that regulation in discussions with the NRC
3 because as it turns out we're regulated to our off
4 site dose calculation manual level which are dosed,
5 and we're a small percentage of that.

6 MEMBER SIEBER: Well, my perception of it
7 is more conservative than what you were saying.

8 MR. MAYER: Yes. Yes.

9 MEMBER SIEBER: And to me if you don't
10 exceed the limit at the site boundary, you're far
11 better off. Then you don't exceed the limit that
12 somebody's drinking.

13 MR. MAYER: Absolutely. And we have
14 confirmed with boundary wells on site as well as off
15 site monitoring of off site wells, surface waters and
16 the river.

17 MEMBER RYAN: One of the last questions,
18 it's maybe a forward looking question so forgive me if
19 you don't have the answer now, and I understand why
20 you don't because you don't have a lot of data; but if
21 you continue this program on into the future, at some
22 point you'll be able say, "Well, some event that
23 causes this in a nearby well is something we ought to
24 investigate more fully because it's indicating a
25 change in the behavior of the system and maybe the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 leak's getting bigger."

2 Have you thought about what about the
3 future might be and so forth?

4 MR. MAYER: Yes, we have. Yes, in fact
5 that was one of the principle design parameters of our
6 long term monitoring program is what you just
7 referenced. And so --

8 MEMBER BANERJEE: So you're going to
9 continue this program?

10 MR. MAYER: Yes. Life-of-plant.

11 MEMBER BANERJEE: Okay. Very good.

12 MR. MAYER: I'd like to answer Mr. Ryan's
13 question. The answer is yes. The program was
14 designed that way. In fact, I focused on Unit 2
15 because that was the question, but we did provide a
16 network of wells that are across the entire site.
17 Because we didn't want to be myopic looking at just at
18 this one situation. So we provided a well field that
19 covers the whole site. That well field was placed
20 specifically with our experts and the hydrologist to
21 evaluate locations that we could then use as back
22 tracks and sentinels to the potential locations, other
23 fuel pools, other pipe systems and large tanks.

24 So this long term monitoring program is in
25 place. It's present frequency is approximately

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 quarterly. There are some other wells that are
2 different frequencies. It's built into our program
3 and it's designed to determine the effectiveness to
4 monitor the natural attenuation of the plume that we
5 do have. It's also designed to help us assess
6 potential dose implications from that. And then the
7 third key component of that program is that it is
8 designed with sentinel wells to help us do exactly
9 what Mr. Ryan reflected on, which is assess other
10 leakage points and help us do extended condition.

11 MEMBER SIEBER: I think that answers my
12 questions.

13 CHAIR MAYNARD: Yes. I would like to move
14 on again. We'll be interested in what the staff has
15 to say. And this is an ongoing open item here. So
16 let's go ahead and move.

17 MEMBER SIEBER: Why don't we move on.

18 MR. DRAKE: Okay. The next area for
19 discussion is the exterior containment concrete aging
20 management. The containment structures at Indian
21 Point have isolated areas that exist at Cadweld joints
22 of the rebar and at attachment points used for
23 scaffolding during original construction. These were
24 observed, but also then first documented in our
25 initial IWL inspections, as well as our maintenance

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 rule inspections in 1995.

2 MEMBER BANERJEE: So the concrete has
3 spalled off or --

4 MR. DRAKE: No. Well, when I say it's
5 spalled, it's not the traditional spalling of the
6 concrete itself. These are cosmetic repaired areas
7 over Cadwelds that were very close to the surface
8 where scaffold embedded metal pieces that were used
9 for construction for the scaffolds as they moved up
10 the dome cylinder were attached to. They came back
11 later and put a cosmetic coating over these things.
12 And then during ILRT tests, because the continuing --
13 that they just popped these right off.

14 MEMBER BROWN: So these are the items are
15 referred to as "pop-offs" in the inspection?

16 MR. DRAKE: Yes. They're more pop-offs,
17 they're not true spalls of the concrete, though. So
18 it is due to the lack of -- they're just cosmetic
19 cover over these embedded items.

20 So it was original. We have not gotten
21 back and not done more cosmetic repairs over these
22 things for two reasons:

23 (1) It would not allow us to monitor them
24 if we -- and would also just pop-off again when we did
25 the next ILRT. And we have observed no aging effects

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 from these. We've looked at them from structural
2 impact. The reenforcing steel provides most of the
3 strength. The observed surface degradation has no
4 impact for the ability of containment for its intended
5 function.

6 MEMBER POWERS: What did you get in your
7 last integrated containment leakage test?

8 MR. DRAKE: I believe they were done in
9 the last outages for both units. If not the last one,
10 it was the fairly recent one.

11 MR. DACIMO: It was two outages ago --

12 MR. DRAKE: For Unit 2.

13 MR. DACIMO: Two outages for Unit 2.

14 MR. DRAKE: And then the last outage for
15 3.

16 MR. DACIMO: No. And two outages ago for
17 Unit 3.

18 MR. DRAKE: But they were within the last
19 five or six years.

20 MEMBER POWERS: Do we have the data from
21 those?

22 MR. DRAKE: I gather that we do.

23 MR. DACIMO: The IRLT data?

24 MEMBER POWERS: Yes. Yes.

25 MR. DACIMO: We can get you that. It

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 passed the integrated leak rate test.

2 CHAIR MAYNARD: Okay. Now is the first
3 time you saw, '95 was when it was first identified?

4 MR. DRAKE: It was when we first observed
5 and started documenting --

6 MEMBER SIEBER: That's when they first
7 wrote it down, correct?

8 MR. DRAKE: Yes. The maintenance rule
9 inspections rated the structures on site. And the
10 requirement for IWL were first instituted in 1995.
11 That was our baseline inspections for those programs,
12 and they were documented there.

13 CHAIR MAYNARD: Okay.

14 MR. DRAKE: They were observed further
15 back. We have in several cases, we have observed
16 these and they were documented through our normal
17 corrective action process. And we've had pictures of
18 them from there going forward to now. And you could
19 put them on top of each other and just notice no
20 change.

21 CHAIR MAYNARD: Have you gone back through
22 your IRLT data to see if there's any step changes at
23 any point or any significant --

24 MR. DACIMO: We have looked at the IRLT
25 data every time. There's been very tight containments

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 and there's been no issues with that at all.

2 MEMBER SIEBER: Initially when you do the
3 initial integrated leak rate test they map cracks.

4 MR. DRAKE: And all the cracks are mapped.

5 MEMBER SIEBER: Have you continued to map
6 cracks and watch the extent to which they've expanded?

7 MR. DRAKE: We haven't gone back to all of
8 them, but we've made a commitment going forward. NRC
9 came in and did an audit of our program. And we made a
10 commitment to do more detailed mapping of that and
11 measurement in the future.

12 MEMBER SIEBER: Usually for the first ILRT
13 you can see where somebody has gone on the outside of
14 containment to indicate, usually with paint or
15 something like that, where the cracks are. Because
16 it's important to monitor. You can tell whether the
17 rebar is failing or not or stretching by looking at
18 how far those cracks move or if you have new ones that
19 you didn't have before.

20 MR. DRAKE: Yes. Most of the tight cracks
21 are still tight, you know, and seal right back up
22 after the IRLT. And there has been no measured
23 staining from any of those cracks.

24 MEMBER SIEBER: You may be able to do that
25 with some photographic technique because to climb --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DRAKE: Yes, that's what we
2 additionally do.

3 MEMBER SIEBER: -- into containment is not
4 something --

5 MR. DRAKE: No, you can't climb in. We
6 have an opportunity to get up towards above the top of
7 it with the stack for Unit 1.

8 MEMBER SIEBER: Right. Right.

9 MR. DRAKE: And we use high powered
10 instruments per the ISI program to get up close
11 effectively that way and to take pictures.

12 MEMBER SIEBER: Yes. And since you brought
13 it up, Unit 1 was one with the afterburner on it,
14 right?

15 MR. DRAKE: Yes.

16 MEMBER SIEBER: Okay. And it was a super
17 heated plant. And that stack is the highest feature
18 there?

19 MR. DRAKE: Yes.

20 MEMBER SIEBER: What do you do to make
21 sure that that stack isn't going to fall on some other
22 portion of the plant?

23 MR. DRAKE: That --

24 MEMBER SIEBER: Because it's a heavy brick
25 stack with a steel liner.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DRAKE: Yes.

2 MEMBER SIEBER: And it's close in.

3 MR. DRAKE: That was analyzed. When Unit 1
4 was all by itself, the stack was higher. When they
5 built Unit 2, they actually shortened it so that it
6 would not contact with the containment building. It
7 has been inspected in the past. It's going to be
8 scheduled to be inspected and painted going forward.

9 MEMBER SIEBER: Is that part of your
10 license renewal program? I didn't see it in there,
11 but --

12 MR. DRAKE: It's part.

13 MEMBER SIEBER: -- it's a prominent
14 feature.

15 MR. DRAKE: It's been added to the
16 structural monitoring program, yes.

17 MEMBER SIEBER: Super. Thanks.

18 CHAIR MAYNARD: Dana, do you have any more
19 questions on the IRLT or did you just want to see
20 their data?

21 MEMBER POWERS: I just want to see their
22 data and the audit report from the NRC on process.

23 MEMBER SIEBER: Sorry to interrupt.

24 MEMBER BROWN: So you're no longer
25 repairing these pop-off? They just --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DRAKE: No. Because if we put the
2 cosmetic repair on them, we wouldn't be able to
3 monitor them. Besides, some of them are very
4 difficult to get to. But if we covered them, then we
5 wouldn't be able to monitor them. They have surface
6 rust on them and it hasn't changed. And that seems to
7 be the best --

8 MEMBER BROWN: So you do these by photos?
9 I mean --

10 MR. DRAKE: We do it photos --

11 MEMBER BROWN: I mean, there's an issue
12 with that in the instruction --

13 MR. DRAKE: Yes. And what we did is made a
14 commitment that what we're going to do is when we have
15 the capability to do some direct measurements of
16 those, even in the remote areas, by using parallel
17 lasers and to track them. But we have pictures and
18 you could almost put the pictures side-by-side over
19 the 10/15 years, and there's no change.

20 MEMBER SIEBER: Well, and you're looking
21 at the length of the rust streaks, correct?

22 MR. DRAKE: Excuse me?

23 MEMBER SIEBER: You're looking at the
24 length of the rust streak as evidence --

25 MR. DRAKE: Actually, there's no rust

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 streaks --

2 MEMBER SIEBER: Oh, there aren't?

3 MR. DACIMO: No. The only rust streaks
4 that are around are from the --

5 MEMBER SIEBER: No streaks?

6 CHAIR MAYNARD: Rough idea of the size of
7 one of these pop-offs?

8 MR. DRAKE: The pop-offs, I mean they're
9 about that size. That's where the embedded thing. And
10 there's been one where we had years ago, I was able to
11 -- we could see the scaling section there. We went
12 out and knocked it off and then we take --
13 photographed that one 10/15 years later, it hasn't
14 changed.

15 MEMBER ARMIJO: Are these tens of these or
16 hundreds of these pop-offs? I can imagine lots of
17 points when you're building.

18 MR. DRAKE: Yes. At Unit 2 the Cadweld
19 areas, embedded areas that we have identified, there
20 are 41 locations in Unit 2 and there's seven in Unit
21 3.

22 MEMBER ARMIJO: These are all --

23 MR. DRAKE: Seven. They're all on the
24 cylinder, none on the dome.

25 MEMBER ARMIJO: Okay.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER STETKAR: So there are on the --

2 MEMBER SIEBER: Well, you didn't the
3 scaffolding on the dome.

4 MR. DRAKE: There are seven Cadweld
5 connections and locations.

6 MEMBER STETKAR: And you've seen the pop-
7 off? When you say "Cadweld connections," the pop-off
8 locations on Unit 3?

9 MR. DRAKE: Yes. They're either Cadwelds
10 or from the scaffolding.

11 MEMBER BROWN: Why is there no concern
12 that there's something underneath the rebar sections
13 that you can't see and that there was a penetration
14 into the concrete in containment? Oh, it's not
15 visible from the surface?

16 MR. DRAKE: No. We know the Cadweld
17 joints --

18 MEMBER BROWN: I mean, you've got
19 environment conditions going all the time if you leave
20 them open --

21 MR. DRAKE: Yes.

22 MEMBER BROWN: -- and expansion and water
23 and everything else getting on them.

24 MR. DRAKE: Yes. We just haven't seen
25 anything that would indicate anything else is going

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 on.

2 MEMBER BROWN: Okay.

3 MR. COX: As Rich indicated, these are on
4 the side of the building so there's not much for water
5 getting into and dam -- it's not going to pool in
6 there.

7 MEMBER BROWN: All right.

8 MEMBER SIEBER: Okay. Thanks.

9 CHAIR MAYNARD: Let's move on. We'll do
10 one more item and then we'll take a break.

11 MEMBER SIEBER: No question.

12 MR. DRAKE: Okay. The next issue is the
13 concern for the water-cement ratio. NUREG-1801 for
14 aging effects for concrete in outdoor air
15 environments, this recommends that the evaluation
16 consider water-cement ratio. The water-cement ratio
17 for Unit 3 was examined and is outside the recommended
18 requirement.

19 Unit 2 and Unit 3 used ACI 318-63, which
20 is the original code of record at time of
21 construction. And this document basically allows two
22 different methods to determine the required strength
23 and durability of the concrete.

24 Indian Point used method 2 where we did
25 actually did testing and we took cylinders and breaks

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 after the fact and concluded that all our concrete
2 exceeded the strength requirements of the 3000 psi,
3 our minimum cylinder that we broke was 3600. Almost
4 all of them were much higher than that.

5 The actual test reports confirmed that.
6 And there has been no aging effects observed of the
7 concrete.

8 MEMBER SIEBER: So this is easy to close?

9 MR. DRAKE: We feel so.

10 MEMBER SIEBER: You submitted all the
11 records and everything to the staff to deal with,
12 right?

13 MR. DRAKE: Yes. Yes.

14 MR. YOUNG: The staff is continuing a
15 review, and we understand they're making some
16 additional questions on these records. But --

17 MEMBER SIEBER: Yes. But what you did is
18 typical of what the industry has done on that --

19 MR. YOUNG: Yes. Yes.

20 MEMBER SIEBER: -- construction of
21 containment.

22 CHAIR MAYNARD: But I don't believe that
23 this one's one that the staff's ready to close out
24 right.

25 MR. YOUNG: Right. They're still doing

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 their review on this.

2 CHAIR MAYNARD: They're still, they're
3 going back and forth on this on the side.

4 MEMBER SIEBER: Good. We can take a
5 break.

6 CHAIR MAYNARD: Not yet. Is there any
7 questions on this one?

8 Okay. Let's take a break. We'll take a
9 15 minute break. Let's be back at 24 after.

10 (Whereupon, at 10:08 a.m. off the record
11 until 10:24 a.m.

12 CHAIR MAYNARD: Okay. Let's come back
13 into session here and go back to the item, I think
14 that's aging management of concrete subject to
15 elevated temperatures.

16 MR. DRAKE: That is correct.

17 CHAIR MAYNARD: Okay.

18 MR. DRAKE: This stems out of the concern
19 that IP2 hot piping penetrations are allowed to
20 operate at temperatures greater than 200 degrees
21 Fahrenheit. NUREG-1801 allowed local area concrete
22 temperatures greater than 200 degrees fahrenheit with
23 plant specific evaluation.

24 So IP2 has done plant specific evaluations
25 for the effects of temperatures up to 200 degree F.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 And basically the engineering evaluations determined
2 that the maximum 15 percent in strength in concrete
3 temperatures up to 250 degrees is enveloped by the
4 concrete structural characteristics that exceeded by
5 20 percent over the original design strength of 3000
6 psi.

7 This basically stems the change in the
8 FSAR which highlights this, stems from a 1994 event
9 from April to October 1994. Normally the operating
10 temperatures in this area is less than 140 degrees.
11 But during this period it was noted Unit 2 that
12 slightly higher temperatures above 150 were observed.

13 The bulk average temperature was approximately 153
14 degrees. The highest measured area measurement was
15 176 with two very isolated temperature readings of 201
16 to 205 degrees for a short period of time between the
17 penetrations. So the evaluation was done to determine
18 that this is acceptable for these short durations.
19 And the FSAR was changed up to 250 degrees.

20 MEMBER SIEBER: What caused that?

21 MR. DRAKE: There were some problem with
22 the blowers at the time. Normally bulky knits have
23 four blowers on each unit; two are in normal
24 operation, two are on standby. Then we have
25 annunciators in the control room that if one of the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 blowers is out of service, the alarm response
2 procedure immediately notifies the NPOs and start
3 standby blowers. And since we have annunciator
4 procedure in effect for temperatures below 150 we
5 don't see it as it any structural concern.

6 MEMBER STETKAR: Let me ask a question.
7 You kind of stumbled across this. When you screened
8 out the hot penetration cooling system from aging
9 management you --

10 MR. YOUNG: Yes.

11 MR. COX: Well, let me answer that. That
12 is correct, the hot penetration cooling system will
13 essentially assist in maintaining the environment of
14 the concrete. And typically, you know, that's not one
15 of the scoping criteria so we haven't included those
16 types of systems. There are a number of other systems
17 that also serve a similar function of maintaining an
18 environment. An example would be containment normal
19 cooling systems.

20 MEMBER STETKAR: I understand. As I
21 understand it, I read through the analysis, and the
22 claim is that the maximum temperature, as you note
23 here, of the concrete would be 200 degrees Fahrenheit
24 if there was no cooling flow, meaning I guess the
25 blower's not operating. And the blowers are obviously

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 active components and they wouldn't be included under
2 the AMPs anyway.

3 Did those analyses look at no flow, in
4 other words blockage of those little cooling channel
5 paths such that there was no convective heat transfer
6 from the concrete? Because you're looking at 500
7 degree plus piping transmitting heat into the concrete
8 in those adjacent areas. And I was curious how you
9 came to the conclusion that the maximum temperature of
10 the concrete and you'd see was 200 degree Fahrenheit,
11 if there was actually no flaw? In other words, if the
12 cooling channels were blocked?

13 MR. COX: Rich, can you speak at it?
14 These pipes are isolated, so that is one other factor
15 there.

16 MEMBER STETKAR: Yes.

17 MR. COX: But Rich is part of the group
18 that made that analysis.

19 MR. DRAKE: Yes. They're well insulated
20 and we have the blowers that pass through there. And
21 in this particular event they were actually taking--

22 MEMBER STETKAR: But I'm not asking about
23 the blowers. I'm asking about plugging the little -- I
24 read about how the little cooling channels are
25 fabricated with the little ribbed and concentric --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 you know, sort of a radiator kind of configuration
2 that the air blows through. If those cooling channels
3 became plugged, fouled such that you had no air
4 passage through there or substantially reduced air
5 passage, regardless of the status of the blowers,
6 would you still reach only a maximum of 200 degrees
7 Fahrenheit?

8 And where I'm headed, obviously, is an
9 aging management program to verify that those channels
10 are open. Because they are a passive flow component.

11 MR. DRAKE: Right.

12 MEMBER ARMIJO: It would take an
13 inspection of some sort.

14 MEMBER STETKAR: Some sort of inspection
15 to verify, you know, volume of flow or -- I'm not
16 going to design a program. It's just a question of
17 are those -- the same way that you verify whether or
18 not a water-to-water heat exchanger is plugged or
19 fouled or whatever. Because these are just air-to-
20 air--

21 MEMBER SIEBER: Well, there's two
22 components to that. You have to calculate to assure
23 the temperature remains 200 degrees. And then you have
24 to go out and check to make sure that all the channels
25 are open.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 MEMBER STETKAR: Well, the calculation
2 actually showed that the maximum steady state
3 temperature was 200 given no convective air flow
4 through those channels --

5 MEMBER SIEBER: That it was 205, yes.

6 MEMBER STETKAR: I feel though that --

7 MR. DACIMO: But we know, though, that
8 there is no issue at 250, right, Rich?

9 MR. DRAKE: That's correct.

10 MR. DACIMO: Okay.

11 MR. DRAKE: At even higher. Even the ACI
12 code is under review to revise their standards even
13 higher.

14 MR. DACIMO: So 250, if you would operate
15 250, it would not be an issue.

16 MEMBER STETKAR: I understand that. But
17 the rationale that I read was that it wouldn't 200
18 degrees if you had no forced flow. And I was curious
19 what you would exceed if you had no air flow from
20 there at all.

21 MR. DRAKE: Yes. There was a study to say
22 that, especially on Unit 3 studies that if you didn't
23 have anything, temperatures would go to up certain
24 temperatures over, you know, a 1000 hours. But --
25 yes, we're going to have to get back to you on that,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 okay? We don't have an answer right now.

2 MEMBER STETKAR: Okay. Thank you.

3 CHAIR MAYNARD: Any other questions on
4 this item? Okay. Topics of interest.

5 MR. YOUNG: Yes. On the next topics of
6 interest, Nelson Azevedo will make the presentation on
7 the next two, the reactor vessel integrity and the
8 buried piping aging management program.

9 MEMBER SIEBER: I'd just note, are we done
10 with open items?

11 CHAIR MAYNARD: No. We're going to come
12 back to these, Jack. We're getting the other ones
13 here.

14 MEMBER SIEBER: All right.

15 MR. AZEVEDO: Okay. Good morning. My name
16 is Nelson Azevedo. I'm the Supervisor of Code Programs
17 at Indian Point. I'll briefly discuss the status of
18 both reactor vessels at Indian Point 2 and 3 with
19 respect to upper shelf energy as well as the RT_{PTS} with
20 the thermal shock limits of 10 CFR 50.61.

21 The Unit 2 reactor vessel, similar to Unit
22 3 was manufactured by Combustion Engineering, both are
23 Combustion Engineering reactor vessels.

24 With respect to upper shelf energy the
25 limiting location for Unit 2 is Plate B2002-3, that's

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 an intermediate shell plate. And the upper shelf
2 energy effective full power years, which is the
3 expected end of extended operating period accumulated
4 fluence is 48.3 ft-lbs. Although this is less than
5 the 10 CFR 50.61 Appendix G screening criteria at 54
6 ft-lbs, it does exceed the minimum required of 43 ft-
7 lbs that was the evaluation done by the Westinghouse
8 Owners Group back in early 1990s were in response to
9 Generic Letter 29.01

10 With respect RT_{PTS} , the most limiting
11 location for Indian Point 2 is circumferential weld
12 34B-009 at 268.4 degrees. Again, that's at 48
13 effective full power years. And this is less than
14 screening criteria of 300 degree. 300 degree is the
15 limit for circumferential welds.

16 Going on to the Unit 3 reactor vessel.
17 Also manufactured by Combustion Engineering. The
18 upper shelf energy at the limiting location is Plate
19 B2803-3 at 49.8 ft.lbs. Again, this is just slightly
20 less than the Appendix G screening criteria of 54
21 pounds but it does exceed the 43 ft.lbs required by
22 the Westinghouse Owners Group analysis done for
23 Westinghouse.

24 With respect to RT_{PTS} , the limiting
25 locations plate is the same plate, B2803-3, at 279.5

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 degrees. And this does exceed the screening criteria
2 of 270 degrees.

3 As required by 10 CFR 50.61 Indian Point 3
4 will submit a plant-specific safety analysis at least
5 three years prior to reaching the screening criteria.

6 MEMBER SHACK: When are you projected to
7 do that?

8 MR. AZEVEDO: We're projected to reach the
9 270 degree limit at approximately 37 effective power
10 years, which is approximately nine years into the
11 period of extended operation.

12 And we have implemented both low leakage
13 scores as well as flux suppressors at Indian Point 3.

14 MEMBER SHACK: But you're taking credit
15 for that in these projections?

16 MR. AZEVEDO: Yes, we are.

17 MEMBER BROWN: You mean taking credit, the
18 fact that they'll have a successful --

19 CHAIR MAYNARD: It means they're going to
20 have to do something else in addition --

21 MEMBER BROWN: Yes, in addition.

22 CHAIR MAYNARD: -- in answer to this prior
23 to that time frame or shutdown.

24 MEMBER BANERJEE: But you're taking credit
25 for the low leakage score and the flux suppressors?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. AZEVEDO: Yes, we are. The fluence
2 calculations for 48 effective full power years do
3 account for the low low leakage score as well as the
4 flux suppressors.

5 MEMBER SIEBER: You haven't gone as far as
6 things like hafnium rods or --

7 MR. AZEVEDO: No.

8 MEMBER SIEBER: -- in that projection?

9 MR. DACIMO: No, we have not gone as far.

10 MEMBER SIEBER: A change in the PTS rule
11 will help you?

12 MR. AZEVEDO: Yes. We're following the
13 revision to 10 CFR 50.61, which is 10 CFR 50.61(a).

14 MEMBER SIEBER: Right.

15 MR. AZEVEDO: Indian Point 3 was one of
16 the reactor vessels analyzed as part of the rule
17 change. And if that becomes part of the regulation,
18 that will address this issue to Indian Point 3.

19 MEMBER SIEBER: Okay. But yours isn't the
20 most severe among the vessels that were examined.

21 MR. AZEVEDO: I know that Indian Point 3
22 was one of the vessels evaluated. I don't know if it
23 was the most limiting vessel or not.

24 MEMBER SIEBER: Well, you're down the list
25 of a few. You're close, but you didn't win.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. AZEVEDO: Okay.

2 CHAIR MAYNARD: Next.

3 MR. AZEVEDO: So next slide I will discuss
4 the buried piping of aging management program. For
5 license renewal Indian Point committed to NUREG-1801
6 program section XI.M34. The program includes
7 consideration of operating experience, and this
8 morning I will just briefly discuss some of the recent
9 operating experiences that we have experience at
10 Indian Point.

11 We performed an inspection the fall of
12 2008. We actually dug up two locations. We exposed six
13 pipe sections. These were two locations where three
14 pipes ran parallel to one another. The inspections
15 revealed some coating degradation. There was
16 approximately five locations that had to be repaired.

17 The pipe wall thickness was measured using
18 ultrasonics, and these UT results indicated the pipe
19 remained at full thickness.

20 MEMBER SIEBER: Now you're relying for
21 your buried pipe corrosion resistance on the outside
22 coating?

23 MR. AZEVEDO: We are relying on the
24 outside coating. And we are factoring in operating
25 experience and making adjustments as we see fit.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER SIEBER: Now operating experience
2 at some PWRs for cooling water lines shows corrosion
3 occurring from inside the pipe. And you're relying on
4 your UT measurements to say that the inside of the
5 pipe is not corroding?

6 MR. AZEVEDO: Our service water system has
7 experienced corrosion from the inside.

8 MEMBER SIEBER: What have you done to
9 repair it or are you just monitoring it?

10 MR. AZEVEDO: We do approximately 40 RT
11 inspections every outage as well as robotic
12 inspections, visual inspection from the inside of the
13 pipe for the larger diameter pipes. So we are
14 inspecting those pipes.

15 MEMBER SIEBER: Yes. Could you describe
16 in just a few words what the robotic inspection
17 consists of? That is pipe's at what, at 36 inch or
18 something like that?

19 MR. AZEVEDO: They vary in size. I believe
20 that we individually inspect anything above 14 inches.
21 If we can install crawler, we'll remove a valve or
22 somehow we get into the system. And then we go as far
23 as we can with a visual crawler and we document the
24 inspection results.

25 MEMBER SIEBER: Have you found build ups

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 of lots of crud and animals and so forth in there, you
2 know, crustaceans and --

3 MR. AZEVEDO: No, we haven't. The
4 predominant issue with the service water is at weld
5 joints. Our piping is concrete lined, cement lined.
6 And if the cement line chips in a certain location,
7 that weld will develop a through-wall leak. That has
8 been our experience.

9 MR. DACIMO: And we also install the Weko-
10 seals.

11 MR. AZEVEDO: In some locations that's
12 correct.

13 MR. DACIMO: In some locations we actually
14 sent a -- in the joint itself is a seal that you can
15 snap in place, okay, to protect that joint and
16 protects service water from migrating through the
17 joint to the metal.

18 MEMBER SIEBER: Well, operating experience
19 would tell all of us that we need to pay particular
20 attention to service water. It has the potential of
21 picking up chemicals. And since the flow is not high
22 at all times, the conditions are good for corrosion
23 and blockage.

24 MR. COX: And a little clarification.

25 This is Alan Cox.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Let me add one clarification. The program
2 that we're talking about here is really focused on the
3 outside of the piping. We do have a number of other
4 programs that we could talk about that deal with the
5 inside and the service water heavy program is one of
6 them that Nelson was describing that deals with the
7 inside of the service water pipe.

8 MEMBER SIEBER: No. I think for the
9 purpose of license renewal we have to consider both.

10 MR. COX: Right.

11 MEMBER SIEBER: Both the outside
12 protection and the inside corrosion resistance,
13 plugging and associated things. Operating history
14 tells us it's important.

15 MR. COX: Right. I just wanted to clarify
16 that not all of that is going to be under this
17 particular program that Nelson was discussing.

18 MEMBER SIEBER: All right.

19 MR. COX: It's under a number of programs.

20 MR. AZEVEDO: Okay. So both of these
21 locations we repaired the coating that had been
22 degraded and we backfilled the holes. This was done,
23 again, in the fall of 2008.

24 Going on to the next slide. More recently
25 specifically on February 15, 2009, we had a leak in an

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 8 inch condensate line. This was due to external
2 corrosion which led to a through-wall defect. This
3 location was excavated. The areas of concern were
4 repaired. One section of the pipe was replaced and the
5 line was returned to service.

6 A failure analysis is ongoing, has not
7 been completed yet on the removed section. And we'll
8 use the results of this failure analysis to establish
9 both scope and frequency of inspections going forward.

10 MEMBER ARMIJO: Is this a carbon steel
11 line?

12 MR. AZEVEDO: Yes, it is.

13 MEMBER ARMIJO: Okay.

14 CHAIR MAYNARD: I know you don't like to
15 speculate until the analysis is done, but do you have
16 any preliminary conclusions or the cause of this?

17 MR. AZEVEDO: Other than say that the
18 corrosion is from the outside, I really don't have any
19 additional information at this time.

20 MEMBER SIEBER: You say that was a
21 condensate line?

22 MR. AZEVEDO: It was a condensate line,
23 that's right.

24 MEMBER SIEBER: That's under the turbine
25 room basement?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. AZEVEDO: This specific location was
2 under the main feedwater lines and next to the aux
3 feedwater pump room.

4 MEMBER SIEBER: Okay. And is that buried
5 piping?

6 MR. AZEVEDO: Yes, it is.

7 MEMBER SIEBER: Okay.

8 MEMBER BANERJEE: How did you find it?

9 MR. AZEVEDO: We had water -- there's a
10 flow penetration sleeve and the water was coming out
11 of the sleeve and pooling on the floor.

12 MEMBER SIEBER: Okay.

13 MEMBER BANERJEE: Would that happen in all
14 cases or is it this particular --

15 MR. AZEVEDO: Not necessarily. If the leak
16 had been outside the building, we may not have seen as
17 quickly as we saw coming out of the sleeve.

18 CHAIR MAYNARD: How did you have to get to
19 this? Did you have to go through concrete or
20 anything?

21 MR. AZEVEDO: Yes. We had to cut a hole in
22 the floor and dig a whole approximately 10 to 15 feet
23 deep.

24 MEMBER SIEBER: Right.

25 MEMBER SHACK: And your coating is what

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 type?

2 MR. AZEVEDO: Bitumestic. It's the black
3 tar.

4 MEMBER BANERJEE: Now those leaks in other
5 pipes, what sort of way would you know what would be--
6 is there a sort of a diagnostic which helps you to
7 detect them?

8 MR. AZEVEDO: EPRI has been working with
9 Duke Power and we've been also participating. Some
10 promising new techniques that the industry is working
11 on, but right now there is no proven technique other
12 than just digging holes and visually inspecting pipe.
13 But we're hopefully that in the near future there
14 will be some ND techniques that we can use.

15 MR. DACIMO: But it also is dependent upon
16 the system also. In the case of condensate you would
17 see, depending on how large the leak would became,
18 your makeup or of you condensate storage tank would
19 start becoming excessive based upon what your other
20 system or expected system losses would be. So in
21 reviewing logs at some point in time you pick up on
22 that.

23 CHAIR MAYNARD: So a number of it that's
24 the way -- that's the way it would be picked up is
25 through performance --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DACIMO: Right. That's correct.

2 CHAIR MAYNARD: -- flow test or break-up
3 rates, things like that.

4 MR. DACIMO: Right.

5 MR. AZEVEDO: Yes, it's a good point that
6 at least for this ASME section XI class 3 systems we
7 do flow tests or pressure tests so we would be able to
8 pick-up through-wall hole defects.

9 MEMBER SIEBER: Yes. This line you usually
10 -- it operates at a very low pressure and if it leaks,
11 it really doesn't effect safety-related systems.

12 MR. AZEVEDO: Right.

13 MEMBER SIEBER: On the other hand, it can
14 degrade the foundation of the building, you know,
15 because you're making a cavity under the floor.

16 MEMBER RAY: Fred, is there any difference
17 between safety function lines, picking up on Jack's
18 point?

19 MR. DACIMO: What we do is our buried
20 piping program ranks the systems that we'll look at
21 based upon safety significance.

22 MEMBER RAY: Okay.

23 MR. DACIMO: So, you know, service water
24 obviously in condensate storage actually is high.

25 MEMBER RAY: That's right.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DACIMO: As a matter of fact,
2 condensate the reason it was picked initially to pick
3 those locations that we looked at was because it
4 screened out as being --

5 MEMBER SIEBER: Yes, RWST also.

6 MR. DACIMO: Right. That would be a high
7 system also.

8 MEMBER SIEBER: Right.

9 CHAIR MAYNARD: Okay. We would like to
10 move on.

11 MR. YOUNG: Okay. Rich Drake will be
12 covering the next item on the 1973 feedwater event.
13 And then following that we can go into the open items
14 that we didn't talk about earlier.

15 CHAIR MAYNARD: That's right. Yes.

16 MR. YOUNG: Okay.

17 CHAIR MAYNARD: I'm keeping my eye on the
18 clock. We are going to have time to do that.

19 MR. DRAKE: Okay. This is a question that
20 was asked about the Unit 2 containment liner 1973
21 feedwater event. On November 1973 during initial
22 plant startup from 7 percent power there was a
23 feedwater hammer which caused a pipe crack inside
24 containment near the containment penetration area.
25 The flashing of the steam impinged on the unprotected

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 containment liner causing a bulge to develop.

2 Subsequent to that piping was repaired.
3 Other modifications were made to the steam generator
4 to prevent -- to preclude reoccurrence of this event.
5 This actually led to the whole industry J tube
6 modifications. And the deformation restored to the
7 containment liner with a --

8 CHAIR MAYNARD: Somebody's got papers on
9 the speaker there.

10 MEMBER SIEBER: This occurred before you
11 put J tubes in?

12 MR. DRAKE: This is correct. This is one
13 of the --

14 MEMBER SIEBER: So the water hammer came
15 from the drain --

16 MR. DRAKE: That's correct.

17 MEMBER SIEBER: -- of the sparger?

18 MR. DACIMO: The J tube model modification
19 actually came out of this.

20 MEMBER SIEBER: Okay.

21 MR. DACIMO: This was one of the earlier--

22 MEMBER SIEBER: And you're the guys that
23 caused that?

24 MR. DACIMO: Yes.

25 MR. DRAKE: Indian Point 2 and we were the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 guys that were associated with it. So that basically
2 modify --

3 MEMBER SIEBER: It was not so artfully
4 phrased, but you got --

5 MR. DRAKE: Yes. The piping to the steam
6 generator modified and the piping itself was repaired.

7 MEMBER SIEBER: Okay.

8 MR. DRAKE: So the area of insulation of
9 the liner then is expanded to cover a greater area
10 liner, insulation to prevent reoccurrence of this
11 also.

12 They performed UTs and a 100 percent mag
13 particle of the liner itself in the area that the
14 bulge occurred to make sure that it did not crack.

15 They performed analysis to determine the
16 as-left condition and also that the liner was good for
17 continued operation.

18 MEMBER SIEBER: But the liner is not the
19 support. The support is inside the containment wall.
20 The liner just happens to be attached to it.

21 MR. DRAKE: That's right. It's just a
22 pressure --

23 MEMBER SIEBER: So what do you know about
24 the inside of the containment wall? How much of that
25 got ripped apart?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DRAKE: What they did is they did UTs
2 of the embedded studs and determined that there were
3 several of them that were broken, and that was also
4 analyzed.

5 MEMBER SIEBER: Yes. But the concrete is
6 there, too.

7 MR. DRAKE: Yes. But this was a very short
8 transient effect. So it was just the liner that
9 bulged.

10 MEMBER SIEBER: Yes.

11 MEMBER ARMIJO: So was it a buckling in?
12 The liner heated up but buckled --

13 MEMBER SIEBER: What happens is that pipe
14 tries to drive itself through to the containment, it
15 takes the liner --

16 MR. DRAKE: It's the steam contains the
17 heat?

18 MEMBER SIEBER: Oh really?

19 MR. DRAKE: Yes. The steam contains the
20 heat.

21 MEMBER SIEBER: So it's not the water in
22 the --

23 MR. DRAKE: No, no, no. No. The water
24 hammer caused the pipe to crack and that steam plumbing
25 then continues under the liner --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER SIEBER: The liner, right.

2 MR. DRAKE: -- and then the heat popped it
3 out.

4 MEMBER SIEBER: Okay.

5 MR. DRAKE: They did mag particles to show
6 there was no cracking. And then they were able to
7 restore most of the configuration of the liner back,
8 basically.

9 MEMBER ARMIJO: So you basically just push
10 it back in? There must have been some plastic
11 deformation --

12 MR. DRAKE: Yes. They used an ILRT
13 basically to restore and push it back into place. It
14 was measured.

15 MEMBER ARMIJO: Okay.

16 MR. DRAKE: There was sight remaining
17 plastic deformation that had occurred in certain
18 locations.

19 MEMBER ARMIJO: But to Jack's point, the
20 duration of the steam impingement was relatively
21 short--

22 MR. DRAKE: That's correct.

23 MEMBER ARMIJO: -- within an hour, half
24 an hour or --

25 MR. DACIMO: John, do you have any sense

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 of how long that was. John Curry, he's a Project
2 Manager for License Renewal.

3 MR. CURRY: As Fred stated, my name is
4 John Curry.

5 When this incident took place from the
6 time logs that were taken, the time that the feedwater
7 actually flowed on where this crack was approximately
8 a half an hour. So it was a very short time --

9 MEMBER SIEBER: About the temperature --

10 MR. CURRY: -- that it impinged on the
11 containment liner.

12 MEMBER BANERJEE: And what sort of
13 temperatures were --

14 MEMBER SIEBER: 400 degrees, probably.
15 450.

16 MR. CURRY: Yes. The final feedwater
17 temperature at that particular point in time was
18 approximately 425 degrees. And the unit was at 7
19 percent power from the reports.

20 MEMBER SIEBER: Right.

21 MEMBER ARMIJO: So you could calculate
22 thermal stresses and see if that exceeded some
23 spalling criteria or something that would damage the
24 concrete if --

25 MR. DRAKE: Yes. For a short period

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 duration for 400 degrees, it wouldn't be a concern.

2 MEMBER CORRADINI: I guess if I were in
3 your shoes, I would answer the question in a sense
4 that this was like a sunburn blister. It pulls out and
5 it insulated itself.

6 MR. DRAKE: That's correct.

7 MEMBER ARMIJO: That helps sort of.

8 MEMBER CORRADINI: It sure does.

9 MEMBER SIEBER: Sort of.

10 MR. DRAKE: Just for the record, is we
11 have done and we're going to submit the data very
12 successful ILRTs on a number of occasions since then.

13 MEMBER SIEBER: The last item on that
14 containment, you probably have done three.

15 MR. DRAKE: Yes. It was last done in --

16 MR. DACIMO: And in reality after that
17 event there was a "partial unofficial ILRT" then there
18 was an official ILRT. So --

19 MEMBER SIEBER: The unofficial one was to
20 restore the --

21 MR. DACIMO: Well, it was 1973 and it's a
22 little fuzzy, but I think that was the intent.

23 MEMBER BANERJEE: Well, going back to this
24 blister, can I ask you so you have a pipe which is
25 cracked. There's a jet of --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER SIEBER: Steam.

2 MEMBER BANERJEE: -- steam and water or
3 whatever --

4 MEMBER SIEBER: Steam.

5 MEMBER BANERJEE: -- coming and hitting
6 this liner. Why is it bulging outwards?

7 MEMBER ARMIJO: It is expanding. It came
8 from behind you, it can't go that way.

9 MEMBER BANERJEE: So it's just a
10 temperature effect, right?

11 MR. DRAKE: Right.

12 MEMBER BANERJEE: It's not due to any
13 forces?

14 MR. DRAKE: No. No.

15 CHAIR MAYNARD: It expands, it can't go
16 out, it's got to come in.

17 MEMBER BANERJEE: So it's a little blister
18 due to the heat --

19 MR. DRAKE: Exactly.

20 MEMBER SIEBER: I would have said either
21 way, but --

22 MEMBER BANERJEE: -- expansion?

23 MEMBER ARMIJO: You are talking about a
24 foot in diameter, 20 feet in diameter?

25 MR. DRAKE: It was over a 60 foot arc.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. CURRY: And another unique design
2 feature of Unit 2 and Unit 3 on the containment liner
3 all of the plate-to-plate welds that were made in the
4 field are covered with a channel --

5 MEMBER SIEBER: Right.

6 MR. CURRY: -- that is welded over them
7 which we refer to as the weld channel system. And that
8 is pressurized with 52 pounds of pressurization. And
9 that air that is fed into that system is monitored.
10 And over the life of the plant and throughout this
11 whole incident that took place in 1973 no change in
12 the weld channel flow was indicated. So as the plates
13 did buckle, the welds also showed that their integrity
14 was maintained.

15 MEMBER SIEBER: Do you keep that
16 pressurized all the time?

17 MR. CURRY: Pressurized all the time.

18 MR. DACIMO: Yes, we're one of the few
19 plants in the country that had that. Connecticut
20 Yankee being one, Zion being another one.

21 MEMBER SIEBER: Yes. Usually the welds
22 that would fail is the channel welds as opposed to the
23 liner welds.

24 MR. DACIMO: Right. Right.

25 MEMBER SIEBER: And most people decided--

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER ARMIJO: Yes. We had an open
2 question about the site of the buckle.

3 MR. DRAKE: It was over a 60 foot arc.

4 MEMBER ARMIJO: Give me in square feet or
5 whatever so that -- that's a pretty big -- it's not a
6 local --

7 MR. DACIMO: Sixty by ten?

8 MR. DRAKE: It's -- yes, by 10 or
9 something like that.

10 MR. DACIMO: The deformation though in
11 inches was what? Was 5/8th of an inch?

12 MR. DRAKE: About an inch and a half --

13 MR. DACIMO: An inch and a half.

14 MR. DRAKE: -- in the worst case.

15 MEMBER ARMIJO: It was a large area --

16 MR. DRAKE: Yes.

17 MEMBER ARMIJO: -- with a small --

18 MR. DRAKE: Yes. Right.

19 MEMBER SIEBER: You say the liner
20 thickness is an inch and a half?

21 MR. DRAKE: No. No. The worst case, about
22 an inch and a half.

23 CHAIR MAYNARD: But the liner really isn't
24 there for structural purposes. It's there for
25 pressure--

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DRAKE: Right, just for pressure.

2 CHAIR MAYNARD: -- and you did the ILRT
3 after that and you'd still be all right.

4 MEMBER SIEBER: It's a membrane.

5 MR. DRAKE: Yes. So we've done ILRTs. We
6 had the weld channel that's in service, it was
7 continually pressurized.

8 In this last outage we did a visual
9 inspection of the as-let condition and confirmed that
10 the configuration is still in the same point. That
11 was with the insulation on, though.

12 We have done ILRTs since then to prove
13 integrity. There is no age degradation observed of
14 the liner itself. We continue to do ISI/IWE
15 inspections and we'll continue to do that in the
16 future. And we made a commitment to perform a one
17 time behind insulation in those areas inspection to
18 determine if there's any other degradation going on.

19 MEMBER BONACA: Would you say it again?
20 Which area?

21 MR. DRAKE: We're going to go with those
22 areas where there is the permanent deformation and
23 with the liner buckled that we're going to go --
24 remove the insulation do a one time visual inspection.

25 MEMBER BONACA: Okay.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER ARMIJO: Remove? You're not going
2 to cut the liner?

3 MR. DRAKE: No, no. We're going to just
4 removed the insulation and do a visual inspection
5 behind the insulation.

6 MEMBER SIEBER: Okay.

7 CHAIR MAYNARD: This would be the
8 insulation around the pipe, the penetration area?

9 MR. DRAKE: No. This will be of the areas
10 where the bulge and buckling occurred.

11 MR. COX: This is Alan Cox.

12 There was insulation that was added to the
13 surface of the liner after this event.

14 MR. DRAKE: And that was done for both
15 units after this event.

16 CHAIR MAYNARD: Okay.

17 MEMBER RAY: For the --

18 MR. DRAKE: Up to like the 80 foot
19 elevation which is almost up --

20 MEMBER SIEBER: What kind of insulation?

21 MR. DRAKE: -- to the operating floor deck
22 of the containment. So anything below be now covered.

23 MEMBER SIEBER: What kind of insulation?

24 MR. DRAKE: That --it's a metal jacketed--
25 I don't know exactly what the size --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. CURRY: It's a foam glass type of
2 insulation.

3 MR. DRAKE: Yes. And it's ---

4 MR. CURRY: It's name was FLOAMGLAS.

5 MR. DRAKE: Yes.

6 MR. CURRY: And there's an asbestos
7 backing paper. So against the liner there's an
8 asbestos backing it in, there's foam glass insulation
9 --

10 MR. DRAKE: Then it's covered with
11 stainless steel.

12 MR. CURRY: And then covered with a
13 stainless steel.

14 MR. DRAKE: And this is also outside the
15 crane wall where you wouldn't get any immediate jet
16 impingement except if you had a pipe break or
17 something like.

18 MEMBER SIEBER: Except for the pipe, that
19 reason why you put it there.

20 MR. DRAKE: But it wouldn't be --

21 MEMBER SIEBER: Would it go to the sump?
22 Would it go the sump if you washed it off the wall.

23 MEMBER BANERJEE: So how high is this?
24 Eighty feet?

25 MEMBER SIEBER: It's high.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DRAKE: It goes up to our 80 foot
2 elevation from a 40 foot -- from a 46 --

3 MR. DACIMO: It's a band, right? It's a
4 band at how many feet high?

5 MR. CURRY: Well, it's from the 46 foot
6 elevation--

7 MR. DRAKE: Almost to the 80th.

8 MR. CURRY: -- to the 80 foot elevation.

9 MR. DRAKE: All the way around.

10 MR. CURRY: And the full area of
11 containment. And it extends above in the hot piping
12 penetration areas. So it was extended at the time of
13 the incident and then carried over to Unit 3.

14 MEMBER SIEBER: When you GSI-191
15 calculation for debris is that included?

16 MR. DRAKE: This was all -- that was
17 considered. Oh, yes, that was considered. Absolutely.

18 MEMBER SIEBER: Because that's --

19 MR. DRAKE: And it's also outside the
20 crane wall.

21 MEMBER BANERJEE: And it is jacketed?

22 MR. DRAKE: It's got -- it's covered with
23 the steel. I said "jacketed," that was probably a
24 misnomer. It's covered with the same metal.

25 MR. COX: It's still the same thing.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER SIEBER: Sheet metal?

2 MEMBER BANERJEE: Well, it's not fibrous
3 or anything like that, right?

4 MEMBER SIEBER: Yes, it is.

5 MEMBER SHACK: It's all glass.

6 MEMBER BANERJEE: Is it fiberglass?

7 MEMBER SHACK: Yes.

8 MR. CURRY: Well, it's a rigid -- it's a
9 rigid piece of insulation. It's a --

10 MEMBER SIEBER: You can break it up in
11 your hand.

12 MR. CURRY: -- made of-- basically it's
13 molten glass with air pockets in it, foam --

14 MEMBER BANERJEE: Okay. It crumbles into
15 what? Particles?

16 MR. CURRY: Yes, well it's not fibrous.

17 MEMBER BANERJEE: But not fibrous?

18 MR. CURRY: But not fibrous.

19 CHAIR MAYNARD: I'd like to move on. I
20 think this topic would be of interest during a GSI-191
21 discussion.

22 MEMBER BANERJEE: I'm sure they're thought
23 about it.

24 CHAIR MAYNARD: But for license renewal,
25 I'd like to go ahead and move on.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 What I'd like to do now is go back to page
2 21. Just step through the ones that are marked
3 "Ready" and give the members a chance to ask questions
4 or to dig into these a little bit deeper. You don't
5 have to go into great detail, maybe just discuss it.
6 We'll get you into you into the great detail.

7 MR. YOUNG: Okay. Alan Cox is going to
8 walk through each item and give a little summary of
9 what the item is and what response. All of these
10 items we've provided responses in a letter that went
11 in toward the end of January, if I remember right.

12 MEMBER SIEBER: Yes, we have the letter.

13 MR. YOUNG: So that's what all these items
14 are. They're part of that January 26th letter.

15 CHAIR MAYNARD: Yes, I understand. We
16 briefly want to pursue these a little bit. And the
17 other items we've been talking about that are still
18 open issues, there's going to be information going
19 back and forth and these we'll get an opportunity to
20 review new information.

21 You know, this is one we're probably not
22 going to see any information on and that's what we've
23 got to see if there's areas that we want to ask for or
24 need more information on. So that's why we need to
25 step these.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 MR. YOUNG: Yes. Okay.

2 Alan?

3 MR. COX: Okay. The first item is on the
4 -- I think the title is yard hose houses and chamber
5 housings. These are ruptures in the fire protection
6 system. The yard hose houses, but essentially it's a
7 storage cabinet to contain tools and nozzles and --

8 MEMBER BANERJEE: So how do you determine
9 that there's no degradation of these, you inspect
10 them?

11 MEMBER SIEBER: It doesn't make any
12 difference even if there is.

13 MR. COX: It doesn't make any difference.
14 You could run over them with a truck and the fire
15 systems would still perform its function. It's a
16 convenience item for storage.

17 MEMBER SIEBER: The only thing you have to
18 worry about is the configuration of the hose that you
19 store in there. And you test those regularly anyway.

20 MR. COX: The hoses are tested
21 continually.

22 MEMBER BANERJEE: And you are testing
23 them, yes?

24 MR. YOUNG: Yes. The staff question was
25 why aren't they in scope. And then we provided the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 answer that they didn't provide an intended function
2 that met the criteria. And that was the answer we
3 provided in the January letter.

4 MEMBER SIEBER: And in most plants they're
5 just sheet metal shacks with a door on it.

6 MR. COX: The chamber housings, again,
7 it's a surge chamber that's intended to prevent false
8 alarms due to pressure surges in the fire water
9 system. They have no license renewal function.
10 They've got an orifice coming in and an orifice going
11 out, so there's not really a pressure boundary for the
12 fire water system.

13 MEMBER STETKAR: When you talk about
14 "chamber," this one is filled with valves, right?

15 MR. COX: Right.

16 MEMBER SIEBER: Right.

17 MR. COX: The next one is the main
18 feedwater system stop valves.

19 MEMBER SIEBER: Scoping.

20 MR. COX: It's a scoping question about
21 whether those were included within scope. I believe we
22 have some of the valves that are safety-related that
23 are used for main feedwater isolation. These
24 particular valves are used as backup feedwater
25 isolation. And they were included in scope as (a) (2).

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Since they weren't safety-related, they didn't really
2 fit under the (a)(1) category. So we did include them
3 for (a)(2) and they evaluated in the maintenance
4 tables for the (a)(2) components.

5 MEMBER SIEBER: I think the units are
6 different. You've got different scoping depending on
7 what years you're talking about.

8 MR. COX: Yes. I think the -- it alludes
9 to the BFD-90 valves on one unit are credited and not
10 on the other unit.

11 MEMBER SIEBER: Okay.

12 MEMBER STETKAR: I had a question: Why is
13 that?

14 MEMBER SIEBER: Original license basis.

15 MEMBER STETKAR: What? Because the lines
16 are physically precisely the same size on each unit.
17 The valves perform the same function on each unit. So
18 I was curious why on Unit 2 the BDF-90 valves are
19 excluded as they're explicitly included on Unit 3?

20 MR. COX: Well, I think the answer goes
21 back to the different ownership of the plant. At the
22 time --

23 MEMBER STETKAR: Okay. That's the answer.
24 History.

25 MEMBER SIEBER: It's the license basis.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. COX: Let me finish. It's the license
2 -- the analysis. And it had to do with two different
3 people doing the analysis and the assumptions under
4 one analysis was that these valves operated and the
5 assumption on the other was they didn't. And both
6 results -- both analyses provided acceptable results.

7 MEMBER STETKAR: This might be more a
8 question for the staff then --

9 MEMBER SIEBER: It's a legal issue.

10 MEMBER STETKAR: -- because it's not at
11 all clear functionally.

12 MEMBER SIEBER: All right. Move on.

13 MR. COX: Okay. What's next?

14 MR. YOUNG: Inaccessible fire barrier.

15 MR. COX: The inaccessible fire barrier
16 penetration seals, it's probably one of the process
17 for doing evaluations to justify if you do have any
18 fire accessible fire barrier seals to justify not
19 doing the inspection. You know, you look at the fire
20 hazards and that sort of thing. And you have to have
21 a documented evaluation for those cases.

22 So the question here was do we have any
23 evaluations and in looking through -- again, the
24 process requires it for inaccessible seals, but we
25 determined there were no inaccessible seals for which

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 we had to have that evaluation.

2 So the simple answer was we don't have any
3 inaccessible seals, we don't have any evaluations.

4 CHAIR MAYNARD: Well, I think you skipped
5 one, the IP2 auxiliary feedwater pump room fire --

6 MR. COX: Okay. I'm sorry. You talked
7 about that earlier from the aging management
8 perspective. The question on scoping was to identify
9 the systems we relied on, the secondary systems that
10 we relied on in that event and to identify
11 specifically what parts of the systems that we relied
12 on and whether those systems were covered under the AT
13 scoping. And we provided that information in the
14 response.

15 MEMBER SIEBER: Right.

16 MEMBER STETKAR: I had a question about it
17 doesn't have -- I asked earlier about the fire event.

18 But I had a related question to auxiliary feedwater
19 pump. And I notice that you have screened out the HVAC
20 systems, heating/ventilation systems for the Indian
21 Point 2 auxiliary feedwater room. I think based on a
22 rationale that operators could locally open doors and
23 provide alternate cooling for that room, if I
24 understood the rationale correctly, is that correct?

25 MR. COX: I'm not familiar with that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 issue. I don't know if we have that --

2 MEMBER STETKAR: Okay. I have a two part
3 question. One is the basis for screening out the Unit
4 2 HVAC completely and the other is that I didn't see
5 anything to address the HVAC for the Unit 3 auxiliary
6 feedwater pump room, which as best as I can tell, is
7 the same type of configuration.

8 MR. COX: We can look at that and get back
9 to you later.

10 MR. DACIMO: Well, we have Tom McCaffrey.

11 MR. McCAFFREY: Tom McCaffrey, the Design
12 Engineering Manager.

13 We do have an analysis, the high energy
14 line break analysis that credits the operator action
15 to open up the roll-up doors for 30 minutes. It's a
16 procedure to control for both units and for the
17 operators to take those actions. They have set points
18 associated with that to give them indication that they
19 need to take that action.

20 MEMBER STETKAR: Do you have analyses to
21 show that the cooling that you can provide is
22 effective since the steam and feedwater lines go
23 through there and it can get pretty hot pretty fast?

24 MR. McCAFFREY: Correct. Correct. And we
25 show that the operators still have the option. I

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 believe the number is 250 degrees approximately. I
2 don't know the number off the top of my head. It's in
3 that ballpark.

4 The operators will have plenty of time
5 when they get the alarm to go out there, roll open the
6 roll-up door to provide cooling to that room

7 MEMBER STETKAR: This room is full of now
8 hot pressurized steam when he opens up the door.

9 MR. McCAFFREY: Yes. The roll-up doors
10 would be a garage door type of --

11 MR. DACIMO: They're very large doors,
12 like a garage door.

13 MR. McCAFFREY: The room is not -- it's
14 smaller than this room here. So the room that they're
15 opening is not a -- in relationship, it's probably
16 half of this room size where the garage door is
17 probably bigger than the entrance way here.

18 MEMBER STETKAR: The same rationale
19 applies for Unit 3?

20 MR. McCAFFREY: Correct.

21 MEMBER SIEBER: It is 200 pounds of steam.
22 That's to feed to the turbine driven steam pump.

23 MEMBER STETKAR: The main steam lines go
24 through there, don't they?

25 MR. DACIMO: No. The main steam lines do

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 not go through aux pump room.

2 MR. McCAFFREY: In the other room. This
3 is purely going to be the aux feed line break from the
4 steam going to the aux steam pump, aux door feedwater
5 steam driven pump in the room. And that's the line
6 break you're going to have in this room.

7 MEMBER SIEBER: Yes. It is either the
8 steam supplied to the turbine or the aux feedwater,
9 which --

10 MR. DACIMO: Those are the two highest
11 pressure lines in that room.

12 MEMBER SIEBER: That's right.

13 MR. McCAFFREY: Correct.

14 MEMBER SIEBER: And they're sort of
15 intermediate, as I see it, as far as energy is
16 concerned.

17 MEMBER STETKAR: And that analysis that
18 you mentioned as part of the current licensing basis
19 for not requiring operability of those ventilation
20 systems for that room, is that -- I'm not familiar
21 with the current licensing basis.

22 MR. McCAFFREY: I'm not really sure of the
23 question. The current licensing basis we do credit an
24 operator action to open up the roll-up doors to help
25 mitigate the high-energy line break. And the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 operators, we have timed this with the operation to be
2 sure they can get there, you know during a scenario
3 they can get there and open up the roll-up door within
4 30 minutes.

5 MEMBER STETKAR: Okay. So essentially I
6 guess what I'm asking you is the current licensing
7 basis doesn't require operability of those ventilation
8 systems to support the auxiliary feedwater system, is
9 that correct?

10 MR. McCAFFREY: I'd not -- I don't know
11 that answer.

12 MR. DACIMO: John Curry, do you have that?

13 MR. CURRY: I don't know the answer
14 directly, no.

15 MR. DACIMO: Okay.

16 MEMBER STETKAR: Okay. And this other,
17 the current tech specs, do they require operability of
18 those ventilation systems to support the auxiliary
19 feedwater system?

20 MR. McCAFFREY: No.

21 MEMBER STETKAR: Okay. Thanks.

22 MEMBER BROWN: I missed something on
23 something on the fire protection seals.

24 MEMBER SIEBER: Yes, I got a question or
25 two.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BROWN: When I looked into the
2 responses there was still a response you all gave
3 back, I guess, to the staff. But it looked like your
4 position was that it's still going to come down to if
5 you couldn't get to a fire barrier protect penetration
6 seal, you didn't have to inspect it. Is that --

7 MR. DACIMO: Well, I didn't hear your
8 comment a moment ago.

9 CHAIR MAYNARD: Let me go back over the
10 comment then.

11 MR. YOUNG: Yes. The question on this one
12 was in our on site documentation we show that if there
13 is an inaccessible seal that we can't inspect, we have
14 to do an analysis to document that and the basis for
15 not inspecting. In the follow-up to that procedural
16 requirement we found there were no inaccessible fire
17 barrier seals so there were no calculations.

18 If in the future we do have a change in
19 which one of these seals becomes inaccessible, then we
20 will have to follow the procedural requirements that
21 the staff had reviewed. But at this time we have no
22 inaccessible seals.

23 MEMBER BROWN: Okay.

24 MEMBER SIEBER: But the reasoning is not
25 too great behind excluding them had you had some, in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 my opinion.

2 MEMBER BROWN: No, that was my concern.
3 Was that because inaccessibility it wouldn't have
4 passed inspection --

5 MEMBER SIEBER: If you don't have them,
6 it's not an issue. On the other hand if you had
7 similar seal failures in accessible areas, I would
8 certainly look at inaccessible --

9 MR. YOUNG: Well, absolutely. That would
10 be part corrective action program, yes. Right.

11 MEMBER SIEBER: Well, that wasn't in your
12 submittal, the --

13 MR. YOUNG: No. But we haven't had any,
14 you know, any --

15 MEMBER SIEBER: Yes, I got that.

16 MR. YOUNG: Okay.

17 MEMBER BROWN: Thanks.

18 CHAIR MAYNARD: Okay. The heat exchanger
19 monitoring.

20 MR. COX: The heat exchanger monitoring
21 was a question that we received on provide more
22 details on the inspection criteria. And we provided an
23 answer to discuss the qualifications -- we got a
24 qualified heat exchanger engineer that does the
25 inspections and we identified some of the specific

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 things that he would be looking for in terms of
2 surface roughness caused by corrosion, erosion
3 pitting, whatever it might be. And, of course, any
4 unacceptable signs of degradation would be evaluated
5 through the corrective action process. And, again,
6 this would all be done by an engineer that's got a
7 qualification for that particular function.

8 Any questions on that?

9 CHAIR MAYNARD: ISI Lubrite sliding
10 supports?

11 MR. COX: Lubrite sliding supports was
12 similar to that. We were asked, you know what exactly
13 are you going to look at as part of inspection that
14 we've committed to. These are inspected as part of the
15 overall inspection of the support, as part of the
16 Section XI IWF program. And basically inspection will
17 involve looking at the -- you know, you can't see a
18 lot of the Lubrite because it's supporting the
19 component. And, you know, you can't see the edges.
20 You can see signs of scoring and scratching on the
21 surfaces that are supposed to slide. And, you know,
22 basically you're looking for gouges or binding that
23 would effect the performance of that support.

24 MEMBER SIEBER: Well, are you actually --
25 it's not like it's just sitting there for 60 years and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 not moving. Because every time you heat the plant up,
2 every time you start and stop a pump and check valve
3 slams shut, those surfaces slide.

4 MR. DACIMO: We do an inspection at the
5 end of every outage where you go do and do a visual
6 part to look at it.

7 MEMBER SIEBER: To look at it? Yes. I
8 mean, this is -- it's not it's hidden and it's not
9 like it never gets exercise because there's a lot of
10 plant maneuvers in view that actually cause these
11 things to function.

12 MR. COX: Again, it's all part of the IWF
13 program for looking at those supports. We'll be using
14 the same IWF frequency and maybe looking for signs
15 of--

16 MEMBER SIEBER: If you look as far as
17 seismic analysis concerned and also the bending of
18 structural components. And so it has an importance,
19 but it's not impossible to visually observe.

20 MR. COX: Anything else on Lubrite?

21 The next item was a question we had on
22 Code Section XI. We had in our Section XI ISI program
23 we had talked about corrective actions and the staff
24 had asked for a clarification if that meant that we
25 would implement the corrective action provisions in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 specific sections of the code. That would be
2 Subsections IW A, B, C, and D and F that were
3 applicable to that component class. And the answer was
4 yes, that is what that meant. So it was basically
5 just a clarification of our intent.

6 The next one was -- excuse e.

7 MEMBER SHACK: I am just -- go on to the
8 next one.

9 MR. COX: Okay. The next one is periodic
10 surveillance preventative maintenance program. Again,
11 it's a clarification or a request for additional
12 details on the specifics of that program.

13 MR. YOUNG: Alan, this is a nickel --

14 CHAIR MAYNARD: We have to go by our list
15 so we can keep track.

16 MR. COX: That's fine.

17 MEMBER SIEBER: My question on nickel
18 alloy is you had over the years about a 14 percent
19 increase in power, licensed power output which
20 obviously has moved TH up and up and up, right?
21 What's your TH right now at a 100 percent power?

22 MR. COX: Nelson, have you got any
23 information on that?

24 MR. AZEVEDO: Yes. My name is Nelson
25 Azevedo.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 I don't have the exact number. It's
2 around 600.

3 MEMBER SIEBER: 600? That's pretty low.
4 Okay.

5 I was going to say the sensitivity change
6 in the color is around 610. But you're probably below
7 that.

8 MR. AZEVEDO: Yes. Unit 2 we --

9 MEMBER SIEBER: That's my benchmark, Bill.

10 MR. AZEVEDO: Unit 2, reactor -- both the
11 reactor vessel heads are T-hot so they don't have the
12 bypass cooling. And the Unit 2 ran historically in
13 the 580s. And after the power uprates they went up to
14 around 600. I don't have the exact number. I could
15 get that for you, but it's around 600.

16 MEMBER SIEBER: Okay.

17 MEMBER BANERJEE: And Unit 3?

18 MR. AZEVEDO: Unit 3 is roughly the same
19 within a couple of degrees. And again, I can get the
20 exact numbers. I don't have --

21 MEMBER BANERJEE: It would be useful to
22 have the exact numbers.

23 MEMBER SIEBER: I think there's only two
24 degrees difference between, as I read it.

25 MR. AZEVEDO: Yes. I will get the exact

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 numbers.

2 MEMBER SIEBER: Okay.

3 CHAIR MAYNARD: And those are low compared
4 to what some of the PWRs are still operating at.

5 MEMBER SIEBER: Okay. Go ahead.

6 MR. COX: Yes. The basic of this question
7 was to provide some clarification on exactly where we
8 had nickel alloy components and welds. And we provided
9 that information in response to that.

10 MEMBER SIEBER: Are you sure they replaced
11 where you say you have thermal sleeves?

12 MR. COX: I would give that question to
13 Nelson.

14 MR. AZEVEDO: I'm sorry. What was the
15 question again?

16 MEMBER SIEBER: Are you sure that you have
17 thermal sleeves everyplace that your design drawing
18 showed?

19 MR. AZEVEDO: Well, we had one thermal
20 sleeve that dislodged from its location and we found
21 the pieces in the reactor vessel and --

22 MEMBER SIEBER: Have you analyzed that?

23 MR. AZEVEDO: Yes, we did that analysis
24 to--

25 MEMBER SIEBER: You probably didn't

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 replace it, right?

2 MR. AZEVEDO: We did not replace it. But
3 we have seen no other indications that any of the
4 other thermal sleeves have dislodged from their
5 locations.

6 CHAIR MAYNARD: With their age of plant,
7 their design probably does identify them all. In the
8 '80s there was a design change made that drawings for
9 some plants that it'd show a thermal sleeve there, but
10 that changed in the construction and it was removed.

11 MEMBER SIEBER: They didn't put it in.

12 CHAIR MAYNARD: Yes. So but your age of
13 plant, I'm not aware of any design changes on thermal
14 sleeves that were current at that point.

15 MR. AZEVEDO: Yes. I believe that changed
16 occurred in the mid-1980s.

17 CHAIR MAYNARD: Yes.

18 MR. AZEVEDO: But by that point both units
19 were already operating.

20 CHAIR MAYNARD: Yes.

21 MEMBER SIEBER: Well, you're right. In
22 some plans there's some confusion as to whether they
23 exist or not.

24 CHAIR MAYNARD: Right. Because there's a
25 fuel change after the original design.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER SIEBER: After the drawings were
2 made the analysis was done.

3 Okay. Thanks on that.

4 MR. COX: I guess the second part of that
5 particular item dealt with the bottom head
6 penetrations on the vessel.

7 MEMBER SIEBER: Right.

8 MR. COX: And I think we had used the term
9 in one of our audit question responses bottom head
10 drain safe ends. And we don't actually have any
11 bottom head drains. So we clarified that that was the
12 safe ends on the bottom head were the safe ends that
13 were used to connect to the in-core instrumentation.
14 The bottom mounted instrumentation to the --

15 MEMBER SIEBER: You have about 50 of
16 those?

17 MR. COX: Fifty?

18 MR. AZEVEDO: We have 58.

19 MEMBER SIEBER: Fifty-eight. Okay.

20 MEMBER BANERJEE: With the upper head you
21 have inspections show nothing around CRDMs or
22 anything?

23 MR. DACIMO: We'll let Nelson answer that
24 question.

25 MR. AZEVEDO: Yes. We've been doing NDE of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the upper head. By the way, for Unit 2 we have 97
2 penetrations and Unit 3 we have 78 penetrations. And
3 we have not found any indications.

4 MEMBER SIEBER: You're doing a visual on
5 the outside?

6 MR. AZEVEDO: We do both visual of the
7 outside surface of the head as well as NDE from the
8 inside on both units.

9 MEMBER SIEBER: Right.

10 MEMBER BANERJEE: No cracks, nothing?

11 MR. AZEVEDO: We have not found any
12 indications, any rejectable indications.

13 MEMBER SIEBER: You have the susceptible
14 material in penetration nozzle? There is a class of
15 penetrations that were more susceptible than others.

16 MR. AZEVEDO: You're talking about the
17 upper head penetrations?

18 MEMBER SIEBER: Yes.

19 MR. AZEVEDO: Our penetrations were
20 Huntington alloy penetrations. They're not the B&W
21 material.

22 MEMBER SIEBER: Okay. Thanks.

23 MEMBER ARMIJO: Also are any of them like
24 spares or basically where it's a dead space error?

25 MR. AZEVEDO: Yes. We have spares and we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 also run the instrumentation through some of those as
2 well as active control rod drives.

3 CHAIR MAYNARD: Okay. And do you know, do
4 you guys do a vacuum filled for filling up.?

5 MR. COX: Yes, we do.

6 CHAIR MAYNARD: Okay.

7 MEMBER BANERJEE: And you inspect the
8 welds as well of the --

9 MR. AZEVEDO: Yes. We use the Westinghouse
10 approach which is a dual probe eddy NUT, which we do
11 inspect approximately 10 percent of the weld material
12 as well as the entire base metal,

13 MEMBER SIEBER: Great.

14 CHAIR MAYNARD: Okay.

15 MEMBER SIEBER: CASS components.

16 MR. COX: Okay. The question on the CASS
17 components. There were two parts of the question.
18 Part A basically questioning whether we were relying
19 on UT examinations for CASS components. And our
20 response was that because the ultrasonic testing is
21 not reliable for those type of materials, we did not
22 rely on that as part of our program.

23 MEMBER ARMIJO: What do you rely on?

24 MEMBER SIEBER: What do you rely on?

25 MEMBER ARMIJO: He's setting us up, I'm

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 sure.

2 MR. COX: We would usually rely on
3 basically the visual inspections and surface
4 examinations.

5 MEMBER SIEBER: Do you UT -- I recognize
6 that it's very difficult to find flaws in CASS
7 stainless, but --

8 MEMBER ARMIJO: No, this is limited to
9 like CASS piping as opposed to bell bodies where you
10 know the chemistry of the alloy --

11 MEMBER SIEBER: Well, the centrifugally
12 cast has some unique features of its own.

13 MEMBER ARMIJO: Yes. Yes. But the alloy
14 chemistry effects whether it's going to embrittled or
15 not.

16 MEMBER SIEBER: Well, let me ask this
17 question: Most plants that have CASS piping of the
18 era of Indian Point Unit 2 and 3 have augmented tech
19 specs for inspections. Do you have augmented tech
20 specs for the inspection of the reactor vessel for
21 piping worlds where they require additional
22 inspections over and above what has later been
23 required?

24 MR. AZEVEDO: No, I'm not aware of any
25 augmented inspection. We just follow the Section XI

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 IWB requirements.

2 MEMBER ARMIJO: What are your largest CASS
3 components, not valve bodies but let's say piping?

4 MEMBER SIEBER: The piping, 36 inch --

5 MEMBER ARMIJO: But you large diameter
6 CASS piping?

7 MEMBER SIEBER: Yes. Oh, yes. The whole
8 cooling system.

9 MEMBER ARMIJO: Well, that's --

10 CHAIR MAYNARD: We'll let them answer
11 that.

12 MR. AZEVEDO: I believe the only CASS
13 materials that we have are the Finnies, the elbows.
14 So I have to verify as far as the piping goes.

15 MEMBER ARMIJO: Okay. So it's very
16 limited? You don't have your big piping --

17 MEMBER SIEBER: It's the important stuff,
18 though.

19 MEMBER ARMIJO: -- system isn't CASS
20 stainless?

21 MR. DACIMO: When you say piping, you
22 talking about RCS piping?

23 MR. AZEVEDO: Yes, I'll have to verify on
24 that. But my understanding is the elbows -- the RCS
25 elbows are CASS material. I have to verify the piping

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 material.

2 MR. DACIMO: We have to get back to you on
3 that.

4 MEMBER ARMIJO: Okay.

5 MEMBER BANERJEE: What is the concern you
6 have?

7 MEMBER ARMIJO: Well, they're very
8 difficult because they're very thick walled, the way
9 they're made the microstructure makes it almost
10 impossible to do ET exams. And there's concerns about
11 embrittlement.

12 MEMBER SIEBER: Yes, there's a lot of past
13 issues.

14 CHAIR MAYNARD: They need to verify their
15 material. I believe it was a little bit later when
16 many of the RCS systems related to the spun CASS
17 stainless steel. So they may not have that.

18 MEMBER ARMIJO: If it's forged, we're
19 wasting time.

20 MEMBER SIEBER: But before we leave these
21 kinds of components and go off into the service water
22 system, have you replaced baffle bolts in these
23 plants?

24 MR. AZEVEDO: No, we have not.

25 MEMBER SIEBER: Have you seen baffle

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 jetting, any evidence of it?

2 MR. AZEVEDO: We have not seen the
3 evidence of that, although we do have the 347
4 material.

5 MEMBER SIEBER: Okay. Have you replaced
6 split pins?

7 MR. AZEVEDO: Yes, we have replaced split
8 pins. In fact, we're replacing split spins again on
9 Unit 3 this coming outage starting next week.

10 MEMBER SIEBER: You mean the ones -- the
11 first replacements?

12 MR. AZEVEDO: That's right. This is the
13 second time for Unit 3.

14 CHAIR MAYNARD: You were probably in with
15 the first batch and they actually made improvements in
16 the split pins after the first ones had been
17 installed. So be my guest.

18 MEMBER SIEBER: Yes. Okay. Thank you.

19 MR. COX: Anything else on the CASS
20 components?

21 MEMBER SIEBER: Service water?

22 MR. COX: Let me find the right page of my
23 notes here.

24 CHAIR MAYNARD: Yes, the service water
25 system.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. COX: Here we go. The service water
2 question that dealt with some differences in aging
3 effects for titanium materials in two different
4 locations. And it turns out that in one location we
5 actually knew the particular grade of titanium, and it
6 was a grade that was not susceptible to this
7 particular aging effect. The other location we didn't
8 have the specific information on the type of titanium.
9 So we took the conservative approach and called out
10 that aging effect for that component.

11 MEMBER BANERJEE: So your main system is
12 titanium where the river water is going through?

13 MR. COX: We have some titanium in the
14 service water. I won't say the whole system is, but
15 there is some titanium.

16 MEMBER BANERJEE: So the heat exchangers,
17 are they, the water there are they titanium? Tubes
18 or--

19 MR. COX: The shell for this heat
20 exchanger is titanium. It's a question about --

21 MEMBER BANERJEE: Well, I'm talking about
22 the heat exchangers with the river water, correct?

23 MEMBER SIEBER: The main condenser type?

24 MR. DACIMO: The main condenser is
25 titanium. But you're asking circulating water?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BANERJEE: Yes. Anything which
2 river water is coming into contact with.

3 MR. COX: Well, there's a whole series of
4 heat exchangers.

5 MEMBER BANERJEE: Now they're all titanium
6 or they're --

7 MR. DACIMO: Every heat exchanger is not
8 titanium.

9 MEMBER BANERJEE: Okay. So there's some--

10 MR. COX: Some of them are. I mean, we
11 had to put that material in the table because we did
12 have some titanium heat exchangers. Like Fred's
13 saying, there's others that are other materials.

14 MEMBER BANERJEE: Okay.

15 CHAIR MAYNARD: But the bottom line of
16 this one was where you could not identify the specific
17 type of titanium, you have included it in an aging
18 management program?

19 MR. COX: Right. But I think we probably
20 included both of them in an aging management program,
21 but we included it for this specific aging effect in
22 this case because we can't say it wasn't susceptible
23 to that.

24 CHAIR MAYNARD: Okay.

25 MEMBER BANERJEE: So do you monitor the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 thickness of the titanium tubes and things like that?

2 MR. COX: Well, we do eddy current
3 testing. We do visual inspections on the inside of --
4 you know, the areas that are accessible for visual
5 inspections. Different techniques are employed
6 depending on the location.

7 MEMBER BANERJEE: And do you have to clean
8 them out often, all sorts of vegetation?

9 MR. DACIMO: We have a prevent -- well,
10 it's chlorinated, okay, so that minimizes the amount
11 of cleaning that you have to do. But additionally
12 there is a preventative maintenance program where you
13 open up heat exchangers on a relatively reasonable
14 periodicity to clean them out and check them out.

15 MEMBER BANERJEE: So you don't have
16 systems like these little balls and things which--

17 MR. DACIMO: No, we do not have a Amertap
18 system.

19 CHAIR MAYNARD: That's usually just for
20 the main condenser.

21 MR. DACIMO: The main condenser, that's
22 correct. We do not have Amertap in each one of those.

23 MEMBER SIEBER: No. You only do that on
24 smaller ones.

25 MR. COX: And I think actually as we do

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the periodic inspections and if we see that the need
2 for frequent cleaning based on those inspections, we
3 would do that. But, I mean, we got a pretty long
4 history with the program, so I think we --

5 MEMBER SIEBER: I presume you do heat
6 balances on these exchangers, too?

7 MR. DACIMO: We monitor inlet and outlet
8 temperatures, absolutely. Absolutely.

9 MEMBER SIEBER: And you can judge from
10 that.

11 MR. DACIMO: Particularly for the diesel,
12 absolutely.

13 MEMBER SIEBER: Yes. Okay.

14 CHAIR MAYNARD: Periodic surveillance and
15 preventive maintenance, program elements?

16 MR. COX: Yes. PM was a question, again,
17 where we had to provide -- that's the one I started to
18 talk about while ago. We had to provide more detail in
19 terms of what specific components -- I guess we had
20 included those in the general description of the
21 program already, but not under the scope section. So
22 we basically pointed out where that information could
23 be found in the program description. We also
24 identified specific techniques, inspection techniques
25 that were going to be employed on those components

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 depending on the aging effect that we were monitoring.

2 And basically we could have credited the techniques
3 that are recommended in the GALL report. Under the
4 one-time inspection program there's a table that says
5 for a particular aging effect here's the acceptable
6 inspection technique for that effect. And that's what
7 we provided in response to this question.

8 Components supports, a question was on the
9 concrete around the anchors where the component
10 supports. And, again, this was primarily a
11 clarification to say that that concrete around those
12 anchors, concrete anchors and supports was included in
13 the structures monitoring program that was looking at
14 the floor or the wall that that support was attached
15 to.

16 MEMBER SIEBER: This is mainly Hilti bolts
17 and things of that nature?

18 MR. COX: Right.

19 MR. DACIMO: There's Hiltis and embedded
20 anchors depending on the location. There's embedded
21 anchors also.

22 MEMBER SIEBER: Oh, okay.

23 MR. COX: It was just a clarification that
24 the structure monitoring program covered the concrete
25 as opposed to the program that dealt specifically with

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the support.

2 MEMBER SIEBER: Now you can visually
3 inspect a Hilti bolt location and not be able to tell
4 whether it's going to stay in there or not.

5 MR. COX: Right. Right.

6 MEMBER SIEBER: So I presume you tug on
7 them every once in a while?

8 MR. COX: I'm not familiar with the
9 details.

10 MR. DRAKE: Actually, as part of the scrub
11 program, the resolution of that issue, we did do tug
12 tests on many components. We also did some
13 retorquing checking on some of those, too.

14 MEMBER SIEBER: Now the classification B1
15 to B5 was different between the units, was it not?

16 MR. COX: I'm not aware --

17 MEMBER SIEBER: I got the feeling that
18 there was some differences between which ones were in
19 each one of the categories.

20 MR. COX: I wasn't aware of any
21 differences in that.

22 MEMBER SIEBER: Okay.

23 MR. COX: Do you know specifically? Reza
24 may have some additional information.

25 MR. AHRABLI: This Reza Ahrabli. I can

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 probably clarify that.

2 MR. DACIMO: Would you state your position
3 also?

4 MR. AHRABLI: I'm the Service Lead for the
5 License Renewal for Entergy.

6 As Alan pointed out, I think that question
7 rise from the fact that as we are rolling on the
8 application it almost imply that they be used on
9 either IBF ISR program for monitoring for inspecting
10 the concrete surrounding the anchors. That wasn't
11 really intended to be implied that way because the
12 stress monitoring program looks like the concrete
13 surrounding the anchor bolts and IBF looks at the
14 anchors.

15 So the clarification as Alan pointed out,
16 that is correct.

17 And back to your question as to B1 through
18 B5, that's really categorization as provided by the
19 NUREG-1801, by the GALL.

20 MEMBER SIEBER: Right.

21 MR. AHRABLI: So B1 applied to the
22 containment structure and B2 through B5 is different
23 than the containment.

24 So clarification was there was, you know,
25 background on that question that the staff asked us.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER SIEBER: Thank you.

2 MR. COX: Again, I'm not aware of any
3 differences, but if you've got some specifics on that
4 we can certainly dig into it.

5 MEMBER SIEBER: Well, it's not important.

6 MR. COX: Okay.

7 CHAIR MAYNARD: Class 1 fatigue?

8 MR. COX: Class 1 fatigue, this was a
9 question on the number of heatups and cool down
10 transients. I believe when we put the application
11 together we had a period of time when we didn't have
12 data readily available, so we made our projections on
13 the number of heatups and cool downs based on a --

14 MEMBER SIEBER: On a shorter period.

15 MR. COX: -- shorter period. And during
16 the audits we had an opportunity to go back and get
17 the additional data and provided the revised numbers.

18 MEMBER SIEBER: Do you have complete data
19 now? You only took about a ten year period and said
20 well this period is like all the others.

21 MR. COX: Well, we actually took the --

22 MEMBER SIEBER: But you do have the data
23 because you have operator logs.

24 MR. COX: We actually had a -- it was I
25 think longer than a ten year period. More like a 20

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 year period, but it didn't include the last ten years,
2 I believe.

3 MEMBER SIEBER: Ten years? Yes.

4 MR. COX: And we went back and added that
5 data.

6 MEMBER SIEBER: Yes.

7 CHAIR MAYNARD: As I recall, wasn't this
8 an area where you -- the available data for IP2 and
9 IP3 were a little different and you may not have used
10 the same periods of time.

11 MR. COX: That's right. Because they were
12 operated by different people, the programs had evolved
13 a little bit differently. And actually have some
14 commitments going forward to go back and revisit those
15 projections for -- I think we had already gone and
16 kind of reconstituted that history on one of the units
17 and we've got a commitment to do that for the other
18 unit.

19 MR. DACIMO: Unit 3.

20 MEMBER SIEBER: The fatigue analysis here
21 is usually for large components and major heatups and
22 cool downs as opposed to high frequency cyclic changes
23 that you find in small air lines, correct?

24 MR. YOUNG: Yes.

25 MR. COX: That's correct.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Is that the last one?

2 MEMBER SIEBER: I think that's it, right?

3 MR. YOUNG: And that covers all of the--

4 CHAIR MAYNARD: You may think you're done,
5 but I've got a few other questions.

6 One, and I think we'll be hearing about
7 this this afternoon a little bit, it's on the water in
8 the manholes and some of the cables. And I don't want
9 to get into the whole generic issue of what's being
10 looked at right now. I just want to get a good
11 understanding what cables that you guys have. Do you
12 have any statement?

13 MR. DACIMO: We're going to ask Tom
14 McCaffrey, our Design Engineering Manager to discuss
15 that.

16 MR. McCAFFREY: I'm Tom McCaffrey, the
17 Design Engineering Manager.

18 We have approximately six cables, 13.7 kV
19 coming down from Buchanan Substation to the station
20 and one 6.9 kV tie between the two stations that would
21 be the license renewal underground medium voltage
22 cables. They have manholes that they run through, and
23 that would be the scope of what would be in the
24 license renewal program, the medium voltage cables and
25 manholes.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 MEMBER SIEBER: Well, let me ask a couple
2 of questions. One of them is what's the structure
3 from one manhole to another? Is it duct work,
4 conduit, piping, concrete boxes? And when the manhole
5 is full of water, is that interconnection full of
6 water also?

7 MR. McCAFFREY: So in some of the
8 situations it's a direct buried cable between
9 manholes.

10 MEMBER SIEBER: Okay.

11 MR. McCAFFREY: In other situations it's
12 conduit. So there is a variety of connections between
13 the manholes and the manhole for each cable section.

14 MEMBER SIEBER: Can I assume then that if
15 there's water in the manhole, there's water in the
16 conduit?

17 MR. McCAFFREY: As we kind of talked
18 before, the plant is kind of built on a hill.

19 MEMBER SIEBER: Yes, I got that.

20 MR. McCAFFREY: So what you're going to
21 get is --

22 MEMBER SIEBER: Yes, it goes downhill.

23 MR. McCAFFREY: -- any water is going to
24 flow downhill. So you're going to get some type of
25 precipitation, rainwater in the conduit or the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 manhole, that's going to eventually flow out of the
2 manhole and down towards the river.

3 MEMBER SIEBER: Right. Now the power
4 supply to things like service water pumps, service
5 water pumps in your screen house. Service water pumps
6 are safety-related? You immediate voltage cable
7 connects from there to the plant, and that's usually
8 underground, right?

9 MR. McCAFFREY: Our service water cables
10 are 480 volt AC cables.

11 MEMBER SIEBER: 480?

12 MR. McCAFFREY: All of our safeguard
13 motors and loads are 480 volt loads.

14 MEMBER SIEBER: Are any of your submerged
15 cables qualified to operate in a submerged condition?
16 Are they qualified?

17 MR. McCAFFREY: Our cables are designed to
18 be underground, they're not designed to be submerged
19 cables.

20 MEMBER SIEBER: That's not what I asked.

21 MR. DACIMO: So well the answer to your
22 question is no.

23 CHAIR MAYNARD: No. He said no.

24 MEMBER SIEBER: Now, do you have splices
25 in the manholes or in the cable runs between any

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 manholes?

2 MR. McCAFFREY: We typically have splices
3 in the manholes.

4 MEMBER SIEBER: Right. That's where you
5 pull the cable from?

6 MR. McCAFFREY: We do not do -- correct.

7 MEMBER SIEBER: Now splices are harder to
8 qualify than undisturbed cable because they're
9 handmade. What tests do you run to determine that the
10 insulation and how often do you run them?

11 MR. McCAFFREY: Well, going forward we are
12 going to be implementing a new -- as a corporation
13 we've decided to go off and start testing using the
14 EPRI guidelines for medium voltage testing. We're
15 going to be doing a Tan Delta or partial discharge
16 testing on our cables. We're currently evaluating
17 which is the better method for us to use for our
18 medium voltage cables going forward here.

19 MEMBER SIEBER: But you haven't done that
20 yet, right?

21 MR. McCAFFREY: We've done some section
22 high pots and Meggers of the cables, but as you know
23 that is not a true indication of the cable insulation
24 testing.

25 MEMBER SIEBER: That's right.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. McCAFFREY: And you know the industry
2 has recently come out with that guidance and we're
3 currently evaluating what's the proper use of us at
4 Indian Point.

5 MEMBER SIEBER: In your operating history
6 have you had cable failures of these cables?

7 MR. McCAFFREY: Well, we've had cable
8 failures. They've been related to workmanship. They
9 have not been age-related failures.

10 MEMBER SIEBER: At splices or in the
11 pulling process?

12 MR. McCAFFREY: Very close -- either in
13 the splice or very close to the entrance to the
14 manhole, which would be basically your cable pulling
15 failure.

16 MEMBER SIEBER: Okay.

17 CHAIR MAYNARD: John?

18 MEMBER STETKAR: I just wanted to clarify.
19 You said that in going forward you're going to do
20 whatever the EPRI recommended testing was for your --

21 MR. McCAFFREY: Yes.

22 MEMBER STETKAR: -- medium voltage cables.
23 But that -- are you going to apply that same testing
24 to any of the 480 volt cables?

25 MR. McCAFFREY: We're going to evaluate

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 and see how that works. The cables are different
2 style cables, the shielded cable versus nonshielded.
3 So that's going to get into some issues with how we
4 test their cables.

5 I don't know if I answered your question
6 completely. But there is --

7 MEMBER STETKAR: No, you didn't. I guess
8 my simple question is are you going to be doing more
9 in depth testing of the insulation on the 480 volt
10 cables?

11 MR. McCAFFREY: We're going to evaluate
12 how to use -- right now EPRI is really focused more on
13 the medium voltage and the shielded.

14 MEMBER STETKAR: I know that, and I'm
15 trying to find out whether you're drawing the line at
16 the six cables, 6.9 Kv and above or extending it down
17 below?

18 MR. McCAFFREY: Well, I think the best way
19 right now is right now, yes, we're going to see how it
20 works on the 6.9 and the higher voltage and see if we
21 can apply it to the lower voltage. But I can't say
22 it's going to work perfectly as a trendable tool on
23 the lower voltage cables.

24 CHAIR MAYNARD: I really don't want to get
25 too much there. I think we're really talking more on

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the current license regime right now. I want to stick
2 to what's it mean for license renewal. And I think
3 understanding what you have in scope that is
4 potentially subjected to this is important.

5 MEMBER STETKAR: Well my question is key
6 of that because there's a grey area between 480 volt
7 and higher voltage cables right now. And because all
8 of their safety-related equipment at this plant
9 happens to be 480 volt, that grey area becomes
10 relatively more important at this plant for license
11 renewal than other plants that have 4 kV pumps.
12 That's the only reason I'm interested in that.

13 MR. McCAFFREY: Right. And we do it for
14 the safeguard, the 480 volt motors, we do Megger
15 testing, we do online motor testing from the
16 switchgear to the motor. So we test the whole cable
17 of motor cables from the switchgear to the motor
18 itself. And we use that to trend what's going on and
19 pick up if we have any dead areas in the cables we'll
20 pick it up and address it there.

21 And I was kind of hedging my words about
22 the new technologies. I do not know how it's going to
23 work on the lower voltage cables.

24 MEMBER STETKAR: Yes, that's right.

25 MR. McCAFFREY: And what we do right now

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 as part of our current preventative maintenance
2 program for our safeguards and 400 volt equipment, we
3 test it, we measure it, we use like a Baker testing or
4 PBMA technology to trend our commission of cables and
5 orders.

6 MEMBER STETKAR: Thanks.

7 MEMBER SIEBER: Well, I agree with Otto
8 that it's not a license renewal issue. It's a current
9 issue. And it's one that needs to be addressed. And
10 whatever the resolution in the current time frame it
11 will extend to the period of extended operation.

12 MEMBER BROWN: Yes. The inspection report
13 that was issued, the staff noted that I guess one of
14 the manholes with the 6.9 kV cables and the splices
15 were submerged.

16 MEMBER SIEBER: Yes. They had water.

17 MEMBER BROWN: And the assessment was that
18 the cable and the splices were satisfactory but there
19 was no basis for saying hey how did we assess that.
20 Was it just a visual, did you run some electrical
21 tests, was it -- they just look nice and pristine, you
22 just brushed the water off and a little bit of the
23 dirt that's accumulated and --

24 MR. McCaffrey: Basically what has been
25 done is a visual inspection. There is no -- you know,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 as you know, a high pod or a Megger test at that
2 level, it's a destructive test and there's really no
3 good technology to say, hey --

4 MEMBER BROWN: Well, high pod is
5 destructive. A Megger test is not necessarily
6 destructive.

7 MR. McCAFFREY: But a Megger is not
8 necessarily looking at a 1300 volt or, you know, even
9 a 6900 volt level, which is really a 15 volt cable.
10 It's going to pick up a degradation of the insulation
11 that you'd get from water intrusion that -- you know,
12 with the degradation of the insulation.

13 There's new technology with a partial
14 discharge and 10 delta are really going to help you
15 understand if you have that insulation breakdown,
16 which a Megger, you know unless you have a short round
17 with that cable voltage, of the voltage class of
18 insulation you're not going to be able to detect that.

19 MEMBER BROWN: Well, I'll preserve my
20 judgement on it.

21 MR. McCAFFREY: Okay.

22 MEMBER BROWN: Megger is not as bad as you
23 say.

24 MEMBER STETKAR: Let me ask you, this is
25 Otto starring me so I'll make sure that this is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 license renewal. It's somewhat related to existing,
2 though I can't really -- right now the commitment for
3 the license renewal program says that you're going to
4 inspect the manholes for water accumulation once every
5 two years, I believe, is the commitment for the
6 license renewal.

7 MR. McCAFFREY: Right.

8 MEMBER STETKAR: Don't you currently
9 inspect them once every quarter?

10 MR. McCAFFREY: Yes. And that's really
11 more of a --

12 MEMBER STETKAR: And you say you're going
13 to use plant experience as the basis for your license
14 renewal inspection frequency. So I'm curious about
15 why you inspect them every quarter now which must be
16 driven by some plant experience.

17 MR. McCAFFREY: The quarterly inspections
18 is the really the root water. We do not do the
19 complete visual inspection, get down there and go out
20 there and inspect all of the supports and the back
21 arms for the cables. It's not the full 100 percent
22 inspection. That's what the two year inspection will
23 include when we do the entire visual inspection along
24 with pumping down the manholes, which we do quarterly.

25 MEMBER STETKAR: So the current is just a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 quarterly open up the manhole and pump it down. Okay.

2 Thanks.

3 MR. DACIMO: It just appears with us to
4 be, well it is, good operating practice if the manhole
5 is strong.

6 CHAIR MAYNARD: And I agree. I think this
7 is going to, again, be resolved as part of the current
8 licensing issue. First, I don't find once every two
9 years and these manholes being useful for much at all.
10 I mean, if you find water, you pump it down. I don't
11 know. But anyway, I think it's going to be dealt with
12 in the current licensing --

13 MEMBER STETKAR: I was more concerned
14 about how they're using current -- you know, use
15 operating experience to be into a new license renewal,
16 you know, inspection frequencies and things like that.

17 CHAIR MAYNARD: I wanted to discuss this a
18 little bit because I know it's going to come up later
19 and we might as well discuss some of it while you were
20 here in front of us here to talk about it.

21 Fred, I believe that you had some answer
22 to some of the previous.

23 MR. DACIMO: Yes. We want to bring up
24 three issues. One, address the issue on the type of
25 chemistry we were doing. Second, the spent fuel pool.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 And third there's a question about the use of hafnium.

2 We do use hafnium on Unit 3, okay. And have been
3 since '95. Okay. So that addresses that.

4 And I've asked Don Mayer to come up on the
5 -- John Curry? Okay. John is our Project Manager for
6 License Renewal.

7 MR. CURRY: There was a question that you
8 had asked, Mr. Sieber, on the type of chemistry
9 control that we used. Right now both plants use the
10 volatile chemistry treatment, AVT.

11 MEMBER SIEBER: Right.

12 MR. CURRY: Unit 2 had started out its
13 life with phosphate control. And that was taken out
14 during hot functional testing or right after. They
15 both went commercial with AVT and we use ethanol,
16 adamine and hydrozine are the additions.

17 MEMBER SIEBER: Okay. Okay.

18 MR. CURRY: And in addition to that your
19 question on the moler control. We maintain a very
20 high pH, 9.6. And so with that high pH, and as Mr.
21 Dacimo had mentioned earlier, we have a new factor
22 factory. So we have very good water that's added, and
23 that's so between the good water and the pH control,
24 the corrosion products are kept up.

25 MEMBER SIEBER: You probably haven't had

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 much of an insult from your early use of TSP?

2 MR. CURRY: No, and actually --

3 MR. DACIMO: We've got new steam
4 generators.

5 MR. CURRY: -- we have new steam
6 generators.

7 MEMBER SIEBER: Well, good luck on your
8 current steam generators.

9 (Several speaking simultaneously.)

10 MEMBER SHACK: -- corrosion of the --

11 MR. CURRY: Yes.

12 MEMBER SHACK: So you have no cooper
13 anywhere in the system?

14 MR. CURRY: Very low corrosion rates in
15 the secondary plant, that's correct.

16 MEMBER BANERJEE: I have a general
17 question, Otto, if I may ask them. I don't know if
18 it's within the scope of the review or not.

19 There's always been concern in this area
20 about warm water going into the Hudson and there's
21 lots of discussion about this. Now what is the long
22 term implication, say, 20 years more operation? Is
23 this going to have some deleterious effect or any
24 effect that can be identified which is different?

25 MR. DACIMO: You mean as it relates to the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 environmental impact statement and with the
2 environment?

3 MEMBER BANERJEE: Yes. I'm just asking as
4 a general interest. It is out of scope, probably.

5 CHAIR MAYNARD: This is truly out of scope
6 for this review. The environmental report is included
7 as an attachment. It has its own process that that
8 goes through.

9 MEMBER BANERJEE: It doesn't come to us?

10 CHAIR MAYNARD: We get a copy of it. But
11 there's a process for handling the --

12 MEMBER BANERJEE: But we don't have to
13 comment on it?

14 CHAIR MAYNARD: Right. Okay.

15 MEMBER BANERJEE: Well, then it's out of
16 scope.

17 MR. DACIMO: I will say the fishing has
18 never been better of the Point.

19 CHAIR MAYNARD: They do have to answer
20 that question and I know that there were several
21 public meeting and the staff. But that is a separate
22 process for that.

23 MR. DACIMO: We have one more issue on the
24 spent fuel pool I'd like Mr. Mayer address.

25 MR. MAYER: Hello again. Don Mayer.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Fred had asked to me just provide a couple
2 of additional comments and clarify a couple of things.

3 First of all, I'd like to just make it a
4 little clearer that the data that we have in front of
5 us right now indicates that the Unit 2 spent fuel pool
6 is not leaking. I did discuss that during the course
7 of the meeting, but Fred just wanted me to make that a
8 little clearer.

9 The pool concentrations downstream, et
10 cetera, are indicative of no active leak. We continue
11 to monitor that as part of our quarterly monitoring
12 process.

13 And the second part of what I was asked to
14 comment on is I mentioned the long term monitoring
15 program. A key, and in fact one of the principle
16 components of that program is to act as an indicator
17 of a potential new leak. And in fact, we believe the
18 sensitivity for leak detection at the Unit 2 pool in
19 particular is quite good. We have welds that are very
20 close to the pool, in fact several feet from it. So we
21 do have the capability to detect new potential leakage
22 should it occur.

23 Thank you.

24 MR. DACIMO: And just by way of background
25 information, Unit 3 pool has a coffer dam system

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 around it.

2 CHAIR MAYNARD: Okay. Fred, did you have
3 anything else?

4 MR. DACIMO: That really completes our
5 prepared statement.

6 CHAIR MAYNARD: All right. Appreciate your
7 time. And obviously stick around because as we hear
8 from the staff, we may be asking you some more
9 questions and stuff.

10 At the end of the day we will go around
11 the room and identify what we believe the members are
12 going to need more information on, especially at the
13 next meeting. And I know that some of these
14 containment issues and the cavity leak and the stuff,
15 there are some important issues that we're going to
16 need to dig into much further. We'll kind of go
17 around the room at the end of the day and identify for
18 our next meeting those things.

19 MEMBER ARMIJO: Yes. Otto, some of us are
20 going to have to be in another meeting. Could we
21 bring up some issues now?

22 MR. DACIMO: If you want, I might suggest
23 I can just go through the list of things that I have.

24 CHAIR MAYNARD: No, we'll go around the
25 room.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. DACIMO: Okay.

2 MEMBER SIEBER: Yes. Let me ask how many
3 people are going to the PTS meeting?

4 MEMBER BANERJEE: In and out, I would say.

5 MEMBER SIEBER: Yes, I'm going.

6 CHAIR MAYNARD: Bill and Jack.

7 We do have a few minutes here. So since
8 you're not going to be here this afternoon, you'll be
9 in the PTS meeting. So say some things right now you
10 want.

11 MEMBER ARMIJO: Yes. When we were talking
12 about this buckling of this liner, the only thing I
13 didn't hear enough on is how you concluded that there
14 was no significant damage to the concrete behind that
15 liner when that event occurred? And I'd just like to
16 hear a little bit more it later.

17 MR. DACIMO: Okay.

18 CHAIR MAYNARD: Okay. Jack?

19 MEMBER SIEBER: Well, I made a list of
20 questions before I got here. And I think they've been
21 satisfactorily answered. On the other hand, there's a
22 lot of open items and more than I've seen in recent
23 times. And my final opinion was on how you closed the
24 open items that you have and how the staff decides
25 that your responses acceptable. But right now I don't

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 find anything on the material in the license renewal
2 application or the safety evaluation that would
3 preclude at this time, pending resolution of these
4 outstanding items, my acceptance of the LRA.

5 CHAIR MAYNARD: Bill, did you have
6 anything you want --

7 MEMBER SHACK: No issues we haven't
8 discussed.

9 CHAIR MAYNARD: Okay. And again, at this
10 point the key is more in what do we want to make sure
11 that we address later. Because we can all have our
12 individual opinions right now, but it doesn't really
13 mean anything until the full Committee meets until we
14 see how the NRC actually resolves some of these
15 things. And there are several of these items that are
16 going to get discussed, but I'd like to get it
17 narrowed down to key items of interest for us. And we
18 will do that. Either at the end of the day, we'll go
19 around on it afterwards. But we'll also have some
20 things for the staff that we will be providing to
21 them, too.

22 So with that I'd like to go ahead and take
23 lunch break. We'll be back at 1:00. And at that time
24 we'll start with the staff's presentation.

25 So thank you.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 (Whereupon, at 11:51 a.m. the meeting was
2 adjourned, to reconvene this same day at 12:59 p.m.)
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

12:59 p.m.

CHAIR MAYNARD: Okay. Like to bring the meeting back into session. And we'll start with the staff's presentation. I'll turn it to Brian Holian.

MR. HOLIAN: Good. Good afternoon. I just had a couple of items before I turn it over to Kim Green, the Project Manager. A couple from this morning and one I forgot.

One, I'd like to remind the staff is they support the Project Manager and the region up there to identify yourself to go to the microphone.

There are a couple of introductions I also wanted to make. Also up at the front table you'll see Maurice Health. He's previously been the Project Manager for Sharon Harris and has Duane Arnold, which is later on in the cue. But he's up assisting Kim with slides.

One other introduction. Often times license renewal has contractors that work with us as part of the SER process and the audit process. Sometimes I don't acknowledge them. But today I wanted to acknowledge Brookhaven National Lab worked on the Indian Point application with this. And Rich Morante, Mr. Rich Morante is with us today also. And

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 he was also responsible looking back at the operating
2 experience with our staff, in particular on the
3 concrete items that you heard discussed this morning.

4 Two other items I wanted to just touch on.
5 A lot of it came up on one question this morning about
6 environmental reviews in particular. And I did want
7 to mention really that side of the staff that's also
8 working on Indian Point on our environmental reviews,
9 that is a separate process and goes through the draft
10 SEIS. And then the final SEIS. And just to remind
11 the Committee that we did issue the draft SEIS a few
12 months ago and held a couple of public meetings up in
13 the Indian Point area in February. And those were
14 widely attended. So over 300 people at each of those
15 meetings, the daytime meeting and the evening meeting.
16 And covered a wide variety of potential impacts that
17 were disclosed in the environmental impact statement.

18 And the staff, you know, got a lot of
19 interest on the environmental aspects up there. I
20 think a normal plant on a scoping process we get 300
21 comments on environmental scoping. On Indian Point
22 the staff received over 3700 comments. And now the
23 draft SEIS is out and that comment period, I believe,
24 ends in March time frame. So we'll be responding to
25 those comments and that'll be a separate track.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 The last item I wanted to mention came up
2 a little bit this morning, and I'm sure we'll cover it
3 again, is the groundwater monitoring that's ongoing on
4 the site. And one item that I wanted to mention
5 there, as the utility I think covered very well, I
6 wanted to mention an inspection report that was sent
7 out, and I'll get to the ACRS Committee, in May of
8 2008 from Region I. We did not bring that part if the
9 Division of Reactor Safety with us today, but the
10 inspection report speaks well to the issues of
11 groundwater and monitoring for what they've done in
12 the last year, year and a half. The accession number,
13 just to read it into the record, is ML081340425.

14 And the region did conclude in the
15 inspection report that public health safety has not
16 been nor likely will be adversely effected. And they
17 went into the split sampling that gets done between
18 the NRC and the utility. So I wanted to mention that.

19 With that, I'll turn it over to -- oh, one
20 other item on that. In the reactor oversight process
21 we have had an open deviation, which is in the reactor
22 oversight process one method that we could use to add
23 inspection resources to a plant. And Indian Point has
24 had, you know an open deviation memo for a couple of
25 items, but in particular this groundwater monitoring

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 has been one. I think the siren system was another one
2 that did receive additional inspection resources up
3 and above what we normally do under the ROP.

4 That's it. With that, I'll turn it over
5 Kim Green.

6 MS. GREEN: Good afternoon. As Brian
7 mentioned, my name is Kim Green and I am the Safety PM
8 for the Indian Point license renewal application. And
9 as you've already met Brian, he's the Division
10 Director for License Renewal, he's joining me. As
11 well as Dave Wrona, who is my branch chief. And also
12 in the audience I'm joined by members of the technical
13 staff who participated in the review or in the audits
14 that took place at the applicant's facility.

15 I'll begin my presentation by providing an
16 overview of the license renewal application.

17 Next I'll discuss the staff's review as
18 its documented in Section 2 of the Safety Evaluation
19 Report.

20 And then Mr. Glenn Meyer, who was the lead
21 renewal inspection team leader, will discuss the
22 license renewal inspection and what took place in the
23 findings of that inspection.

24 And then I will come back and discuss the
25 staff's review as documented in Sections 3 and 4 of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the Safety Evaluation Report.

2 And lastly, I'll go over the open items.
3 Mainly I was going to focus on the seven open items
4 that are still under staff review, but I do have in my
5 slides the open items that the staff has information
6 for which they feel they can close the open items. And
7 I will discuss those as you see fit.

8 The license renewal application was
9 submitted by the applicant by letter, dated April 23,
10 2007. As they've mentioned, they are both Westinghouse
11 4-loop power pressurized water reactors. They're each
12 rated at 3216 megawatts thermals and they have an
13 electric output of about 1080 megawatts each.

14 And they have already mentioned that the
15 operating license for Unit 2 expires at midnight on
16 September 28, 2013 and for Unit 3 it expires on
17 December 12, 2015.

18 As they already mentioned, the plant is
19 located about 25 miles north of the North York City
20 limits.

21 On January 15, 2009 the staff issued its
22 Safety Evaluation Report. In that report we identified
23 20 items. The staff issued 121 requests for
24 additional information. And during the audits we asked
25 272 audit questions. The applicant docketed its

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 responses to those questions in letters dated December
2 18, 2007 and in March 24, 2008.

3 The applicant made a total of 38 license
4 renewal commitments. And the number of RAIs that we
5 asked in the audit questions and the commitments is
6 fairly typical of a plant going through license
7 renewal.

8 This next slide just enumerates the audits
9 and regional inspections that occurred during the
10 course of the review.

11 As previously mentioned, the SER was
12 issued with 20 open items. At the time of the issuance
13 the staff requested additional information by formal
14 letter, dated December 30, 2008. So it was pretty
15 present. Or we actually requested additional
16 information within the SER itself for some of the open
17 items.

18 For the remaining six open items that we
19 did not request additional information, the staff at
20 the time was still reviewing information we had from
21 the applicant. Some of that was submitted in early
22 November of 2008.

23 I just wanted to point out that last week
24 the staff did issue a draft request for additional
25 information on five of the open items. And we've had

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 a phone call with the applicant on those. And as soon
2 as the staff looks at a few things, we'll finalize
3 those RAIs and issue those formally to the applicant
4 so they can respond.

5 By letter dated January 27, 2009 the
6 applicant submitted additional information for 14 of
7 the open items. The staff has reviewed that
8 information and based on the information contained in
9 that letter we feel that we will be able to close 13
10 of the 14 open items. And as I proceed through this
11 presentation I'll note the status of the open items.

12 Section 2.1 of the SER documents the
13 staff's review of the applicant's scoping and
14 screening methodology. Based on its audit and review
15 the staff was able to conclude that the applicant's
16 methodology is consistent with the requirements of 10
17 CFR 54.4 and 10 CFR 54.21(a)(1).

18 Section 2.2 of the SER documents the
19 staff's review of the applicant's plant-level scoping
20 results. The staff determined that the applicant
21 initially omitted the IP2 chlorination and the IP3
22 hydrogen systems from the scope of license renewal.
23 Therefore, we issued a request for additional
24 information. And the applicant subsequently included
25 the IP2 chlorination and the IP3 hydrogen systems

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 within the scope of license renewal.

2 MEMBER STETKAR: Can I ask just a quick
3 one on that? I notice they did add the IP3 hydrogen
4 system. Is the IP2 hydrogen system included in the
5 scope? I couldn't find it, but it's a big document.

6 MS. GREEN: I don't know that off
7 the top of my head. But Stan Gardocki, who performed
8 the review might be able to answer that question.

9 MR. GARDOCKI: This is Stan Gardocki.

10 I think it was included, and we noticed
11 that it was included on a unit, and that's why we
12 asked the questions and we had them it include it on
13 the other one.

14 We were specifically looking at the
15 attached pipe into the BCT whether it was safety-
16 related --

17 MEMBER STETKAR: I understand.

18 MR. GARDOCKI: That's what brought our
19 attention to it. So I know if it wasn't included, it
20 would have brought it to my attention. So it was
21 brought up in IP3 that hydrogen was not -- it was in
22 the table of attached -- there's an attached that says
23 not in scope. So it was particularly called out
24 there.

25 MEMBER STETKAR: Right.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. GARDOCKI: But IP2 is included under
2 the gas systems. So under nitrogen and hydrogen it
3 was included in there.

4 MEMBER STETKAR: Perhaps.

5 MR. GARDOCKI: Yes.

6 MEMBER STETKAR: The big discussion on IP2
7 is intended to focus on nitrogen. There was a lot of
8 discussion about nitrogen. And hydrogen was just
9 mentioned as another gas system.

10 Anyway, could you confirm whether it's
11 included?

12 MR. GARDOCKI: Yes.

13 MEMBER STETKAR: Thanks.

14 MS. GREEN: So the applicant, like they
15 said, they included these two systems within the scope
16 of license renewal. And with these inclusions the
17 staff concluded that the applicant did identify the
18 systems and structures within the scope of license
19 renewal in accordance with 10 CFR 54.4(a).

20 Section 2.3 of the SER documents the
21 staff's review of the applicant's scoping and
22 screening results for mechanical systems. In the
23 license renewal application the applicant identified
24 59 mechanical systems within the scope of license
25 renewal for IP2 and 87 for IP3. And I think the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 applicant explained adequately this morning why the
2 difference exist in the number of systems. And as they
3 explained, they were basically owned by two different
4 utilities for numerous years. And that resulted in how
5 they named and identified their system boundaries. And
6 so that resulted in a difference of the number of
7 systems identified.

8 For the balance of plant systems, those
9 being the auxiliary and steam and power conversion
10 systems, the staff employed a two tier approach.

11 For the tier 1 systems the staff reviews
12 the application and the UFSAR if there is a discussion
13 of the UFSAR for that system.

14 For the tier 2 systems the staff reviews
15 the application, the UFSAR and the license renewal
16 drawings that are provided by the applicant.

17 The staff did perform a 100 percent review
18 of the mechanical systems identified by the applicant
19 as within the scope of license renewal.

20 The staff identified the omissions of some
21 nonsafety-related components from the scope of the IP2
22 containment spray system. Since staff requested the
23 applicant to do an extended condition review and as a
24 result the applicant identified three other systems
25 whereby nonsafety-related components were omitted from

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 the scope of license renewal. These are the IP2 and
2 IP3 closed cooling water systems and the IP3 folding
3 vent sampling system.

4 The applicant amended the application and
5 added the nonsafety-related components to the scope of
6 license renewal in accordance with 10 CFR 54.4(a)(2).

7 Section 2.3 of the SER staff identified
8 three open items. At this point I should point out
9 that the A in the numbering scheme identifies an issue
10 particular to Unit 2 and a B would identify an issue
11 particular to Unit 3.

12 So for the first open item 2.3A.3.11.1
13 that was the open item that questioned the aging
14 management review results for the yard hose houses and
15 chamber housings. And the applicant covered that.

16 Do you have any --

17 CHAIR MAYNARD: You say that's only for 2.
18 Am I missing something? Why wasn't that applicable
19 to 3 also, just the same question?

20 MS. GREEN: Well, I think at the time we
21 asked the question, the applicant had mentioned --
22 when the staff reviewed the license renewal
23 application we were under the impression that for
24 these particular components they were within the scope
25 of license renewal. Because the applicant scopes at a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 system level. So if they identify that a system meets
2 one of the intended functions in 54.4, they will put
3 the entire system. They'll say the entire system is
4 in scope. But then when they do an aging management
5 review they determine which portions of the system
6 actually support an intended function and need to be
7 subject to an aging management review.

8 And so when the staff asked the question
9 we asked it only of Unit 2, I think. And they
10 identified these as being within the scope of license
11 renewal. And since they are passive and long-lived
12 components, if they're in scope we would expect them
13 to be subject to an aging management review. But
14 after they provided information in the letter dated
15 January 27th they indicated that they're not in scope.
16 They don't meet any of the intended functions.
17 Therefore, they wouldn't be in scope. So that
18 clarified that for us.

19 But I don't think we asked that particular
20 question for Unit 3. But if I wanted to know for sure,
21 I'd have to ask Naeem Iqbal to come to the mic and to
22 answer your question.

23 CHAIR MAYNARD: Okay. We should ask,
24 because it sounds reasonable but there are some other
25 differences between 2 and 3. So is the same

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 conclusion for 2 applicable to 3 in this case?

2 MS. GREEN: I'll let Naeem answer.

3 MR. IQBAL: Okay. We'll answer this
4 question. Naeem Iqbal from NRR.

5 Yes, we asked this question. I asked this
6 question specifically because in their application
7 they specify for the Unit 2. So we asked this
8 question.

9 CHAIR MAYNARD: Okay. This question was
10 asked for IP2.

11 MR. IQBAL: Right.

12 CHAIR MAYNARD: Why wasn't it asked for
13 IP3?

14 MR. IQBAL: Because in the chapter 2 they
15 only identify for Unit 2. So that's why.

16 CHAIR MAYNARD: Okay. Why wasn't it
17 identified for 3 then? Why is 3 absent from this?

18 MR. IQBAL: Maybe they don't have that.
19 Those components. Because these plants are two
20 different plants. Different so maybe the plant
21 configuration may be a little different.

22 CHAIR MAYNARD: I understand that. And if
23 somebody said that 3 doesn't have them, that all of
24 them that are there are really associated with 2, then
25 that would answer it. But I haven't heard anybody say

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that. I've heard speculation, but I don't know --

2 MS. GREEN: We would have to get back to
3 you on that.

4 CHAIR MAYNARD: Okay.

5 MS. GREEN: The next open item is 2.3.4.2-
6 1. That questioned the exclusion of a certain
7 feedwater isolation valves, or the apparent exclusion.
8 We had asked the applicants to clarify if the valves
9 that we were questioning, the BFD5s at Unit 2. And I
10 think the BFD5s and BFD90s at Unit 3. They're
11 mentioned in the UFSAR as providing backup feedwater
12 isolation during main steamline break, I think. And
13 it wasn't clear. Because the applicant does not
14 highlight on their drawings the components that are in
15 scope for -- nonsafety-related components that were in
16 scope for (a)(2). So it's not always clear to the
17 staff whether the components are subject to aging
18 management review and if they're in scope.

19 So we asked and the applicant provided
20 information and clarified that the valves that we were
21 questioning are in fact in scope for the purposes of
22 54.4(a)(2). So with that information, we think we'll
23 be able to close this open item.

24 CHAIR MAYNARD: John?

25 MEMBER STETKAR: And I asked the applicant

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 this morning, I'm not sure I got a satisfactory
2 answer, could you explain to me why the BFD90 valves
3 are not mentioned at all for Unit 2, but they are in
4 scope for Unit 3 when they're precisely the same
5 valves performing precisely the same function?

6 MS. GREEN: We did ask that as part of our
7 RAI for the applicant to explain if the condition
8 exists for Unit 2. But Stan Gardocki was the
9 reviewer, so I'll have him answer your question.

10 MR. GARDOCKI: This is Stan Gardocki,
11 Balance of Plant Branch.

12 The BFD90s are motor operated valves that
13 close as a redundant isolation to the safety-related
14 fuel reg valves. So on one drawing on one drawing, on
15 the station drawing it shows an SI signal to those
16 valves. And it also shows on that valve drawing that
17 the signal going to the feedwater bypass valves. So
18 that's why I included two valves on one unit and just
19 the one valves on the other unit.

20 MEMBER STETKAR: Let me ask Entergy then.

21 On Unit 2 do the BFD90s, the feedwater bypass reg
22 valves, the small lines, do they receive an SI signal
23 to close also, the motor operated isolation valves on
24 Unit 2?

25 MR. DACIMO: Yes, they do.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER STETKAR: Thank you. Hence, my
2 question.

3 CHAIR MAYNARD: Identify yourself.

4 MR. DACIMO: Fred Dacimo, Vice President
5 License Renewal.

6 MEMBER STETKAR: Hence my question. The
7 DFD90 values on Unit 2 will also receive a safety
8 injection signal, then why didn't the staff question
9 their inclusion?

10 MR. GARDOCKI: We did, and that was part
11 of the RAI. We asked them similar to the other unit
12 should these also be effected on that unit. Not
13 questioning the licensing basis, but we asked them
14 under extended conditions in that RAI should they be
15 included. And basically what the staff is looking for
16 whether these valves should be included as an (a)(1)
17 component versus an (a)(2) component if they had a
18 specific related function. And they weren't included
19 on the drawings as within the boundary flags
20 identified as (a)(1) components. So our specific
21 question said should they have been included within
22 the boundary flags as a safety-related component
23 providing a safety-related function.

24 CHAIR MAYNARD: Well, I think John's
25 question is really about --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER STETKAR: I understood the question
2 about the drawings and whether things were
3 highlighted. My question is that on Unit 2 the normal
4 feed reg control valve, isolation valves, are designed
5 BFD5. And the feed reg bypass valve, isolation valves,
6 are designed BFD90. And that's the same designation
7 on Unit 3. The valves are designated the same.

8 You raised the question apparently on Unit
9 3 because you saw both sets of motor operated valves,
10 90s and the 5s, receiving a safety injection signal,
11 is that correct?

12 MR. GARDOCKI: Correct.

13 MEMBER STETKAR: And we just confirmed
14 that indeed both sets of valves on Unit 2 also receive
15 a safety injection signal, but the open item in all of
16 the questions that I see pertain only to the number 5
17 valves on Unit 2.

18 MR. GARDOCKI: And the reason why they
19 were specifically addressed to that was is it
20 specifically states in the UFSAR for one unit that
21 they are credited. And the other unit it specifically
22 states they are not credited for closing on low power
23 operations. That's why the bypass valves were not
24 included in the RAI.

25 So one unit -- they're similar units,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that's where our confusion was. So we asked that
2 under extended condition should they have been. But
3 their design basis document that we looked at, the
4 UFSAR specifically say in low power operations they
5 don't have to close the feedwater reg bypass valves.
6 So that's why we didn't ask specifically that valve
7 for (a)(1). It wasn't credited.

8 MEMBER STETKAR: For Unit 2 you didn't ask
9 it?

10 MR. GARDOCKI: Correct.

11 MEMBER STETKAR: You did ask it for Unit 3
12 because Unit 3 --

13 MR. GARDOCKI: Say in their UFSAR they do
14 credit. So there was a difference in their design
15 basis documents between the two units.

16 CHAIR MAYNARD: Well, I don't think we're
17 going to get an answer here.

18 MEMBER STETKAR: No.

19 CHAIR MAYNARD: I think it's something we
20 make a note of and we need more information on for the
21 next time we meet.

22 MEMBER STETKAR: No, that's fine. I just
23 wanted a clarification.

24 CHAIR MAYNARD: I think we need to have,
25 you know, why are they different. And I understand

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 that one may have a different licensing basis, but I
2 think we also need to understand why do they have a
3 different --

4 MEMBER STETKAR: That's one issue. I'm
5 just trying to find out some of the things that I was
6 concerned as I went through this is there are real
7 physical differences between the two units and there
8 are some differences that are more paper differences
9 between the two units. And I wanted to understand if
10 there are differences in the SER or the license
11 renewal application between the two units, what the
12 basis for those differences are. Real physical
13 differences are obvious.

14 MR. GARDOCKI: But the answer it came down
15 to was they were nonsafety-related valves and they can
16 use nonsafety-related valves as a redundant isolation.
17 So the question of whether they should have been
18 safety-related was dropped. So --

19 MEMBER STETKAR: Yes. And this issue has
20 come up on many license renewal applications. This is
21 not a new threshold issue for us at all. The question
22 is why the difference between Indian Point Unit 2 and
23 Indian Point Unit 3 for valves that are precisely the
24 same size performing precisely the same physical
25 function. I don't want to get into what's written in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 UFSAR. And valves that also need safety injection
2 signals.

3 MR. COX: This is Alan Cox.

4 Let me add one point of clarification. As
5 far as the LRA and licensing goes the valves are not
6 treated any differently. Again, their question was on
7 whether they should be classified as (a)(1). The
8 bottom line is they're both -- both unit the same
9 valves that we're talking about here are in scope and
10 subject to aging management review for (a)(2).

11 MEMBER STETKAR: (a)(2)? They are?

12 MR. COX: Yes.

13 MEMBER STETKAR: Okay. Good. Thanks.

14 CHAIR MAYNARD: Okay.

15 MEMBER STETKAR: That helps a lot. As
16 long as the staff agrees that none of them are under
17 scope for (a)(1), none of -- however many of them are,
18 eight, sixteen. As long as none of them are in scope
19 for (a)(1), then that's a valid conclusion. And if
20 you say all of them are in scope for (a)(2) regardless
21 of whether they're the 90s or 5s, that's good.

22 MR. COX: All right.

23 MEMBER STETKAR: Thanks.

24 MEMBER RAY: Mr. Chairman, as long as
25 we've got this here.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR MAYNARD: Sure.

2 MEMBER RAY: On the RAIs that are yet
3 going out do we understand how we will have the
4 benefit of the responses for our deliberations?

5 CHAIR MAYNARD: Yes, we will get copies of
6 those, anything that we want and that's responsive.

7 When we meet again, then all of those
8 should be resolved in some manner or not, and we will
9 have that to review ourselves and see if we agree or
10 disagree or have additional questions on them.

11 MEMBER RAY: I just wanted to be sure.

12 CHAIR MAYNARD: Yes.

13 MR. GARDOCKI: If I can follow up on your
14 earlier question with the hydrogen system, I did find
15 it in the LRA under Section 2.3.3.5 for Unit 2. It
16 describes the nitrogen system. And it not only
17 includes the nitrogen system, it includes the carbon
18 dioxide system and hydrogen.

19 MEMBER STETKAR: So it does include
20 hydrogen? Thanks.

21 MR. GARDOCKI: And it describes to the
22 VCT.

23 MEMBER STETKAR: Thank you.

24 MS. GREEN: Okay. The third item on this
25 slide is 2.3A.4.5-1, which is the IP2 aux feedwater

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 pump room fire event. Basically for that issue the
2 applicant provided information just describing the
3 systems that were needed to provide flow to the steam
4 generators during the one hour fire event. But the
5 staff didn't feel that it had enough information at
6 the time to make a determination that they had
7 provided adequate information for those components
8 that are subject to aging management review since
9 that's what's required by the rule.

10 So we asked the question and the applicant
11 did provide that information to us in a letter, dated
12 January 27, 2009. So with the information that they
13 provided they fulfilled the requirement of the rule
14 identifying those components that are subject to aging
15 management review. So we feel with that information we
16 can close out this open item.

17 In Section 2.4 of the SER the staff
18 concluded that there were no omissions of structures
19 or structural components from the scope of license
20 renewal in accordance with 10 CFR 54.4(a). And there
21 were no omissions from an aging management review in
22 accordance with 10 CFR 54.21(a)(1).

23 Section 2.5 of the SER document, the
24 staff's review of the scoping and screening results
25 for the electrical and instrumentation and control

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 system, the staff identified one open item in this
2 area which deals with the station blackout scoping.
3 That's open item 2.5-1. The staff is still evaluating
4 the applicant's scoping boundary for that. I will
5 cover that in a little more detail and we've heard a
6 little bit about it this morning from the applicant.

7 But with the exception of the station
8 blackouts open item, the staff concluded that there
9 were no omissions of electrical and instrumentation
10 and controls systems components from the scope of
11 license renewal. And there was no omissions from an
12 aging management review in accordance in 10 CFR
13 54.21(a)(1).

14 At the end of Chapter 2 our conclusion in
15 the SER was that the applicant's scoping and screening
16 methodology is consistent with the requirements of 10
17 CFR 54.4(a) and with the 10 CFR 54.21(a)(1).

18 And the staff also concluded that with the
19 exception of the open items there were no omissions
20 from the scope of license renewal. And there were no
21 omissions from the aging management review.

22 So at this time I'd like to turn the
23 presentation over to Glenn Meyer.

24 MR. MEYER: Good afternoon, Chairman
25 Maynard and ACRS members. I'd like to briefly discuss

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 the results of the regional inspection.

2 The inspection has basically two primary
3 objectives. We take a look at the scoping of nonsafety
4 systems structures and components to make sure that in
5 the field there is no potential interaction that could
6 effect the safety systems. And we also take a sample
7 of the aging management programs to look at what
8 exists on site in terms of program support, prior
9 history, plans to implement the programs.

10 There is a secondary objective wherein we
11 pick a few systems to look at the condition of the
12 system, to look at how the aging management programs
13 cover them and also the operating experience by the
14 system. And in this case we looked at auxiliary
15 feedwater on both units and we also looked at the Unit
16 2 station blackout diesel generator.

17 MEMBER STETKAR: Can I ask a question?
18 And this might not be relevant for you, but your
19 inspections tend to look at operating experience.

20 MR. MEYER: Yes.

21 MEMBER STETKAR: I had a general question.
22 We've had at least one other applicant that I can
23 think of who used a rather narrow interpretation of
24 NEI guidance related to operating experience, and in
25 particular they initially interpreted the NEI guidance

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 for the use of operating experience and the
2 documentation of that operating experience as being
3 relevant only to "existing programs" rather than new
4 programs.

5 Was that same distinction made here or are
6 you confident that the operating experience that you
7 looked at in your inspections and that's documented in
8 the application applies across the board both to new
9 programs and to existing programs? Because I'm
10 thinking of this other applicant who actually had to
11 go back in and finish up that experience for the new
12 programs because it is relevant.

13 MR. MEYER: Let me clarify. The previous
14 applicant, could that be Beaver Valley.

15 MEMBER STETKAR: I don't --

16 MR. MEYER: Okay. Was it a month ago that
17 you had the meeting?

18 MEMBER STETKAR: There's at least one
19 other applicant.

20 MR. MEYER: Okay. Well we had in Region
21 I, it turns out that Beaver Valley's application is
22 later, but the report was issued before Indian Point.
23 But it's become clear that on new programs this does
24 tend to be an across the board approach that they
25 take. That the GALL for new programs is based on

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 industry operating experience. And the applicants rely
2 on that and don't do an in depth look at their own
3 experience thinking that when the new program is
4 implemented prior to the period of extended operation,
5 at that point they'll review their own operating
6 experience.

7 So in my experience from recent
8 inspections Indian Point would tend to be similar to
9 the others where they don't pursue operating
10 experience for a new program and instead rely on the
11 industry experience that has been taken credit for in
12 the GALL report.

13 MEMBER STETKAR: But if I understand that,
14 let me make sure that I understand it. That what
15 you're saying is that they will consider their own
16 plant operating experience, but not until that program
17 is implemented?

18 MR. MEYER: You know, basically design
19 constructed and implemented, right. They have the
20 basics of the new program and their commitment to the
21 GALL exists now, but the operating experience part of
22 it will go into depth later.

23 So in fact, in the Beaver Valley case when
24 I inspected there and found that they were aware of
25 operating experience, would tend to say that they were

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 outside the industry, that they still felt that they
2 were going to deal with that later and had not really
3 dealt with the issue.

4 MEMBER STETKAR: But you were at least
5 aware of that operating experience; that's my point.
6 At this time are we aware of the --

7 MR. MEYER: It came out during the
8 inspection. Our issue was that even though they were
9 aware of it, it was cast iron pipes that were failing.

10 MEMBER STETKAR: Yes.

11 MR. MEYER: And even though they were
12 aware of it, they had not adjusted aging management
13 program to address that. They were still taking
14 credit for a one time inspection, which is to confirm
15 that the conditions are not --

16 MEMBER STETKAR: That's a specific concern
17 at Beaver Valley. But I think my point is that --

18 MR. MEYER: But I would say that their
19 approach would be consistent -- we should ask Entergy,
20 but I believe their new programs, there is a
21 distinction between existing programs and new
22 programs. And I believe their new programs are based
23 on the industry experience that's taken credit for the
24 GALL report. So --

25 CHAIR MAYNARD: Well, I think it would far

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 to ask Entergy. I think what you're asking is in
2 developing these new programs did they take any of
3 their own operating experience into account?

4 MEMBER STETKAR: That's correct. Making
5 commitments for the frequency of inspections or the
6 type of inspection or additional testing to be
7 performing those new programs?

8 MR. YOUNG: Yes. This is Garry Young.

9 In the operating experience review we
10 actually have two parts to it. One is to look at the
11 adequacy of the aging management program through
12 operating experience and the other is to look at aging
13 effects through operating experience.

14 So the first part, the part where we look
15 for aging effects we do look at all operating
16 experience to determine if we have aging effects that
17 are different or somehow beyond the scope of what's
18 already covered in the GALL report or 95-10 or other
19 industry guidance. So that operating experience we
20 look at everything.

21 The operating experience to look at the
22 effectiveness of an aging management program we do
23 focus primarily on existing programs. For example,
24 since the cable inspection program doesn't exist, then
25 there's no operating experience to show the adequacy

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 of that program other than what's already been
2 documented in the GALL report.

3 So, but we do have two parts to it. We
4 look at all operating experience on aging effects to
5 see if we captured all the aging effects and then
6 separately we look at the operating experience on the
7 adequacy of the program. And that is focused on
8 existing programs and not new programs that don't
9 exist.

10 CHAIR MAYNARD: I think what I understand
11 you said was that in developing the programs, the
12 frequency, the types of examinations that you may do,
13 you do consider all your operating experience that you
14 have available.

15 MR. YOUNG: Yes.

16 CHAIR MAYNARD: What you don't consider
17 for the new programs is the effectiveness of those
18 programs --

19 MR. YOUNG: Yes.

20 CHAIR MAYNARD: -- because you haven't had
21 anything to compare the effectiveness to.

22 MR. YOUNG: That's correct. So, yes,
23 there's two parts to the operating experience. And
24 that's right.

25 So, yes, if we --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER STETKAR: I see the rationale.
2 Yes. Thanks.

3 CHAIR MAYNARD: And I think the important
4 part is getting it factored into the initial --

5 MEMBER STETKAR: That's right. And my
6 primary concern was has that type of review been
7 performed and is it available for the staff to make a
8 conclusion that the elements of the programs that
9 you're committing to, you know, accurately account for
10 that experience.

11 MR. YOUNG: Yes. I think, I mean -- and
12 again, the example you gave where there was operating
13 experience that an aging effect that previously had
14 not been identified is requiring aging management and
15 therefore could be subject to one time inspection.
16 That is exactly the kind of experience we're looking
17 for to see if we can in fact credit that program.

18 MEMBER STETKAR: Thank you.

19 CHAIR MAYNARD: Go ahead.

20 MR. MEYER: I think we talked about two
21 the system that we looked at.

22 Turning to scoping. The inspection
23 concluded that Entergy's scoping of nonsafety system
24 structures and components was generally accurate and
25 their method acceptable. In our review we looked at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 both the structural and spatial interaction parts to
2 reach that conclusion.

3 I do want to note that during aging
4 management program we found two errors in scoping,
5 and I'll address those shortly.

6 So turning to aging management programs.
7 When looking at the service water integrity program
8 our inspector found that were components, specifically
9 baffles under the service water pumps, that were not
10 included in scope. Entergy agreed that it was
11 appropriate and concluded that the structural
12 monitoring program was the place to put that so the
13 license renewal application was amended to address
14 that their program documents are planned to be updated
15 to address that.

16 In a similar fashion when we looked at the
17 lubricating oil analysis program the reactor coolant
18 pumps have motors with heat exchangers for cooling.
19 Entergy was under the impression that the cooler when
20 the motors are refurbished are replaced. So as such,
21 they wouldn't need an aging management program. Our
22 inspectors found that wasn't accurate, that they were
23 actually refurbished and reused. And so they were
24 suitable for an aging management program. They agreed
25 to change the scope of that component in the license

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 renewal application.

2 We also had some concerns in the diesel
3 fuel monitoring program, specifically the Indian Point
4 3 fuel oil storage tanks. Our plan to have wall
5 thickness measurements, but the existing procedure and
6 acceptance criteria for that. So they changed the LRA
7 in that respect.

8 Also, Unit 2 has a fuel oil tank truck
9 that in an emergency would be used to transfer fuel.
10 And their procedure for doing that was deficient
11 regarding sampling, process and location. So they
12 adjusted their procedures and amended the application.

13 And also the Unit 2 security diesel
14 generator, the fuel tank for that had been omitted
15 from the program for diesel fuel oil. And they did add
16 that and amended the application.

17 In the water chemistry program there were
18 disparities regarding pH and glycol concentration
19 testing. And also including the security generator for
20 the sampling on those processes. They did amend the
21 application and planned to address the program.

22 In the metal enclosed bus inspection
23 program, their existing procedure didn't specify an
24 appropriate acceptance criteria regarding basically
25 the possibility for dirt and dirt to effect the bus.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 And so they did amend the application in that regard
2 and are addressing that in the procedures.

3 Next slide.

4 Also, the next two are new programs. In
5 the selective leaching program the application stated
6 there would be a selected set, but wasn't specific as
7 to how that set would be determined. And they agreed
8 that a 90 percent confidence that 90 percent of the
9 components did not have degradation, would be a
10 suitable sampling approach and amended the application
11 to include that.

12 In the non-EQ bolted cable connections
13 monitoring program there was a disparity between what
14 the application had and interim staff guidance
15 regarding methods to monitor the bolted connections.
16 And they agreed that they would make certain that the
17 final guidance would be what they met. And they
18 adjusted -- they amended the application to address
19 that.

20 Also during the inspection we addressed
21 the exposed rebar that you heard about this morning.
22 We looked at the records and their evaluations of the
23 existing conditions and felt that they were
24 appropriate, but their plans were to continue to
25 monitor it in a qualitative manner. And it was our

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 belief that to truly monitor and trend the condition
2 would involve some quantitative measures. And they
3 did subsequently provide Commitment 37 to describe
4 those additional quantitative inspections.

5 There were other issues that we did
6 address on site and didn't involve application
7 changes. One was operating experience on the metal-
8 enclosed bus program. It's an existing program. The
9 inspection determined that there was 2004 example
10 where a bus had been inoperable and yet their
11 operating experience review and program basis
12 documents didn't include that. And we felt it should
13 be part of the record, although it didn't
14 substantively change the metal-enclosed bus program.
15 And they agreed they would change their operating
16 experience review report to include that sample.

17 In the heat exchanger monitoring program
18 we did have the opportunity to look at instrument air
19 closed cooling heat exchanger that were open during
20 the inspection. And following up on that there was a
21 disparity between the units where one unit included
22 the instrument air closed cooling heat exchangers in
23 the program and the other did not. So they agreed that
24 they both should be in and would adjust the program to
25 do that.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 We looked in the electrical area Indian
2 Point Unit 2 has a material that they use for
3 electrical cable separation. It's not a fire
4 protection purpose. And one of our inspectors had
5 looked in that are previously and noted that transite,
6 a material that's specifically for this electrical
7 cable separation, hadn't been addressed in their aging
8 management review. They agreed that they had looked at
9 all the fire protection materials. And so they did
10 take a look at transite and concluded there were no
11 aging effects, but they would adjust their aging
12 management review documents to note that.

13 And lastly, there were in walking down
14 various systems in the plant, there were a few
15 isolated incidents where inspectors noted degraded
16 conditions. And in following up, found that they
17 hadn't yet been entered into the corrective action
18 system in the structural monitoring, boric acid
19 corrosion and fire protection areas. And Entergy
20 agreed that that was appropriate and they did put
21 these conditions into the corrective action program.

22 We did return after the main inspection to
23 do a few additional inspections. One was the Unit 2
24 station blackout diesel generator --

25 CHAIR MAYNARD: I'd like to ask Entergy,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Entergy's items, these condition reports for isolated
2 degradation entered into your corrective action
3 program, I'm sure you entered the condition. Did you
4 also enter or take a look at why these hadn't been
5 identified before or did you just put the condition in
6 and --

7 MR. MEYER: In fairness I should note that
8 in a lot of these program areas they do periodic
9 inspections. And we may have identified evidence of
10 boric acid that subsequent inspection would have
11 identified but, you know, it hadn't yet occurred. But
12 regardless --

13 CHAIR MAYNARD: I understand that. And
14 it's usually pretty obvious whether something has been
15 there a short time or a long time. And I'm just
16 wondering --

17 MR. DACIMO: But our corrective action
18 program requires you do that on a generic basis. Why
19 aren't your own people identifying some of these
20 issues? Right. And we looked at that.

21 CHAIR MAYNARD: Okay. Good.

22 MR. MEYER: We returned. The SBO diesel
23 generator was declared operational on April 30th, so
24 we returned following that both to look at the scoping
25 of this new system and also to review how the aging

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 management programs are going to address this new
2 system. And we felt that they had done an acceptable
3 job of including it within the application.

4 We did return to look at the electrical
5 cable vault or manhole as it's been described, to
6 observe that. And that is documented in the report.
7 And I think we've addressed the fact that there was
8 some water. Some splices were under water and they
9 drained that vault. So I think that's been discussed.

10 And lastly, we returned during the Unit 2
11 refueling outage because we did note that there had
12 some corrosion on a part of the containment liner. I
13 don't believe this is the same as the containment
14 liner problem that's had extension discussion. So
15 this one was accessible. We had inspectors return and
16 take a look at the conditions. Found them to be
17 similar to what was described in their documents and
18 it didn't seem to be a problem in that respect.

19 So based on our inspections we concluded
20 that scoping of nonsafety system structures and
21 components and the sampled aging management programs
22 are acceptable. And our inspection results support a
23 conclusion of reasonable assurance that aging effects
24 will be managed and intended functions maintained
25 during the period of extended operation.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 I'd also like to briefly address current
2 performance. Both units are in the licensee response
3 column of the action matrix. That's the lowest level
4 of regulatory oversight. As Brian mentioned, there
5 are what we refer to as deviation memos that permit us
6 to do more inspections in areas that are suitable for
7 more inspection. And that has been the alert
8 notification system and also the ground water issue.

9 Over the past 12 months all of the
10 findings that we've had, the inspection findings have
11 been green, the lowest level of safety significance.
12 And all the current performance indicators and over
13 the last 12 months are green and have been. And that
14 indicates that their performance is suitable.

15 That concludes my presentation. If there
16 are no questions, we'll --

17 CHAIR MAYNARD: It doesn't mean there
18 won't be some later.

19 MR. MEYER: I'll remember that.

20 CHAIR MAYNARD: John, you looked like you
21 were going to --

22 MEMBER STETKAR: No, I'll wait.

23 MS. GREEN: Okay. I'm going to start with
24 section 3 now. Section 3 of the Safety Evaluation
25 Report consists of the staff's review of the aging

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 management programs and aging management review
2 results. I won't go over each of the subsections. I'll
3 just touch on those and have an open item or item of
4 interest.

5 Section 3.0.3 contains the staff's review
6 of the applicant's aging management programs. In the
7 LRA the applicant identified 41 aging management
8 programs; 10 were identified as new programs, 31 were
9 identified as existing programs.

10 Fifteen of them were reported to be or
11 identified as consistent with the GALL report. And 10
12 were identified as consistent with the GALL report
13 with enhancements.

14 Eight were identified to have exceptions.
15 And eight were identified as plant specific programs.

16 So in this section of the SER the staff
17 identified eight open items. And by letter, dated
18 January 27, the applicant submitted additional
19 information that will enable the staff to close the
20 five open items that are listed here.

21 Would you like me to cover each one or do
22 you have any particulars? The applicant covered them
23 this morning.

24 CHAIR MAYNARD: I would just ask if any of
25 the members for these from the previous discussion

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 this morning have any questions for the staff right
2 now on these?

3 MEMBER RYAN: No.

4 CHAIR MAYNARD: We can go on then.

5 MS. GREEN: Okay. The following three
6 open items are still under review by the staff. And
7 I'm going to cover those in detail later toward the
8 end of the presentation.

9 Section 3.1 of the SER documents the
10 staff's review of the aging management review results
11 for the reactor vessel, internals and the reactor
12 coolant system. There were two open items identified
13 in this section of the SER. We've received
14 information from the applicant by a letter dated
15 January 27th. And we should be able to close these two
16 open items out.

17 Any questions on these two for the staff?

18 Okay.

19 Section 3.3 of the SER the staff's review
20 of the aging management review results for the
21 auxiliary systems is documented. There is one open
22 item in this section, and that's about the titanium
23 heat exchanger components. We've received the
24 information and the clarification we needed from the
25 applicant in the letter dated January 27th. So we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 should be able to close this particular item out.

2 Section 3.4 of the SER documents the
3 staff's review of the aging management review results
4 for the steam and power conversion systems. There was
5 one open item in this section, and that's the IP2 aux
6 feedwater pump room, the fire event. And I'm going to
7 cover this a little bit more later. Because this item
8 is still under review by the staff.

9 And Section 3.5 of the SER we document the
10 staff's review of the aging management review results
11 for the structures and the structural components.
12 There were three open items identified in this section
13 of the SER. Two of them are still under staff review,
14 and I'm going to address those later in the
15 presentation. The third open item was about the
16 concrete, the aging management program that would be
17 used to manage the effects of aging for the concrete
18 and surrounding B1 supports. The applicant clarified
19 which they are using, so we'll be able to close out
20 that open item.

21 Questions?

22 MEMBER STETKAR: I have a question about
23 under the structures. There was an RAI that was
24 raised regarding parts of the service water intake
25 structures, the bar racks and the screens and some of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 those things. Not necessarily the physical concrete
2 parts of the structure, but structural elements in the
3 intake structure.

4 And as I read the resolution of that RAI
5 it seemed to focus on Unit 3 specific line features.
6 As I understand it. Correct me if I'm wrong, if I
7 remember the plans correctly. Unit 3 has an intake
8 structure with the six normal service water pumps and
9 then it has a set of three backup service water pumps
10 to take suction from the discharge canal. But Unit
11 only has the single intake structure with the six
12 service water pumps with no backup pumps, is that
13 right?

14 MR. McCAFFREY: This is Tom McCaffrey from
15 Entergy.

16 That's correct for Unit 2. Unit 2 in
17 addition has a river water system which can supply
18 like a third operation for service water to the
19 station. It's a separate intake function from Unit 1.

20 MEMBER STETKAR: That might be the answer
21 to my question.

22 MR. McCAFFREY: Okay.

23 MEMBER STETKAR: Those river water pumps
24 are not located in the same intakes? Are they located
25 in the same intake structure?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. McCAFFREY: No, they're a separate
2 intake structure.

3 MEMBER STETKAR: Thanks. I'll stop.

4 MS. GREEN: Okay. Section 3.6 of the
5 Safety Evaluation Report documents the staff's review
6 of the aging management review results for the
7 electrical systems and instrument control system. In
8 the LRA the applicant identified a 138 kV high voltage
9 cable associated with station blackout as within the
10 scope of the license renewal and subject to aging
11 management review. However, the applicant stated that
12 at that time that there were no aging effects
13 requiring management. And that for the material
14 environment aging effect combination that neither the
15 component, being the cable, or the material or
16 environment were evaluated in the GALL report.

17 The applicant also stated at the time that
18 the cable was designed for continuous wetted
19 conditions.

20 So the staff questioned the applicant's
21 conclusion regarding that cable and issued a request
22 for additional information. Ultimately the applicant
23 amended the LRA and added that high voltage cable to
24 the scope of the periodic surveillance and preventive
25 maintenance program. And the staff found this solution

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 to be acceptable.

2 For Chapter 3 the staff concluded that
3 with the exception of the open items the applicant has
4 demonstrated that the aging effects will be adequately
5 managed during the period of extended operation in
6 accordance with 10 CFR 54.21(a)(3).

7 Section 4 of the SER documents the staff's
8 review of the applicant's time-limited aging analyses.
9 Again, I'm not going to go over each of the
10 subsections, but we'll touch on those that have open
11 items or matters of interest.

12 Section 4.2 of the SER we document the
13 staff's review of the applicant's reactor vessel
14 neutron embrittlement TLAAAs. It was mentioned earlier
15 today, for the IP2 the limiting beltline material is
16 lower shell Plate B2002-3. And since the irradiated
17 Charpy V notice upper shelf energy value is projected
18 to be less than the acceptance criteria of 50 foot-
19 pounds,, the applicant has provided an equivalent
20 margins analysis that demonstrates that the reactor
21 vessel will have margins of safety against fracture
22 equivalent to those required by Appendix G to Section
23 XI of the ASME code and will satisfy the requirements
24 of Section 4(a)(1)(a) of Appendix G to 10 CFR Part 50
25 through the end of the period of extended operation of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 Unit 2.

2 MEMBER BROWN: Can I ask a question on
3 that?

4 MS. GREEN: Sure.

5 MEMBER BROWN: The other document that we
6 had indicated that this 48.3 value was less than the
7 acceptance criteria of 50, Entergy presented that.
8 But they also noted that it was greater than the
9 Westinghouse Owners Group equivalent margin to -- I've
10 forgotten what the rest of the words were -- of 43.
11 And so I guess I've got a disconnect right now between
12 50 --

13 MS. GREEN: Okay.

14 MEMBER BROWN: -- which is the criterion,
15 54 which says, hey, you out to have margin to the 50
16 but the analyses are saying we don't need any margin
17 to the 50 and it's right up against. So they do
18 another analysis to some other criteria which is not
19 stated. What is this criteria and why is okay to be
20 greater than -- why is it -- let me phrase this
21 properly. Why is okay to be significantly above this
22 43 value which was previously understood to be the
23 margin that you ought to have.

24 MS. GREEN: Okay. Barry Elliot is just--

25 MR. ELLIOT: I couldn't hear the question.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 I'm sorry.

2 MEMBER BROWN: That's all right. I'm not
3 even sure it was clear.

4 Where are you?

5 MR. ELLIOT: I'm right here. I had see
6 you. I can't hear.

7 MEMBER BROWN: Okay. Well, that's all
8 right. I can't see without my glasses.

9 CHAIR MAYNARD: This is going to be an
10 interesting discussion.

11 MEMBER BROWN: Entergy presented when
12 they presented their paper they said the Westinghouse
13 Owners Group value for -- and I can get it back out,
14 the equivalent margin from the 50 was 43.

15 MR. ELLIOT: Right.

16 MEMBER BROWN: They were going to be at
17 49, whatever the number is in here. 48.3 at the end
18 of the extended period of operation, which was less
19 than 50.

20 MR. ELLIOT: Right.

21 MEMBER BROWN: And I guess my question
22 what good is 43 if that's where you're supposed to be
23 margin purposes, but yet it's okay to be up to the
24 acceptance criteria for 50.

25 MR. ELLIOT: Okay.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BROWN: And then Kim brought up
2 this other issue about well because they're up real
3 close, they do this other analysis for the code and
4 found that it met some criteria, but which she didn't
5 state.

6 MR. ELLIOT: Okay.

7 MEMBER BROWN: So I guess I just wanted to
8 understand why it's okay to be so close to the margin.

9 MR. ELLIOT: Okay.

10 MEMBER BROWN: Excuse me. Above whatever
11 the margin was we had before we'd eaten it all up or
12 close to it.

13 MR. ELLIOT: Okay. Okay. Let me explain
14 to you, first off, they're meeting the regulation and
15 why they're meeting the regulations.

16 My name is Barry Elliot.

17 I'm surprised. The only people I thought
18 would ask the question aren't here. But that's very
19 good. That's a very good question.

20 And let me just explain and give you a
21 little background on the regulation. The 50 foot-
22 pound criteria is established at if you're above that
23 energy level for the reactor vessel materials, we're
24 sure that you have adequate fracture toughness to
25 withstand events that we are concerned about, design

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 basis events.

2 So the purpose of the evaluation of upper
3 shelf is to determine whether or not you're below 50
4 foot-pounds.

5 MEMBER BROWN: Yes.

6 MR. ELLIOT: Once you demonstrate that
7 you're below 50 foot-pounds, which is what they have
8 demonstrated here, we have another part of the
9 regulations which says you have to reach Appendix G
10 criteria. The way that is satisfied is two ways.
11 There are two documents that we use to satisfy that
12 criteria.

13 One is Appendix K of the ASME code which
14 gives criteria and methodology by which you can
15 demonstrate that you have adequate fracture toughness.

16 MEMBER BROWN: Even though you're below
17 the 50 --

18 MR. ELLIOT: Even though you're below the
19 50 foot-pounds.

20 The second criteria is we have a
21 Regulatory Guide, which is Regulatory Guide 1.161
22 which gives guidance on how to use the ASME code.

23 Now what happened here is the licensee
24 evaluated their vessel to something that was done in
25 the '90s. It was 1993 or '94 document that the NRC

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 reviewed and it reviewed it to the documentation that
2 was appropriate at that time. So as part of this
3 review I requested that they update it to the current
4 regulations, which was the current ASME code and the
5 current Regulatory Guide. And it compared the two.

6 And the comparison determined that the
7 guidance in the past and the requirements in the past,
8 there was only difference. And that was the
9 equivalent margin analysis. There was one difference
10 and it was more conservative in the past than it is
11 today. So that they have demonstrated that they could
12 meet the guidance today. And the guidance today that
13 they meet would be applicable to 43 foot-pounds. And
14 as long as the vessel has more than 43 foot-pounds
15 they are meeting today's regulatory requirements.

16 MEMBER BROWN: Okay. So I guess there was
17 an industry accepted basis for saying we can make it
18 less conservative than it used to be?

19 MR. ELLIOT: Yes. Industry methodology,
20 the ASME code criteria, which we have endorsed. The
21 NRC has endorsed it.

22 MEMBER BROWN: I know that you have
23 endorsed that.

24 MR. ELLIOT: And now we've asked them to
25 update it, and they made the comparison. And they

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 meet those requirements today.

2 CHAIR MAYNARD: As I recall, it's not just
3 changing acceptance criteria. If you meet the 50,
4 then you don't have to do have to do anymore. If
5 you're below that, there's additional evaluation and
6 analysis that have to be done before you can take
7 advantage of the lower acceptance criteria.

8 MR. ELLIOT: Right. Yes. And that's what
9 they've done. They've done it through a generic
10 analysis and now they've demonstrated that the generic
11 analysis is applicable today. And they've also
12 demonstrated that it's applicable to their plant. And
13 that's the reason it's acceptable.

14 MEMBER BROWN: Okay. I think.

15 CHAIR MAYNARD: Go ahead.

16 MS. GREEN: So similarly at Indian Point 3
17 they have a limiting beltline material, and that's
18 shell Plate 2803-3. And again they provided since
19 their value is going to be less than the acceptance
20 criteria of 50 foot-pounds, they provided a margin now
21 that demonstrates that their reactor vessel will have
22 margins of safety against fracture toughness
23 equivalent to those required by the ASME code and also
24 by Section 4(a)(1)(a) of Appendix G to 10 CFR 50
25 through the period of extended operation.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER BROWN: Same --

2 MS. GREEN: Same answer.

3 MEMBER BROWN: Same answer, so I'm not
4 going to say anything on this one.

5 MS. GREEN: Ditto on that one.

6 At Indian Point 3 with regard to
7 pressurized thermal shock, the applicant calculated
8 the referenced temperature for PTSIU for the limiting
9 plate. That's the 2803-3 plate. In accordance with the
10 current PTS rule and position 2.1 of Regulatory Guide
11 1.199 Rev. 2. The staff requested that the applicant
12 estimate when the screening criterion would be
13 exceeded. And the applicant estimated that it would be
14 exceeded approximately nine years into the period of
15 extended operation. That's what they told us and
16 that's what they said this morning. So that would be
17 2024. And at that time --

18 MEMBER BROWN: Is it where? The reason I
19 ask that is that they said it would occur at 37
20 effective full power years. Somebody made that
21 statement this morning.

22 MS. GREEN: Yes.

23 MEMBER BROWN: Yes. And the extension was
24 38. When they go to 60 years they'll have 48
25 effective full power years, correct? Somebody else

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 made that statement. Correct me if I'm wrong. And
2 based on they said they would meet -- they would get
3 there -- no. They were going to their limit at 37
4 effective full power years. So I just did a ratio
5 roughly and said it would about 2021, 2024. So I'll
6 allow some error there.

7 So that means what do you have in place?
8 I mean, I just kind of look at this, okay, you're
9 going to get well ahead of you finishing your extended
10 period. And you have to figure out what you're going
11 to do or shut down. Do you wait until the eleventh
12 hour and fifty-ninth minute? This is kind of a--

13 MR. AZEVEDO: No, you don't.

14 MEMBER BROWN: -- theoretical question, I
15 guess.

16 And, Otto, if I'm stepping.

17 CHAIR MAYNARD: Well, you're not. We've
18 addressed this for a number of other plants, though.

19 MEMBER BROWN: Okay.

20 CHAIR MAYNARD: And we can have them
21 address it here or talk about it a little bit. But
22 the bottom line is you have to have a program in place
23 that identifies before they exceed any limits.

24 MEMBER BROWN: No, I understand that.

25 CHAIR MAYNARD: Before they meet that they

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 have to do something to either reduce it --

2 MEMBER BROWN: Do they reduce power to do
3 that to change that, is that what you mean?

4 CHAIR MAYNARD: Or if they can't, they
5 reach that point, they shut down.

6 The license renewal, getting a license for
7 operating an extended period of time does not give you
8 the right to violate any of the rules or regulations.

9 MEMBER BROWN: I understand.

10 CHAIR MAYNARD: So if you've reached that
11 point, you have to shut down. The applicant's not
12 required to have in place what they're going to do at
13 this point. They just have to have it done before
14 they--

15 MEMBER BROWN: Now is that by rule also?

16 CHAIR MAYNARD: Now let me have them go
17 ahead it here.

18 MEMBER BROWN: Okay. I don't want an
19 announcement. I mean, we go on I mean if that's the
20 case.

21 CHAIR MAYNARD: Well, let them go ahead.

22 MEMBER BROWN: All right.

23 MR. AZEVEDO: Yes. The short answer is, in
24 fact, and some of the other members of the ACRS in a
25 different meeting, the PTS rule is being changed. And

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

10 CFR 50.61 does provide an alternative way to demonstrate that we have the adequate fracture toughness. And if that gets approved, that will resolve our issue.

There are other things that we can do --

MEMBER BROWN: Is that analytic or a test basis? I'm not in that meeting, so --

MR. AZEVEDO: Well, it's different screening criteria that we would have to do different calculations to demonstrate that we meet the alternative requirements.

MEMBER BROWN: All right. That's enough. I won't beat that one to death anymore. I'll stop.

CHAIR MAYNARD: Well it is an important issue. But within the concept of license renewal we're looking at programs to be able to detect and identify and manage these --

MEMBER BROWN: Yes. And my past experience in our programs, this is a number we paid a lot of attention to. That's all.

CHAIR MAYNARD: Yes.

MEMBER BROWN: So I was just interested in the thought process as to where they were.

CHAIR MAYNARD: And there are discussions going on right now and other alternatives and stuff.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 But the bottom line is for license renewal we're
2 looking at what do they have in place -- the staff,
3 what do we have in place from a regulatory standpoint
4 to ensure that this issue either gets addressed before
5 any limits are exceeded. And if not, the plant shuts
6 down.

7 MEMBER BROWN: Okay.

8 CHAIR MAYNARD: Go ahead.

9 MS. GREEN: And because the applicant has
10 predicated that they'll exceed the PTS screening
11 criterion, it included Commitment 32 which states that
12 as required by 10 CFR 50.61 before IP 3 will submit a
13 plant specific safety analysis for Plate B-2903-3 to
14 the NRC three years prior to reaching the screening
15 criterion.

16 They also added in that commitment that
17 alternatively the site may choose to implement the
18 revised PTS rule when approved. Obviously if they
19 don't approve the rule, that goes away. But if they do
20 the staff just points out that the rule is -- the
21 revised rule is draft at this time.

22 MEMBER BROWN: And they've seen that, I
23 take it? They said that would solve their concerns,
24 is that correct? Okay. I thought I heard you say
25 that.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR MAYNARD: Yes, this has been worked
2 on for some time.

3 MEMBER BROWN: That's fine. No, I am
4 aware of that based on the last meeting we had on it.
5 I just didn't know how extensive it was.

6 MS. GREEN: Section 4.3 of the SER
7 document is the staff's review of the applicant's
8 metal fatigue analyses. Sixty year fatigue analyses
9 were performed for all NUREG/CR-6260 locations with
10 the exception of two locations at Indian Point 2 and
11 three locations at Indian Point 3. And that's because
12 Indian Point 2 and Indian Point 3 are ANSI B331.1
13 plants and therefore they do not have cumulative usage
14 factors for the these particular locations. But they
15 have made a commitment to manage aging under their
16 fatigue monitoring program for all new NUREG/CR-6260
17 locations in accordance with 10 CFR 54.21(c)(1)(iii).
18 And that's identified as license renewal Commitment
19 33.

20 There was one open item in this section.
21 There was open item 4.3-1. And the staff asked the
22 applicant to provide the actual number of heatup and
23 cool downs for IP3. In the LRA did not have that
24 information. I guess at the time they submitted the
25 application. Unfortunately at the time that I was

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 issuing the SER with open items I didn't realize that
2 they previously provided that information to us in
3 response to an audit question. And they pointed that
4 out kindly to me. And they also provided the
5 information again in a letter dated January 27th. So
6 now that we have information, it can be closed.

7 CHAIR MAYNARD: I'm surprised that you
8 didn't remember everything.

9 MS. GREEN: I know. It's a little
10 overwhelming after a while.

11 That should not have been. If I had
12 realized at the time, that would not have been
13 identified as an open item.

14 CHAIR MAYNARD: Better to have it this way
15 than to -- so that's fine.

16 MS. GREEN: Okay. Well, I'm going to try
17 to over the open items that are still under staff
18 review at this time. As I stated in the beginning,
19 the SER was issued with 20 open items. And since
20 before the issuance of the SER the staff has been
21 working with the applicant to obtain the information
22 that we need to complete our view.

23 So by letter dated December 30th, 2008 we
24 did issue a request for additional information for
25 nine of the open items. And in the SER we requested

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 additional information for five more of the open
2 items. That left six that were under the staff review
3 at the time.

4 We had information for some of them. I
5 think five if I recall in a letter that the applicant
6 sent to us in the beginning of November. And the time
7 we were issuing the SER, the staff hadn't completed
8 its review of that information. So we weren't able to
9 ask the applicant for additional information at that
10 time. So they had nothing to provide to us.

11 By letter dated January 27th the applicant
12 did submit additional information for the 14 open
13 items for which we requested additional information.
14 And based on our review of that information, the staff
15 has informed me that 13 of the open items can be
16 closed. We don't expect to ask for any additional at
17 this point in time. We feel we have enough information
18 to close 13 of those open items. And we informed the
19 applicant of that information.

20 So we still have seven open at this time.
21 And they're listed on this slide. And I'm going to
22 try to cover them, what the staff's thinking is the
23 these particular items. You heard from the applicant
24 what their view is. Now I'm going to try to cover the
25 staff's.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 So for station blackout, as you know it's
2 basically a generic issue that the staff has been
3 evaluating. At Indian Point -- when we were reviewing
4 their application the diagrams that they had in the
5 LRA did not identify two independent recovery paths.
6 So we asked them a question. And when they responded
7 to us, they revised the figures. But at the time they
8 revised the figures, they changed the boundary from a
9 circuit breaker to a motor operated disconnect, which
10 kind of threw us because the staff believes that the
11 boundary should end at a circuit breaker. That's what
12 our guidance suggests.

13 So then by letter dated March 24th the
14 applicant revised it's LRA response to end the
15 boundary at a circuit breaker. And then by the letter
16 dated August 14th, 2008 the applicant clarified that
17 the recovery paths did include the structural
18 foundations needed.

19 So the staff is still reviewing the
20 applicant's boundary and the information that we've
21 received. And at this time it's still an open item.
22 Okay.

23 CHAIR MAYNARD: Go ahead, John.

24 MEMBER STETKAR: I don't know if it's fair
25 to ask and you can say no it's not fair.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR MAYNARD: We don't have to be fair,
2 John.

3 MEMBER STETKAR: You can make a pretense.

4 Since this is not one of these kind of a
5 track, 13 or 14 that are well underway to being
6 resolved, could I ask what particular concerns the
7 staff still has related to the scope? I got confused
8 as I went through the timeline also. And when Entergy
9 showed me the drawing this morning that showed the
10 whole switchyards with the circuit breakers and
11 pathways highlighted, it seemed pretty
12 straightforward.

13 MS. GREEN: Right. I'm going to let my--

14 MEMBER STETKAR: I want to say I don't
15 want to say don't want to --

16 MR. HOLIAN: I take this.

17 MEMBER STETKAR: -- fairly straightforward
18 in terms of acceptance, at least I could clearly see
19 where the boundaries are.

20 MS. GREEN: Well, I'm going to let Brian--

21 MR. HOLIAN: Yes. This Brian Holian,
22 Division Director. And I'll cover this one.

23 And we also had a simplified drawing that
24 we were preparing also to try to make it a little more
25 clear, at least the area of disagreement. And I'll

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 cover it in a couple of sentences here.

2 One, you know, this station blackout issue
3 has been around for a couple of years, the generic
4 aspect of it. As much as different plants have feed
5 reg valve differences on whether that's in their COB
6 or not. At this point you're looking at how far out
7 does the plant boundary go for license renewal. And
8 that's what it really gets at. And the basis behind
9 some of the questions. And even how clear that is
10 from plant-to-plant on their COB is a question. So
11 it's an appropriate area for the regulatory and the
12 plant to be discussing in license renewal, and it has
13 been.

14 We do have existing guidance out there
15 now. And it's generally worded. It talks about the
16 path that's required. Typically includes the
17 switchyard circuit breakers. And so that's general
18 guidance. Typically is an issue for interpretation
19 from plant-to-plant. And I think as we look back at
20 the history it was written that way because it was to
21 be based on what they were licensed to, even as they
22 came in with their electrical diagrams on that. So
23 it's the first item I wanted to mention.

24 The second item we put out, the staff put
25 out, to try to clarify that existing guidance a year

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 ago, more detailed guidance that basically said, and
2 it's still in draft and it's out and it's been
3 commented on, that we'd like you to detail this a
4 little bit further to make it consistent across all
5 the plants. And you will take it out plants to
6 transmission system voltage. I'm paraphrasing, but
7 that's one of the items in the revised guidance. And
8 it gets it way into the switchyard.

9 And what you saw at Indian Point, Kim
10 described earlier an area where they beefed it up,
11 I'll say, to meet our first guidance, our existing
12 guidance. So they quickly -- just the existing
13 guidance. Typically where do you go and, as she
14 mentioned, pass the disconnects to a circuit breaker
15 that is typically met. So I think from the utility's
16 viewpoint they meet the existing guidance.

17 This transmission-system voltage what you
18 saw in their drawing was they have one line that comes
19 down from 138 kV, the second line that goes out it
20 stops at the 13.8, 6.9 transformer. That's still in
21 the switchyard, at the edge of the switchyard. Our
22 electrical staff would basically say take it out on
23 that second path, the redundant path, to the next
24 circuit breaker set that are still right there in the
25 switchyard.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 So that's the area of delta; how far out
2 do you go into the transmission.

3 A little criticism from the industry that,
4 hey, how far out do you want us to go, you know, the
5 next transformer pass that or not? So that's the area
6 of disagreement.

7 I will just touch on it now. We do have
8 guidance, and even NEI has weighed in on this in the
9 last year on the draft guidance, that even the station
10 blackout rule itself might not have been written to go
11 to that aspect of the rule. And staff, their
12 criticism of the staff, which I brought up to the
13 Subcommittee here during our general briefing on
14 license renewal issues a few months back, was that you
15 should go after this in clarifying the station
16 blackout rule vice an interim staff guidance in the
17 license renewal aspect. And that's a good criticism,
18 I think.

19 And the electrical branch might be
20 choosing to go at it that way to clarify the boundary
21 for the station blackout event vice, you know, a
22 plant-by-plant issue as we come into license renewal.

23 So to summarize, and this is still being
24 decided upon by the staff, but you might see us
25 retract from that proposed guidance that's out there

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 that says --

2 MEMBER STETKAR: The transmission voltage?

3 MR. HOLIAN: That transmission-system
4 voltage. And if that's so, it will clarify this open
5 item and it'll be closed. But that discussion is still
6 ongoing.

7 MEMBER STETKAR: Thanks. That helps me an
8 awful lot. Because I hadn't appreciated the subtly of
9 the transmission voltage criteria, let's say. Thanks.

10 MS. GREEN: Okay. The next open item that
11 you heard about earlier from the applicant about the
12 Indian Point 2 refueling cavity leakage. During the on
13 site audits the staff identified that IP2 refueling
14 cavity leaks when flooded during refueling operations.
15 And as the applicant mentioned, that usually lasts
16 about two weeks out of a 24 month refueling cycle.

17 The staff questioned the applicant about
18 what corrective actions have been taken to repair the
19 leak. And as you heard, the applicant's made several
20 attempts to repair the leaks, but they haven't proven
21 successful yet.

22 And the applicant mentioned that it has an
23 action plan to permanently remedy the issue. But when
24 they told us about it, they did not make it a license
25 renewal commitment.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 And as they also mentioned, they had
2 previously taken bore samples in the region of the
3 leak to determine the extent, if any, of degradation
4 to the concrete. And as they also mentioned, the
5 sample showed that none has yet occurred.

6 So the staff asked the applicant what they
7 had planed to do for the period of extended operation.
8 And the applicant committed to perform a one time
9 inspection in this region. I think they plan to take
10 another bore sample in the region to confirm the
11 absence of concrete and rebar degradation. And that
12 was provided as license renewal Commitment 36.

13 And as I mentioned earlier, last week we
14 sent them a draft request for additional information
15 to seek information on their plans to monitor
16 degradation in this region during the period of
17 extended operation.

18 I can add a little bit more to this. The
19 information that they gave us for their permanent fix
20 I think is going to take three refueling outages,
21 which would be after their current license expires.
22 If a renewed licensed were to be issued, they wouldn't
23 know whether or not the permanent fix that they might
24 implement would be successful. And so not knowing
25 that, the staff has just simply asked what do you plan

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 to do to monitor it during the period of extended
2 operation to confirm that no degradation is occurring.

3 So that's where the staff is at this point.

4 CHAIR MAYNARD: Well, I think we talked
5 about this one a lot with the applicant. And this was
6 the one that for me I'm having probably the biggest
7 struggle getting my arms around it as to what the
8 overall confidence level in, you know what degradation
9 if any has been done. You know the overall safety
10 significance of this. And I don't know, for me it's
11 probably not worth talking about it anymore at this
12 point. But I know the next meeting for me we're going
13 to have more discussion and I need to see some more
14 information on that. That's something I'll cover
15 later. But we can wait also and see how the staff
16 resolves this and stuff, too.

17 John?

18 MEMBER STETKAR: Yes. Can I ask a
19 question that I didn't think of it until right now.
20 It's really a question for Entergy. Just to help me
21 file some things away, if nothing else.

22 Is there -- I don't want to call it
23 annular, but an interspatial space between the
24 refueling cavity liner and the concrete? We talked a
25 little bit about that with respect to the fuel pool

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 this morning and that, you know, there might be water
2 there. Is there a similar space that water might be
3 permanently residing? Or do you feel that if there is
4 a space, that water has such a free path that it
5 drains away?

6 MR. DACIMO: Yes. We feel fairly strongly
7 that there is no trapped water in this area.

8 MEMBER STETKAR: Okay. That any water
9 that enters basically winds up down on the --

10 MR. DACIMO: And we can see that via
11 starts and stops when you flood and when you -- lower
12 levels, okay. When you flood the cavity up and also
13 on your lower levels, start and stop. Additionally,
14 we had done some mass balances previously when we had
15 done our containment sump strainer modifications. And
16 we could see the make up rate is really equivalent to
17 the train rate. So that gives us a feel for what's
18 going in is going out. Okay.

19 Additionally if you look at the geometry
20 we feel pretty confident that the geometry, the way
21 the vertical walls are, that you're getting good
22 drainage. There's nothing that's going to pool under
23 there. And particularly you can kind of look up in the
24 basement of the vapor containment and kind of see
25 where it's coming from. Where it's draining from. So

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 that in itself gives us a fairly confident that is all
2 drained.

3 Last but not least is we also feel on top
4 of all of that, okay, it is only wetted two weeks per
5 two years. So the amount of time if we were to assume
6 -- let's assume that we're incorrect. If we are
7 incorrect, we really feel that the impact on the
8 structure itself would not be significant.

9 And we'll -- I assume this is going to be
10 a discussion next time. So we'll bring --

11 MEMBER STETKAR: Yes. Yes.

12 MR. DACIMO: -- those issues to the table.

13 CHAIR MAYNARD: And I think for me it
14 would help, go ahead and talk about it, maybe some
15 better pictures and stuff to go into what you think
16 the path is. Just a little bit better detail than what
17 the pictures that we had there.

18 MR. DACIMO: We will be prepared to do
19 that next time.

20 Now, all of that notwithstanding, I don't
21 want to imply that again that we're happy with this.
22 Okay? We're going to live with this but on the other
23 hand, though, don't think it really presents a long
24 term challenge for this facility if it remains
25 uncorrected.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 MS. GREEN: Okay. The next open item is
2 the one that addresses the IP2 spent fuel pool leak.
3 As the applicant mentioned, and has already been
4 established, that the Indian Point 2 spent fuel pool
5 has experienced leakage. And as the applicant
6 mentioned, the spent fuel pool does not have leak
7 chase channels which makes it more difficult to detect
8 and quantify leakage.

9 So to assess for potential indications
10 this spent fuel pool leakage, the applicant did commit
11 to test the groundwater outside the IP2 spent fuel
12 pool for the presence of tritium from examples taken
13 from adjacent monitoring walls every three months.
14 And they've identified this as license renewal
15 Commitment 25.

16 Entergy in the application and in their
17 program they didn't state that they plan to perform
18 augmented inspections of the spent fuel pool structure
19 during the period of extended operation. So the staff
20 requested some additional information on the condition
21 of the concrete and rebar in the area where the
22 leakage had been detected. And the applicant did
23 provide this information including information about
24 their bore samples that they had taken. But at the
25 time of the issuance of this SER the staff was still

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 evaluating the information. But they did that in the
2 November 6th letter. But since that time, like I said,
3 last week we did send a draft request for additional
4 information to ask the applicant how the AMP or the
5 aging management program will determine if a degraded
6 condition exists during the period of extended
7 operation or explain how the AMP will adequately
8 manage the potential aging of concrete due to borated
9 water during the period of extended operation.

10 CHAIR MAYNARD: And again, I think this is
11 another important item that we certainly want to
12 discuss next time. I'm not sure there's need to
13 discuss anymore here. I don't know it might --

14 MEMBER RYAN: Just to reiterate what we
15 said earlier, you know, a better understanding, a
16 little more depth on the geohydrologic program and how
17 it relates to the engineering conditions. And I think
18 it would be particularly helpful to give your insights
19 from the monitoring you've done as to what you think
20 it means relative to how the defect is behaving.
21 That's particularly useful. Because I'm sure you've
22 got a record of monitoring now over some period of
23 time. So gaining your insight into what that tells
24 you would be very helpful.

25 MR. DACIMO: Yes. We'll be prepared to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 share the conclusions that we've had -- you know, all
2 this stuff is on the public record. We'll bring that
3 in and we will share that everyone.

4 MEMBER RYAN: Good. One thing you didn't
5 mention we talked a lot about tritium, because that's
6 the indicator. And any other radionuclides that are
7 detected and what your interpretation of those
8 positive that you've got, if any, would be helpful as
9 well.

10 MR. DACIMO: We'll be prepared to do that.

11 MEMBER RYAN: Thank you.

12 CHAIR MAYNARD: I'd like to take a break
13 right now. Let's come back at 15 'til and we'll go
14 ahead and finish.

15 (Whereupon, at 2:27 p.m. off the record
16 until 2:44 p.m.)

17 CHAIR MAYNARD: Okay. Let's come back
18 into session. And, Kim, go ahead with the next item
19 here.

20 MS. GREEN: Okay. The next open item
21 that's under staff review is the one that addresses
22 spalling of the exterior concrete containment
23 structure. During the on site audit staff reviewed
24 some operating experience relative to the concrete
25 spalling and asked a lot of questions. The applicant

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 provided information about the areas and the reasons
2 for the spalling. As they mentioned earlier, it
3 occurs primarily where the Cadweld sleeves have
4 insufficient concrete coverage and also where they
5 have applied some concrete over the anchor embedments
6 that were used for erection of scaffolding during
7 initial construction.

8 The applicant also mentioned that they did
9 evaluate the structural margins for the IP
10 containments and concluded that at the locations where
11 the rebar is exposed there is sufficient design margin
12 to ensure structural integrity. And they also said
13 that this condition is being monitored under their
14 containment inservice inspection program.

15 In response to the staff's request about
16 this issue, the applicant committed to enhance the
17 containment inservice inspection program during the
18 period of extended operation. As Glenn also
19 mentioned, they covered that during the inspection.
20 And the applicant said that they would perform
21 enhanced characterization of the degradation. I think
22 they're going to quantify it using some camera that is
23 able to record measurements. And that will allow them
24 to perform effective trending of the degradation. And
25 that was identified as license renewal Commitment 37.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 And this is another item that we recently
2 submitted a draft RAI on, and we're just trying to
3 find out how the applicant will use the enhanced
4 inspection results and the design margin calculations
5 to ensure that there's no loss of intended function
6 during the period of extended operation.

7 Open item 3.4-1 addresses the aging
8 management review results for those components needed
9 to support a fire event in the IP2 aux feedwater pump
10 room. In the application the applicant stated that
11 the systems needed to supply feedwater to the steam
12 generators during the fire event are continuously in
13 operation and are monitored. They also stated that
14 significant degradation that could threaten the
15 performance of the intended functions of the
16 components will be apparent in the period immediate
17 preceding the event and corrective action will be
18 required to sustain continued operations. And for the
19 minimal one hour period that the systems would be
20 required to provide makeup to the steam generators
21 that further aging degradation that would not have
22 been apparent prior to the event is negligible. So
23 therefore the applicant did not identify any aging
24 effects that since normal plant operation ensures
25 adequate pressure boundary integrity, the post fire

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 intended functions to provide feedwater to steam
2 generators is assured. Therefore, they did not
3 identify a specific an aging management program would
4 be required.

5 Because these systems contain passive and
6 long-lived components, the rule states that the
7 applicant should demonstrate that the effects of aging
8 will be adequately managed during the period of
9 extended operation such that the intended functions
10 will be maintained consistent with the current
11 licensing basis for the period of extended operation.

12 And based upon the information LRA that we had, the
13 staff did not believe it had sufficient information to
14 make this determination.

15 So by letter dated December 30, 2008 the
16 staff asked Entergy to provide details of the AMR
17 results for those systems credited for providing flow
18 to the steam generators during the fire event. They
19 provided that information in a letter dated January
20 27th. And the staff is still evaluating the response
21 at this time.

22 CHAIR MAYNARD: I'm still trying to get my
23 hands around this one. The aux feed is so important
24 that I'm still -- like I don't know that I've got a
25 question. I'm just kind of expressing some

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 nervousness here that I've got to do some more
2 reviewing on my own for this situation and really what
3 the effect is on aux feed and everything here.

4 So, John, you look like you have --

5 MEMBER STETKAR: Yes, Kim, I kind of share
6 Otto's uneasiness, and I'm not quite sure if I can get
7 my hands around exactly why. Because in some cases
8 I'm not intimately familiar with kind of the rules of
9 defining these fires.

10 From what I heard you just say is I
11 noticed on the second item on the slide there says
12 that applicant stated that aging related degradation
13 occurs during one hour is negligible. And what I
14 heard you say is that you aren't particularly
15 considering that one hour time window in your
16 evaluation, is that correct? You're more concerned
17 with the availability of the normal systems to provide
18 flow regardless of whether it's one hour after the
19 fire or a couple of hours, is that correct?

20 MS. GREEN: Correct. That's correct.

21 MEMBER STETKAR: Okay. So the one hour
22 doesn't really enter into your evaluation, is that
23 correct?

24 MS. GREEN: Yes. That's correct.

25 There are some systems that are used

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 during this event that are already in scope for other
2 reasons.

3 MEMBER STETKAR: Right. Right.

4 MS. GREEN: And then there are some
5 systems that are only -- I think the only reason
6 they're in scope is because of this fire event.

7 MEMBER STETKAR: Right.

8 MS. GREEN: And the applicant is making a
9 statement that because these systems are in continuous
10 operation they'll always be monitored and therefore
11 they would identify if there was a problem with the
12 system prior to the fire event ever occurring. And
13 they've cited some precedents in other applications,
14 as they mentioned, where the staff has for the BWRs in
15 particular I think, accepted the justification that
16 for condensers in particular that they're in
17 continuous operation and the post accident intended
18 function would be maintained based on continuous
19 operation.

20 I think the staff is still evaluating this
21 because we haven't seen this yet for a PWR.

22 MEMBER STETKAR: Okay.

23 MS. GREEN: And so the staff is still
24 trying to come to terms with whether or not there are
25 some passive long-lived components that would have

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 known degradation, not necessarily at this plant but
2 in GALL, the components of particular material would
3 experience some aging related degradation. And whether
4 or not it's one hour the staff doesn't --

5 MEMBER STETKAR: Doesn't care how long
6 after T⁰ the thing --

7 MS. GREEN: Right. Correct.

8 MEMBER STETKAR: Thanks. That helps me a
9 little bit with the one hour.

10 And I'll ask it again just to make sure I
11 understand that the staff agrees that because of the
12 Halon protection system in the IP3 auxiliary feedwater
13 room this is a nonconsideration for IP3, is that
14 correct? And there isn't a corresponding IP3
15 auxiliary feedwater room at the --

16 MS. GREEN: That is my understanding.

17 I think in this particular zone for the
18 aux feedwater pump room at IP2 there is an exemption
19 that they have for fire protection, but it's due to
20 the fact that they don't have -- well, I went back and
21 tried to dig up the history on this. And this is one
22 of those areas that doesn't have adequate suppression,
23 so therefore they have to take credit for providing
24 some--

25 MEMBER STETKAR: Yes, that was pretty

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 clear this morning.

2 MS. GREEN: Right.

3 MEMBER STETKAR: That IP2 doesn't have
4 adequate protection. But it's concluded that IP3 does
5 have adequate protection?

6 MS. GREEN: That is my understanding.

7 CHAIR MAYNARD: I would think that's
8 something that we would want to get clarified at the
9 next meeting.

10 MEMBER STETKAR: I mean, it sounds like
11 it's part of the current licensing basis. It may be a
12 physical difference between the two plants because of
13 the existence of the protection systems, the
14 differences in those systems. I just want to make sure
15 that --

16 MS. GREEN: We can find that out and make
17 sure that we understand that; that it is not an issue
18 for IP3.

19 MEMBER STETKAR: I mean, I was just
20 curious because in the SER there's a section heading
21 that says IP3 auxiliary feedwater room fire event and
22 it just simply says not applicable --

23 MS. GREEN: Right.

24 MEMBER STETKAR: -- without any further
25 discussion about why that is or --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MS. GREEN: Well, that was my genius.

2 MEMBER STETKAR: I'm sorry.

3 MS. GREEN: They identified in Section
4 2.3.4-5 in their LRA. And if I had put in 2.3.4-5 as
5 their condensate system for IP3, it would leave a --
6 you know, in the numbering. And so I put it in and
7 just said it's not applicable.

8 MEMBER STETKAR: And so it was easy for me
9 to find the section to go look, because it was there.

10 MS. GREEN: So by doing so, I guess I've
11 caused some confusion. But we will definitely find
12 out for certain.

13 CHAIR MAYNARD: Okay. We're easily
14 confused, but that's all right.

15 MEMBER STETKAR: We're easily confused.

16 CHAIR MAYNARD: Harold, were you --

17 MEMBER RAY: Yes. I mean, I guess the
18 issue comes down to whether or not there are in fact
19 systems relied upon in this event that are in service
20 all the time prior to the event, correct?

21 MS. GREEN: That's what they tell us, yes.

22 MEMBER RAY: Well, but I mean that's the
23 question in your mind?

24 MS. GREEN: Yes.

25 MEMBER RAY: Are you all confirming that?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR MAYNARD: We need to make sure that
2 the staff has looked at that and agrees with that.

3 MEMBER RAY: Yes.

4 MS. GREEN: That was one of the questions
5 we had asked. If they are going to take -- in scoping
6 -- this issue is kind of divided. It has two parts.
7 The scoping and screening aspect of it which we had an
8 open item on, which they provided the information and
9 we can close based on the information they provided.

10 And then there's the aging management
11 review results which are a little bit different which
12 the staff is still evaluating.

13 One of the questions we did ask and the
14 staff caught this, was if you're going to take credit
15 for continuous operation of systems they found some
16 systems that the applicant had credited which are
17 continuously operated. They are only operated
18 intermittently. And when we asked them about that,
19 they went ahead and added that particular system to
20 scope and said "Okay, this is in scope and it's
21 subject to aging management review because it's not in
22 continuous operation."

23 But we did, we did question about the
24 systems that were continuously operated versus the
25 ones that were intermittently operated.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER RAY: Okay. But that's a long way
2 of saying, I think, that the unresolved issue hinges
3 on the question of whether or not there are or are not
4 systems relied on in this scenario that are in
5 continuous operation. It sounds like.

6 MS. GREEN: Yes.

7 MEMBER RAY: Okay.

8 CHAIR MAYNARD: Again, I think it's
9 important for the next meeting for us to know what the
10 staff's final review and position on that.

11 MEMBER RAY: Well, yes. And what the
12 basis of it is. I mean, someone tell us what the
13 systems are that are in dispute here, if there's a
14 dispute at the end of the day.

15 MS. GREEN: The next open item is 3.5-1
16 and it addresses the water-cement ratios that were
17 cited in the license renewal application for IP
18 concrete.

19 In the LRA the applicant had identified
20 water-cement ratios to support its claim that certain
21 aging effects identified in the GALL report that
22 required further evaluation are not applicable to the
23 concrete.

24 The staff noted that the applicant
25 referenced an inconsistent combination of air

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 entrainment and water-cement ratios per American
2 Concrete Institute Standard 318-63 and asked the
3 applicant to clarify the correct water-cement ratio
4 value that it used.

5 So by letter, dated November 6, 2008, the
6 applicant stated that the ACI Standard 318-63 provides
7 two methods for determination of concrete properties.
8 And it further stated that the concrete mixture at IP
9 was established based on tests of concrete mixtures
10 with varying water to cement ratios per method 2 of
11 the standard.

12 The applicant stated that the actual test
13 for containment concrete showed compressive strengths
14 above the required 3000 psi.

15 The staff recently issued a draft RAI to
16 ask the applicant to define the water to cement ratios
17 and provide results of original concrete strength
18 tests or alternatively the applicant may identify
19 applicable aging effects and describe how they will be
20 managed during the period of extended operation.

21 I think this is my last open item to
22 cover. It's 3.5-2, and that addresses the reduction of
23 strength and modulus of concrete due to elevated
24 temperatures.

25 As mentioned earlier in the LRA the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 applicant stated that the concrete surrounding the IP@
2 penetrations can reach temperatures of up to 250
3 degree Fahrenheit. The GALL report recommends further
4 evaluation to manage the reduction of strength and
5 modulus of concrete structures due to elevated
6 temperatures greater than 200 degrees Fahrenheit.

7 The applicant concluded that the reduction
8 of strength and modulus is not an aging effect
9 requiring management. So the staff questioned the
10 applicant's conclusion and asked the applicant to
11 evaluate the effects on the properties of concrete
12 exposed to the elevated temperatures. The applicant
13 determined that there is a reduction in strength of
14 approximately 15 percent from elevated temperatures
15 but found this to be acceptable because compressive
16 strength tests showed that the actual strength is 15
17 percent higher than the design strength of 3000 psi.

18 And this is another one where we recently
19 issued a request for additional information to ask how
20 the strength of margin was determined and if reduction
21 in modulus of elasticity was considered in the
22 evaluation.

23 CHAIR MAYNARD: For me on this one if
24 they're using what the actual strength versus the
25 design strength is, I think it's important. I think

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 this is part of the staff's question to them is in
2 showing how they know that, how did they determine
3 that? You know, if you take one sample and say it's
4 applicable to everything, that's probably not enough.

5 So what was used and how do they know what the actual
6 strength is? It would be important to me once we see
7 how this gets ultimately resolved, if it does.

8 MS. GREEN: Right. So we've asked them for
9 that information. So hopefully, when they provide the
10 information we've requested, we'll be able to close
11 out.

12 As they mentioned earlier, the temperature
13 -- and we found this out during a phone. There was
14 some question about 250 degrees; was that during
15 normal operating conditions or was it post accident
16 conditions. And they had said that the temperatures
17 really are more around 150 degrees during normal
18 operating conditions. So with that information, too,
19 that was helpful to know to get that clarification. So
20 they're going to provide that to us in writing.

21 MEMBER STETKAR: That 150 degree
22 temperature, though, is based on operation of that air
23 cooling system, is that correct?

24 MS. GREEN: That's my understanding.

25 CHAIR MAYNARD: And you'd ask questions--

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MEMBER STETKAR: I had asked questions
2 about that this morning.

3 CHAIR MAYNARD: There's another one that
4 would need to be addressed when we meet again on this.

5 MEMBER STETKAR: Yes the basis for the
6 fact that it basically can't become higher than 250
7 degrees.

8 CHAIR MAYNARD: Okay.

9 MS. GREEN: I think that concludes my
10 presentation.

11 CHAIR MAYNARD: Okay. Any other questions
12 for the staff here? Charlie?

13 MEMBER BROWN: Okay. I just had a
14 question on the audit report. This is the one I
15 talked to you about earlier. This is your alls audit
16 report. Under the flow-accelerated corrosion section,
17 pate 13. You all noticed event chamber drain piping
18 and high pressure turbine drain piping and another --
19 a two inch line and then a three-quarter inch line.
20 And you all -- they did wall thickness checks. And I
21 guess on one of them, the event chamber drain piping,
22 I guess the minimum acceptable thickness is 123 mils
23 and the actual measured was 52 mils. And
24 there's some required thickness for two more years of
25 135 mils, which obviously they don't meet.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 Then there were two other ones. One of
2 them was almost identifiable. They were kind of right
3 on, very, very close.

4 And I guess my question came out as there
5 went on to be an explanation. There was a response
6 that said hey you go -- if you encounter these things,
7 there's certain things. You take more samples and you
8 test those, and you do a bunch of stuff for similar
9 sized pipes.

10 One thing I didn't see in the program for
11 doing that, this is Entergy's response to that, is you
12 found a situation where your inspection process did
13 not identify a minimum that was unacceptable before it
14 actually occurred. And typically you would like to do
15 that.

16 Now I'm not sure this is a safety system.
17 but the principle is kind of the same in that the
18 whole corrective action process doesn't address
19 changing the frequency of inspections for certain
20 particular elbows or, you know, flow redirections or
21 what have you in order to ensure you have a process
22 that does identify that you're getting close. That you
23 don't surprised. And this was fairly big. A big
24 number difference. It's like almost a third of the
25 required.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 So that was my question is that the
2 process they didn't give a specific program, I guess
3 maybe it's your alls' program because it talks about
4 their fact program. So my question is why isn't
5 frequency a factor once you find your inspection
6 doesn't identify a problem before it actually becomes
7 a big program or it's significantly below wall
8 thickness? Is Entergy to --

9 MR. DACIMO: We can comment on that.

10 CHAIR MAYNARD: Okay. Go ahead.

11 MR. AZEVEDO: Yes. My name's Nelson
12 Azevedo.

13 The FAC program and in point follows the
14 NSAC 2020, just to give you a standard, as well as the
15 EPRI guidelines.

16 I can't comment on the point that you're
17 bringing up, but I can tell you in general terms just
18 because you exceed the required thickness does not
19 mean that section is no longer acceptable. There's a
20 localized wall thinning evaluation that we can do.
21 And, again, just because you exceeded the minimum 360
22 requirement doesn't mean that that section was
23 unacceptable.

24 But more going to the other point as what
25 do we expand. We add additional locations that we do

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 inspections --

2 MEMBER BROWN: Well, that's locations. I
3 understand the locations part.

4 MR. AZEVEDO: Right.

5 MEMBER BROWN: It was frequency that I was
6 addressing.

7 MR. AZEVEDO: Well, what we do is we
8 calculate the erosion rate and based on that rate we
9 extrapolate to when we need to additional inspections
10 at this or other locations before we exceed whatever
11 the minimum required is. So that is part of the
12 program.

13 MEMBER BROWN: Okay. But this one didn't
14 work?

15 MR. AZEVEDO: Again, I have to get the
16 details of this one here. Just because it was below
17 the minimum thickness does not mean it was
18 unacceptable.

19 CHAIR MAYNARD: I think what you're
20 getting at here did they make adjustment to their
21 frequency when they found this?

22 MEMBER BROWN: Exactly. Thank you.
23 Exactly. That would have been my reaction. Here I
24 found a circumstances where I did not identify it
25 before it really became a problem. And with whatever

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 other process you did do, would you have adjusted your
2 frequency to try to ensure and look at other
3 circumstances to see if hey, is my approach really
4 giving me a frequency in which I can find these
5 before?

6 MR. AZEVEDO: The answer is yes.

7 MEMBER BROWN: But it's not stated in the
8 response. When I looked at page -- I'll find it here
9 in a minute. I think it's page 70.

10 MR. DACIMO: We'd have to review. We'd
11 have to look at that document. But the program
12 requires that.

13 MEMBER BROWN: Okay. Now, did you all ask
14 that question or not?

15 MS. GREEN: I can't tell you whether we
16 asked the question or not. The individual reviewer is
17 not at this meeting. I could find out and get back to
18 you on it.

19 CHAIR MAYNARD: What I would suggest that
20 we do is have Entergy take a look at the audit report
21 and the staff do. And our next meeting --

22 MEMBER BROWN: That's fine with me.

23 CHAIR MAYNARD: -- address what--

24 MEMBER BROWN: Yes, that's fine.

25 CHAIR MAYNARD: -- they did and what the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 program required.

2 MEMBER BROWN: That's fine.

3 CHAIR MAYNARD: Yes, I think that would be
4 good.

5 Any other questions for the staff?

6 MEMBER BROWN: Hold on. Hold on. No.

7 CHAIR MAYNARD: What I'd like to do now
8 is, Theron, if you could bring on, let's see, Ms.
9 Deborah Brancato and we'll hear comments that she
10 prepared. We also received documents from her.

11 Ms. Brancato, are you on?

12 MR. MUSEGAAS: Actually, this is Phil
13 Musegaas, Judge. Or, you're not a judge, I guess. Mr.
14 Maynard, is that who I'm speaking to.

15 CHAIR MAYNARD: That's correct, yes.

16 MR. MUSEGAAS: Okay, sir. My name is
17 Phillip Musegaas. I'm the lead counsel for Riverkeeper
18 on the Indian Point proceeding. So there was a little
19 mix up because Deborah submitted the comments, but
20 I'll be giving the statement today.

21 Would you like me to spell my name for the
22 record?

23 CHAIR MAYNARD: Yes. If you would, please.

24 MR. MUSEGAAS: Okay. P-H-I-L-L-I-P and
25 last name is M-U-S-E-G-A-A-S.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 And I just have a statement that will
2 probably just take a few minutes. And you have our
3 written submissions as well, which go into more
4 detail.

5 I just want to thank the ACRS for giving
6 us the opportunity to provide comments today and to
7 make a statement today. We appreciate it.

8 To begin with, Riverkeeper is a not for
9 profit organization dedicated to protecting the Hudson
10 River and its tributaries from pollution. Since our
11 inception in 1966 Riverkeeper has used litigation,
12 science, advocacy and public education to raise and
13 address concerns relating to the Indian Point Nuclear
14 Power Plant. Our predecessor organization, actually,
15 which the Hudson River Fisherman's Association
16 actually was an active party opposing the original
17 licensing of the plant.

18 Riverkeeper's offices are located 22 miles
19 from Indian Point. And we have numerous members that
20 reside within at least 50 miles of the plant, and many
21 of them within 15 miles.

22 Over the years Riverkeeper has been
23 actively involved in raising safety concerns
24 associated with the plant's operation.

25 In November of 2007 Riverkeeper filed a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 petition to intervene challenging Entergy's license
2 renewal application. We were subsequently admitted as
3 a party and granted a hearing. Three of our five
4 contentions were admitted for adjudication.

5 What I'd like to do today is just very
6 briefly highlight two of our admitted contentions
7 which bear directly on the information in the
8 application, of course, and in the staff's draft SER.
9 And then also mention some concerns we have relating
10 to a contention which was not admitted, but which we
11 feel we should bring to the ACRS Subcommittee's
12 attention.

13 So I'd like to talk just briefly. I'm
14 going to talk about metal fatigue, flow-accelerated
15 corrosion and then severe accident mitigation
16 alternative analysis.

17 So to being with metal fatigue. The NRC
18 regulations require that license renewal applicants
19 evaluate the time limited aging analyses for covered
20 components effected by metal fatigue and demonstrate
21 that such analyses remain valid for the extended
22 licensing term or that they have been projected to the
23 end of the period of extended operation. This is
24 pursuant to 10 CFR 50.21(c)(1)(i) and (ii).

25 If the applicant is unable to do so, it

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 must submit an aging management plan demonstrating
2 that the effects of aging on the intended functions
3 will be adequately managed for the extended period of
4 operation.

5 Entergy's license renewal application
6 fails to demonstrate the TLAAs remain valid for the
7 period of extended operation, or that they have been
8 projected to the end of the period of extended
9 operation. And there's, I think, three points I'd
10 like to make here.

11 First, the TLAAs and the LRA for selected
12 representative components show that the
13 environmentally adjusted cumulative usage factors,
14 which are the CUFs or C-U-Fs, for a number of
15 components will exceed one, which is the unity, during
16 the license renewal term.

17 Second, Entergy's list of components with
18 CUFs of less than one in Tables 4.3-13 and 4.3-14 is
19 inaccurate because:

20 (a) Based on data in NUREG/CR-6909
21 Entergy used an unrealistically low environmental
22 correction factor, which is referred to as a FEN;

23 Second, Entergy did not project the
24 analysis to 60 years but rather used the CUF of
25 record, which is the current CUF accounting for the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 original 40 year license term, and;

2 Third, Entergy did not calculate several
3 limiting locations since data was unavailable.

4 Had Entergy employed proper methods and
5 assumptions, the number of components with CUFs
6 greater than one would be much larger than depicted in
7 the LRA in these tables.

8 And I neglected to mention at the outset,
9 but the technical contentions that we filed
10 challenging the metal fatigue and the flow-accelerated
11 corrosion are supported by technical expert Dr. Joram
12 Hopenfild. So we have expert support for these
13 contentions.

14 I'm not an attorney. I'm not an engineer.
15 S if you do have specific technical questions related
16 to this, we can happily have our expert to respond to
17 those. I certainly wouldn't be able to.

18 So going on. Our third main point on
19 metal fatigue. Entergy's assessment of TLAAs is
20 incomplete because having identified components that
21 exceed unity, Entergy was required to expand the scope
22 of the TLAAs in which it considers exacerbating
23 effects of environment conditions on the fatigue of
24 metal components. This is according to NUREG-1801,
25 which is the GALL report.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 And had Entergy applied the FENS to
2 reflect the fact that these listed components operate
3 in a very harsh environment, not just in the vacuum
4 and in the air environment that's being modeled but in
5 the environment of water and stream that are known to
6 reduce fatigue life, many of the CUFs would have far
7 exceeded unity.

8 An aging management program must provide
9 sufficient detail to demonstrate that the applicant
10 will adequately manage aging of equipment. And it is
11 not sufficient to merely "summarize options for future
12 plans." And I'd like to emphasize the point because
13 while this may be more of a legal matter than a
14 technical matter at this stage of the proceeding,
15 Riverkeeper is particularly concerned about this.

16 In its application Entergy basically has
17 put out several options for addressing metal fatigue
18 during the extended period of operation. They made
19 some adjustments to their plan following Riverkeeper's
20 petition and New York State's petition to intervene,
21 which also metal fatigue concerns. However, the
22 current state of Entergy's application, Entergy's has
23 stated that they will choose among three options to
24 address metal fatigue:

25 (1) Refine the fatigue analysis to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 determine CUFs less than one when accounting for the
2 effects of reactor water environment;

3 (2) Manage the effects of aging by an
4 inspection program, or;

5 (3) Repair or replace the effected
6 locations before exceeding a CUF of 1.0.

7 Unfortunately, none of these options
8 satisfy the NRC's safety regulation.

9 To demonstrate that aging will be managed
10 effectively, Entergy must provide an actual
11 description of its monitoring program that includes a
12 clear definition of the type and frequency of its
13 inspection in order to ensure that components are
14 replaced or repaired in a timely manner. An
15 acceptable aging management program must also specify
16 criteria for repair or replacement. It is not
17 sufficient to merely presume that these things will
18 happen based on a vague commitment to comply with the
19 regulations in the future.

20 Riverkeeper feels, and we believe the
21 regulations require, that Entergy should be required
22 to demonstrate that they comply with the regulations
23 and provide the analysis prior to approval of license
24 renewal. However, the staff's SER finds that Entergy's
25 TLAA assessment is entire acceptable, as I believe

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Kimberly Green explained. The SER concludes that the
2 effects of aging on the intended functions of relevant
3 plant components will be adequately managed for the
4 period of extended operation.

5 I will continue with flow-acceleration
6 related corrosion. And I know I have limited time, so
7 I'll try to be concise here.

8 NRC regulations require license renewal
9 applicants to have a program to effectively manage
10 wall thinning due to FAC. Detection of FAC should
11 occur before there is a loss of the structure and the
12 component's intended function. So again, this is
13 supported by NUREG-1800.

14 The wall thinning must be monitored or
15 inspected to ensure that the structure and component's
16 intended function will be adequately maintained over
17 the extended operation term.

18 Entergy's program is inadequate to ensure
19 that the effects of FAC on relevant plant components
20 will be properly managed. First, Entergy's reliance
21 on the CHECWORKS computer program is misplaced because
22 it has not adequately re-benchmarked the program to
23 account for changes in plant operating parameters. And
24 this refers to the latest power uprates that were
25 granted to Indian Point 2 and 3. Respectively, Indian

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 Point 2's uprate was in October 2004, an increase of
2 3.26 percent. And Indian Point 3, the uprate was
3 granted in March 2005 and that was a power increase of
4 4.85 percent.

5 Such power changes effect velocities,
6 temperatures, coolant chemistry and steam moisture,
7 especially on the secondary side of the plant where
8 the steam flow and feed flow increases are
9 approximately proportional to the power increase.
10 Accordingly, CHECWORKS must now be properly updated.

11 And in more detail we change the way in
12 which Entergy used CHECWORKS in their application.

13 Since CHECWORKS cannot be properly relied
14 upon to monitor and detect thinning from FAC, Entergy
15 must provide detailed information regarding the method
16 and frequency of component inspection and its criteria
17 for component repair or replacements. This, again,
18 according to NUREG-1800.

19 The program should include a methodology
20 for analyzing the results against applicable
21 acceptance criteria. And we don't believe Entergy has
22 either used CHECWORKS accurately or provided detailed
23 information, as I've said, regarding their
24 methodology, frequency of component inspections or any
25 real program for when they would actually repair or

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 replace components.

2 Next I would like to briefly talk about
3 severe accident mitigation analysis, alternative
4 analysis. Entergy's LRA seriously underestimates the
5 potential containment bypass during a core damage
6 accident. In light of current knowledge about severe
7 reactor accidents it is prudent to assume that:

8 (1) Any high, dry accident sequence,
9 i.e., those in which the secondary side dries out due
10 to the unavailability of feedwater and the reactor
11 coolant system pressure remains high, all primary
12 coolant is lost and the core uncovered would involve
13 induced failure of steam generator tubes and that
14 would result in one or more of the secondary side's
15 safety valves, downstream of the effected stream
16 generators would remain open after tube failure.

17 Taking these assumptions into account,
18 Riverkeeper believes the conditional probability of
19 atmospheric release categories in the event of core
20 damage due to this type of accident is over 50
21 percent.

22 In the context of the SAMA analysis
23 Entergy has not properly considered the contribution
24 to severe accident costs made by severe accidents
25 involving such reactor containment bypass via the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 induced failure of the SG tubes. Because it does not
2 account for the above mentioned functions, Entergy's
3 estimates of conditional probabilities of atmospheric
4 release categories are incorrectly low.
5 Correspondingly the value Entergy assigns to the cost
6 risk associated with atmospheric releases is
7 mistakenly low.

8 And again, in the interest of time we've
9 given you detailed information on support for these
10 concerns.

11 A second issue relating to the SAMA
12 analysis, Entergy's LRA does not adequately take into
13 account the safety risks of spent fuel pool fires.
14 While initially it was assumed that the storage spent
15 fuel generally did not pose significant risks, with
16 the introduction of high-density closed form storage
17 racks into spent fuel pools beginning in the 1970s,
18 this understanding is no longer valid. The closed
19 form configuration of high-density racks can create a
20 major problem when water is lost from a spent fuel
21 pool including, of course, significant pool fire.

22 And we have in support of our petition we
23 have included an expert report that supports this
24 concern.

25 In the context of the SAMA analysis

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 Entergy has not considered the contribution to severe
2 accident cost that would be caused by fire in either
3 of the spent fuel pools in Indian Point 2 or 3. If the
4 cost of pool fires were considered, the value of
5 SAMA's would be significant.

6 And just to note, Riverkeeper is well
7 aware that SAMA analysis has traditionally been
8 applied only to reactor accident and then any spent
9 fuel storage or spent fuel issues are generally
10 considered category 1 by the NRC and are exempt from
11 license renewal review. However, we think it is
12 important to raise this issue before the ACRS.

13 Finally, Entergy's license renewal
14 application does not adequately take into account the
15 safety risks of intentional attacks on Indian Point 2
16 or 3 or their spent fuel pool. These attacks are
17 reasonably foreseeable and indeed, have been addressed
18 to some degree by the NRC.

19 One final point and then I have a quick
20 comment and I'll wrap up here.

21 Entergy grossly miscalculates the
22 radiological consequences in performing its SAMA
23 analysis. Specifically, Entergy significantly
24 underestimated off site costs resulting from a severe
25 accident at Indian Point in three ways:

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 (1) They used a source term that resulted
2 in unusually mean off site accident consequences in
3 comparison to results obtained with source terms
4 vetted by independent experts and actually recommended
5 for use by the NRC, and;

6 (2) Failing to adequately consider the --
7 in its consequence calculations resulting from
8 meteorological variations, and;

9 (3) Inappropriately using the \$2000 per
10 person rem dose conversion factor.

11 Due to such underestimation, Entergy has
12 significantly under estimated the off site cost of
13 severe accidents. Entergy's erroneously low cost
14 estimate has therefore led it to underestimate the
15 benefits of SAMAs that mitigate or avoid the
16 environmental impact of severe accidents.

17 And this particular aspect of our SAMA
18 challenge is supported an additional expert report.

19 And that concludes most of my
20 presentation. I just want to make a couple of
21 comments based on some things I heard this morning on
22 the phone.

23 First, in the discussion of the spent fuel
24 pool Indian Point 2's spent fuel pool leak. I just
25 would like to note for the Board's attention that

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 there were actually two large plumes of contaminated
2 ground water that are now on the site. One is
3 primarily a tritium plume, I believe, originating from
4 the Indian Point 2 pool. It underlies a large portion
5 of the site between the IP2 pool and the Hudson River.

6 And actually this contaminated water is presumed to
7 be leeching into the Hudson.

8 In addition, there is a large plume of
9 groundwater contaminated with strontium-90, cesium-137
10 and nickel-63 and other radionuclides that originated
11 from the Indian Point 1 pool. That pool, as Don Mayer
12 explained to you, has been drained the source of that
13 leak presumably has been eliminated. However, the
14 residual contamination remains in the groundwater and
15 remains on the site. Just so you have a full picture
16 of extent of contamination there. And that plume is
17 additionally leaking into the Hudson River through the
18 groundwater and up into the water table.

19 Riverkeeper would list to ask the Board
20 respectively that if and when Entergy submits revised
21 calculations regarding the CUF calculations for metal
22 fatigue, we would like the opportunity to present our
23 critique or our response to that calculation to the
24 ACRS. And we would have our expert do that, of course.

25 So we would just like to lodge that request with the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 ACRS at this time.

2 That concludes my comments. Thank you very
3 much.

4 CHAIR MAYNARD: Okay. I'd like to thank
5 you for your comments. And we were and have been
6 taking notes on what you said. We did copies of the
7 documentation that you had provided to us.

8 And relative to future meetings or future
9 consideration we have of this or any of the other
10 items, you'll certainly have an opportunity to provide
11 your comment before we make any final decisions. Our
12 meetings will all be public meetings. So you will have
13 an opportunity if you choose to to comment on
14 information relevant to license renewal at that time.

15 MR. MUSEGAAS: Okay. Thank you.

16 Can I ask you a quick question just
17 procedurally? If you don't mind, I'll be very quick.

18 Are you --

19 CHAIR MAYNARD: One of the advantages that
20 we have is that we don't have --

21 MR. MUSEGAAS: --going to have additional
22 Subcommittee meetings or are you going to a full
23 Committee at the next stage?

24 CHAIR MAYNARD: I'm sorry. I can't answer
25 that right now.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 MR. MUSEGAAS: Okay.

2 CHAIR MAYNARD: We will have further
3 discussion with the full Committee and we'll decide
4 what our next actions are. No matter what we decide
5 to do before there is another meeting or any other
6 activity, there would be public notice and the
7 knowledge of that would be made public well in advance
8 of it there.

9 So I can't answer what our next step will
10 be because that will have to be a full Committee
11 decision. So can't answer that right now.

12 MR. MUSEGAAS: I see. Thank you.

13 CHAIR MAYNARD: And one of the advantages
14 we have is we gather information. At this point we
15 don't have to answer any.

16 MR. MUSEGAAS: That puts in a good
17 position then?

18 CHAIR MAYNARD: Okay. Well, thank you
19 very much for your comments.

20 MR. MUSEGAAS: Sure.

21 CHAIR MAYNARD: And again, you will have
22 an opportunity when we meet on this again to provide
23 comments relative to this issue. So again, thank you
24 very much.

25 MR. MUSEGAAS: Thank you, Mr. Maynard.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR MAYNARD: Okay. What I'd like to do
2 now is to go around the room. I think the focus needs
3 to be we've talked about these individually, one more
4 time what items before we meet again, whether it be
5 another subcommittee meeting, full Committee meeting,
6 whatever, as to what additional items -- you know what
7 things do we need to see some information and stuff
8 on. We've talked about some of these.

9 I'll kind of go over my list from what I
10 heard. Charlie, you had asked for some information on
11 the FAC program and what they did, maybe specifically
12 for this items in the audit report there.

13 MEMBER BROWN: Yes.

14 CHAIR MAYNARD: Sam Armijo had asked about
15 the buckling and the condition of the concrete
16 underneath it and how that was determined.

17 MEMBER BROWN: That's the feed break.

18 CHAIR MAYNARD: Where you had the feed
19 break there.

20 John, you'd asked about the temperature
21 analysis, what if those bits were plugged on that
22 cooling system there.

23 You asked for plume data from the spent
24 fuel.

25 ILRT data for DAna. Dana Powers had asked

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 for the integrated leak rate testing.

2 And three of the key issues that we talked
3 about here that need a little more discussion in the
4 record:

5 Cavity leakage both from the applicant and
6 the staff. I know that's an ongoing review and stuff,
7 but I think that's something that several of us felt
8 nervous that we would need to see more information,
9 more specific information relative to that;

10 Spent fuel pool for IP2. More information
11 on that and where the plume data and stuff comes into
12 play, and;

13 That the aux feed pump room fire, you
14 know, different between 2 and 3 and does the fire
15 suppression system, is that enough to qualify for not
16 having to have the aging effects in there.

17 Let me go around and see if there's
18 anything else that the members -- John, I'll start
19 with you. Are there any others?

20 MEMBER STETKAR: No, I don't, Otto. I'm
21 quickly looking at my notes here. And I think that --

22 CHAIR MAYNARD: This doesn't have to be
23 your last chance. Because if we think of something
24 later, we'll get it to you, Kimberly. And I'll also
25 canvass the other members that weren't here or weren't

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 able to stay for this portion and see if there's some
2 other items to focus on.

3 MEMBER BROWN: The aux feed system thing,
4 continuous use you didn't mention.

5 MEMBER RAY: Yes, he did mention that.

6 MEMBER BROWN: He did that. Okay.

7 MEMBER RAY: He mentioned it in the
8 context of fire protection.

9 MEMBER BROWN: Okay. All right.

10 MEMBER STETKAR: Just to make sure, and
11 this is a question to you, Otto, or perhaps Peter, or
12 I'm not sure. With respect to what we just heard about
13 the SAMA concerns, we typically as a Subcommittee
14 don't review -- that's all part of the environmental
15 impact report submittal and that's not within our
16 scope of review, is that correct?

17 CHAIR MAYNARD: Right. We get that
18 information to look at it, but --

19 MEMBER STETKAR: But it's simply
20 information. The only reason I was concerned about
21 that is because of my PRA background. A lot of the
22 contentions that are raised, kind of go over into the
23 risk assessment area. And we don't normally comment or
24 question about those issues for the license renewal
25 process.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR MAYNARD: That has its own process
2 there that it goes through there.

3 MEMBER STETKAR: Okay. I just wanted to
4 make sure of that because that's something that I
5 looked at.

6 CHAIR MAYNARD: And as an individual if
7 you have comments or input on that, you can certainly
8 provide that to the staff for their consideration.

9 MEMBER BROWN: Well, you covered my items.
10 I had one other, I guess, enquiry or thought relative
11 to the ground monitoring. Do they provide one of those
12 little, you know, boundary plots to show where the
13 tritium. You hear all the words and everything, but a
14 little plat picture that shows a line going around
15 that says what the concentrations are. I don't know--

16 MEMBER RYAN: I think we got agreement
17 that we're going to get some additional information.

18 (Whereupon, simultaneous discussions.)

19 MEMBER RYAN: I was just trying to get a
20 better understanding pictorially for my visually
21 oriented mind growing up in the television age.

22 CHAIR MAYNARD: One other question for
23 you, Charlie. I think that the staff has offered
24 this, you know, put a little information together on
25 the embrittlement and the Charpy V test, the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 requirements and stuff there --

2 MEMBER BROWN: Okay.

3 CHAIR MAYNARD: -- and the program for
4 that.

5 MEMBER BROWN: Yes. As long as it's not
6 5,000 pages. If it's kind of crisp summary, a page and
7 half. I don't know. Something that's reasonably
8 readable in my lifetime.

9 CHAIR MAYNARD: Okay. Harold?

10 MEMBER RAY: I'm not -- I wouldn't express
11 the issue as leakage, but I think what you're
12 intending I agree with, which is any challenge to
13 structural adequacy arising as a result of the
14 leakage.

15 MEMBER BROWN: Right.

16 MEMBER RAY: That issue, the sufficiency
17 of the sampling that's been done to establish that
18 that's not a problem, is it even possible to eliminate
19 it as an issue merely by sampling, perhaps analysis
20 would be more fruitful.

21 And then I guess you and John had an
22 exchange there about the issues that were raised by
23 the gentleman on the phone link right now. I guess I
24 need some tutorial on that subject matter. I mean, I
25 can't imagine us duplicating a process that's already

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 underway at the SLB, for example. But on the other
2 hand, I'm not sure how we process it. And the
3 business about well it's not something that we take
4 into account may well be correct excerpt as input that
5 we receive. But I guess I'm just feeling at this
6 point, Otto, that I need a little more education about
7 how we deal with the number of things that were
8 brought to our attention there as concerns.

9 This I don't think is the right time or
10 place to do it. Maybe the full Committee discussion is
11 the right place. I'm not sure.

12 CHAIR MAYNARD: Okay.

13 MEMBER RAY: But that's the thing I would
14 add to what's been said so far. I just need more
15 education about how do we process that input.

16 CHAIR MAYNARD: Yes. And I think the full
17 Committee would be a good place we can kind of talk
18 about that a little bit. And the bottom line by any
19 input that we get from the public gets considered,
20 we'll take a look at what is within our scope.
21 Anything else, you know, the staff has heard this and
22 we can always refer things to the staff instead of --

23 MEMBER RAY: Exactly.

24 CHAIR MAYNARD: It's not that there's a
25 box here and anything outside of that gets ignored.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 It's just a matter of what we consider versus what's
2 considered through another process.

3 MEMBER RAY: Well, it would take quite a
4 bit for us to step through that again. And I just
5 wanted to put that on your list of to-dos. Because I
6 do feel that we do need to digest it and discuss it to
7 see what we should be doing.

8 CHAIR MAYNARD: Okay.

9 MR. TURK: At the risk of volunteering,
10 sir.

11 CHAIR MAYNARD: Come to a microphone.

12 MR. TURK: I'll probably follow the advice
13 or I'll fail to follow the advice of never volunteer.

14 CHAIR MAYNARD: Could you give your name.

15 MR. TURK: My name is Sherwin Turk. I'm a
16 lawyer in the Office of General Counsel, and I'm
17 working with the staff on the Indian Point license
18 renewal review.

19 Matters that were raised by Riverkeeper
20 before the licensing board were looked at by the
21 Board. They reached a decision on whether the issue
22 should be admitted or not. Their decision is subject
23 to appeal and review by the Commission directly.

24 At the same time, any comments that
25 Riverkeeper has on the draft EIS, the draft

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 supplemental EIS which the staff issued, would be
2 looked at by the staff before issuing the final EIS.
3 They'll be addressed in the final EIS. And, again, the
4 EIS itself will be part of the record that the
5 Commission considers it reaches a decision on
6 licensing.

7 So there is this twofold process for
8 considering environmental concerns.

9 MEMBER RAY: But I don't know that that
10 answers the question what cognizance should we take
11 it. I mean, that's hopeful but not dispositive, I
12 don't think.

13 MR. TURK: Yes. I'd have to leave that up
14 to ACRS' own counsel.

15 MEMBER RAY: Right.

16 CHAIR MAYNARD: And again, I think you're
17 talking from discussion of the full Committee meeting
18 there. So, yes. Okay.

19 Mike?

20 MEMBER RYAN: I think the issue of the
21 groundwater we've touched on enough. And to me it's
22 one where there might be some insights developed and
23 gained by looking at the data in terms of what the
24 behavior of a leakage is rather than any other
25 environmental assessment beyond that.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 So I think from the plant renewal
2 standpoint it's useful for us to hearing more about
3 that with regard to the renewal questions more than,
4 you know, some of the other questions that we were
5 raising on the forum. So I'm happy we'll take a look
6 at that.

7 CHAIR MAYNARD: One other item. I think
8 when I was reading the introductory remarks, I think I
9 left a sentence out. I think I failed to identify that
10 Peter Wen wa the Designated Federal Official for the
11 meeting here. So get that on the record. We did have
12 one.

13 Okay. I'd like to thank everyone for
14 their presentations, the applicant, the stuff. I
15 appreciate the public comments from Riverkeeper.

16 We will take all these comments and items
17 and factor those into our further review. And have
18 discussions at the full Committee meeting to determine
19 what our next step for us would be. But I think we've
20 provided you with some of the key things that we think
21 we certainly need to focus on. And that doesn't mean
22 that there might be other issues that will come up and
23 or when come time for another meeting, that we have
24 different questions. But at least these are things
25 that I think are the top of our minds right now.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 So, with that, I don't know, Brian, did
2 you have any closing remarks?

3 MR. HOLIAN: No. I just have a couple of
4 comments and it's just quickly just a couple of
5 process takeaways that I took from some of the
6 questions. And I just wanted to mention that I had
7 one comment about the reactor cavity leakage that's
8 applicable.

9 One, on the question of RAIs or requests
10 for additional information on feed reg valves. I take
11 that as a process issue that we've been looking at in
12 license renewal for when we ask a specific question
13 about one plant, say IP2 or 3, that we also are open
14 ended enough to ask the utility to address, you know,
15 the difference in the COB on that. So I do understand
16 that. And we would expect the utility if there was an
17 issue related to the application, to pick that up
18 also. But I take that as a process improvement for us.

19 The second item was a discussion on
20 operating experience and the issue of what you look at
21 now vice what you look at for a program to be and to
22 come. I do just mention that we do have a couple of
23 plants this year entering the extended period. And
24 there will be operating experience on aging management
25 programs that we will expect these applicants to take

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 into account. So I think the question was more of
2 whether they're doing it now or whether they're saving
3 up their operating experience to apply it to the
4 program at the right time. But that will be an item
5 that we'll check on in our process for ensuring they
6 do that.

7 The last comment I had was just briefly on
8 reactor cavity leakage. We will get a bigger
9 discussion of that both from the staff and the
10 applicant. But I will mention that the ACRS will
11 probably hear Prairie Island. I don't know when that
12 Subcommittee meeting is, but we had a public meeting
13 with them just Monday of this week on reactor cavity
14 leakage similar to what you heard discussed here today
15 at the Prairie Island plant. So more to come on that
16 one.

17 CHAIR MAYNARD: And Harold reminded me we
18 do need to emphasize, like on the leakage, it's not so
19 much the leakage as what's the safety significance of
20 that and what's --

21 MR. HOLIAN: That's exactly right. And a
22 last plug for some of the some of this operating
23 experience that was looked at at Indian Point. You
24 know, Dr. Sam Lee and I were discussing that prior to
25 coming to the Subcommittee. It's we've been criticized

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

(202) 234-4433

1 for not including enough operating experience. And we
2 are looking to make sure that the GALL items,
3 especially in the concrete items that you heard about
4 today, whether we have the applicable items in there
5 for aging effects. So that we look at that as a
6 success story as the staff's been pulsing some of
7 those areas.

8 CHAIR MAYNARD: Fred, did you have any
9 closing?

10 MR. DACIMO: Yes. Fred Dacimo.

11 One technical item that we'd like to
12 address before we just wrap it up.

13 MR. AZEVEDO: Again, my name is Nelson
14 Azevedo.

15 Some question this morning as to what the
16 temperature was for the reactor vessel heads at both
17 units. The temperature is 592 degrees for both units.

18 MR. DACIMO: We appreciated this
19 opportunity to speak to the ACRS this morning and this
20 afternoon. I think the questions were insightful.
21 And we will certainly address all the issues at
22 however the ACRS decides what venue they want to have
23 this meeting the next time. And we're looking forward
24 to that.

25 That's all I've got.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

1 CHAIR MAYNARD: All right. If nobody has
2 anything, we will adjourn the meeting.

3 Thank you very much.

4 (Whereupon, at 3:42 p.m. the meeting was
5 adjourned.)
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

NEAL R. GROSS

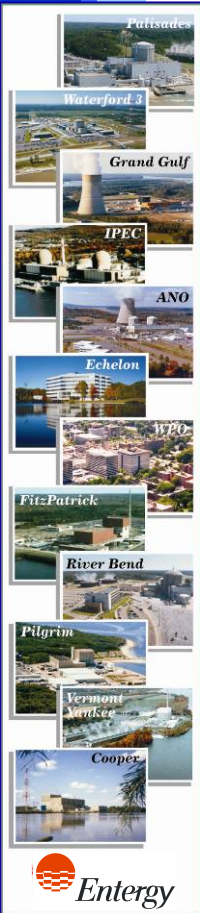
COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

Indian Point Energy Center

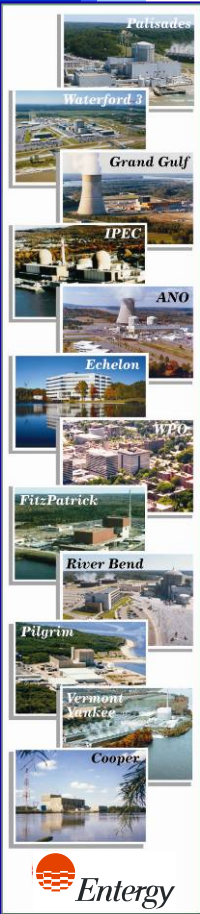
**ACRS License Renewal Subcommittee
March 4, 2009**



Indian Point Energy Center

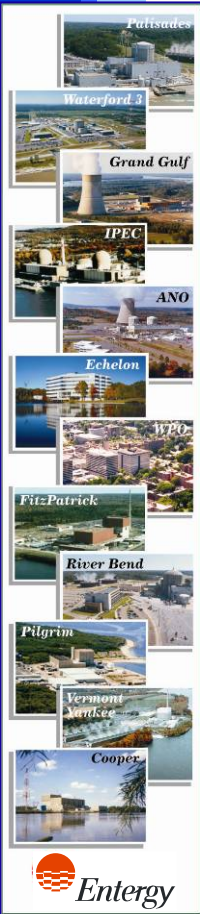
Personnel in Attendance

Joe Pollock	Vice President, Site - IP
Fred Dacimo	Vice President, License Renewal - IP
John McCann	Director, Licensing
Don Mayer	Director, Emergency Planning
Rich Burroni	Manager, Programs and Components
Garry Young	Manager, License Renewal
Tom McCaffrey	Manager, Design Engineering
John Curry	Project Manager, License Renewal - IP
Mike Stroud	Project Manager, License Renewal
Alan Cox	Technical Manager, License Renewal
Bob Walpole	Manager, Licensing
Rich Drake	Supervisor, Civil/Structural Engineering
Nelson Azevedo	Supervisor, Code Programs



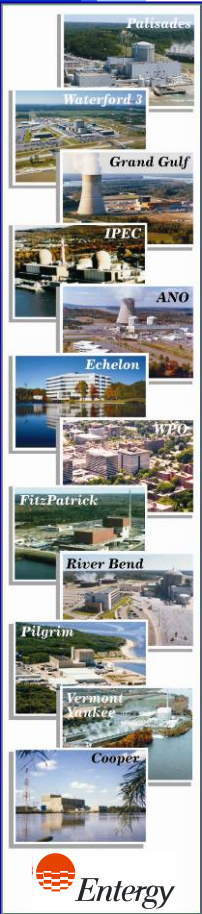
Agenda

- Background
- Operating History
- Major Plant Improvements
- Scoping Discussion
- Application of NUREG-1801
- Commitment Process
- Topics of Interest
- Questions



IPEC Site Description

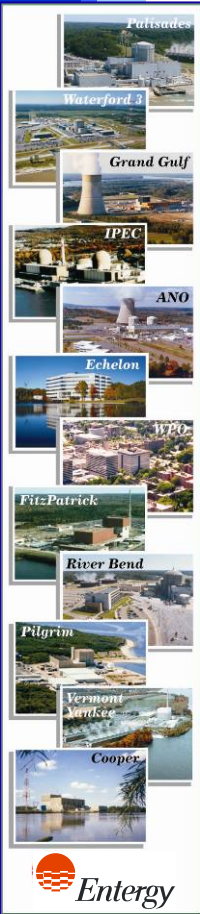
- Westinghouse NSSS UE&C (AE) - WEDCO (Constructor)
- IP2 – Westinghouse low pressure turbines, Siemens HP turbine, GE generator
- IP3 – ABB low pressure turbines, Siemens HP turbine, Westinghouse generator
- PWR, large dry containment
- 3216 MW thermal power
1078 MWe – IP2, 1080 MWe – IP3
- Once-through cooling from Hudson River
- IP2 dual speed circulating water pumps with Ristroph screens
- IP3 variable speed circulating water pumps with Ristroph screens
- Staff complement: approximately 1100



IPEC Operating History

Indian Point Unit 2

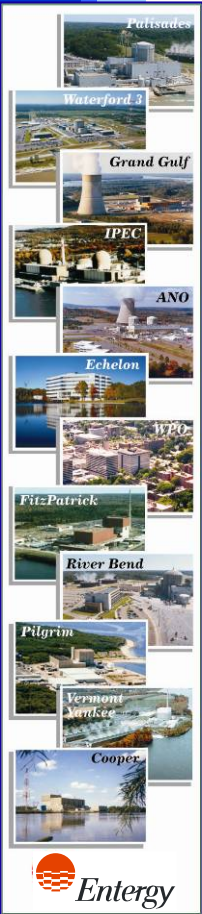
- Construction permit October 14, 1966
- Operating license September 28, 1973
- Commercial operation August 1, 1974
- Uprated power licenses
 - 11.4% (3071 MWt) March 7, 1990
 - 1.4% (3114 MWt) May 22, 2003
 - 3.26% (3216 MWt) October 28, 2004



IPEC Operating History

Indian Point Unit 3

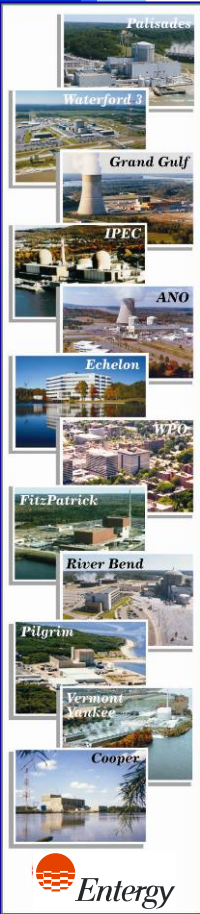
- Construction permit August 13, 1969
- Operating license December 12, 1975
- Commercial operation August 30, 1976
- Uprated power licenses
 - 10.0% (3025 MWt) August 18, 1978
 - 1.4% (3067 MWt) November 26, 2002
 - 4.85% (3216 MWt) March 24, 2005



IPEC Operating History

License Transfers

- IP3 Con Edison to NYPA December 24, 1975
- IP3 NYPA to Entergy November 21, 2000
- IP2 Con Edison to Entergy September 6, 2001
- LR application (IP2 & IP3) April 23, 2007
- Operating license expires
 - IP2 September 28, 2013
 - IP3 December 12, 2015



Major Improvements

Indian Point Unit 2

1978

One additional station battery and inverter

1981

Fan cooler unit heat exchangers

One additional station battery and inverter

1982

Rebuilt control room with human factors and new computers

1985

Dual speed circ pumps & Ristroph screens

1990

Main generator

1995

Titanium condenser

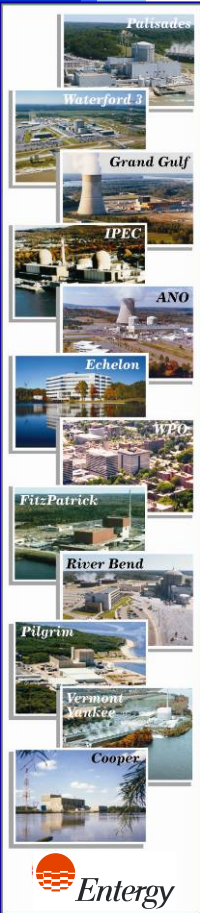
1996

Implemented 24 month fuel cycle

1997

Converted to best estimate LOCA analysis

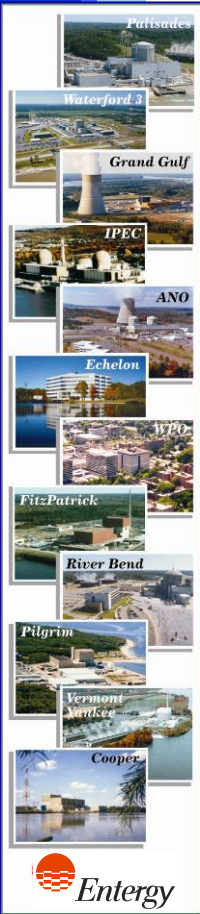
Replaced NaOH spray additive with TSP baskets in containment



Major Improvements

Indian Point Unit 2 (cont)

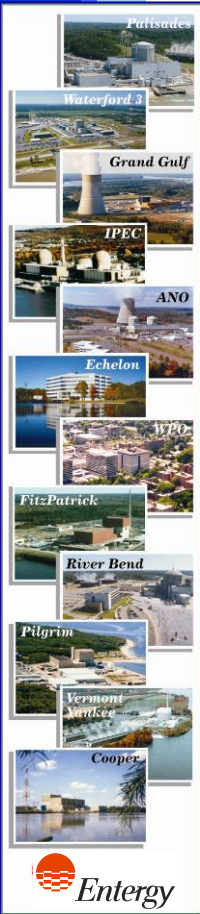
- | | |
|------|---|
| 1998 | <i>Low pressure turbines</i> |
| 1999 | Autocatalytic hydrogen recombiners |
| 2000 | <i>Steam generators</i> |
| | <i>Feedwater heaters</i> |
| | Converted to alternate source term |
| 2004 | <i>High pressure turbine</i> |
| | <i>Moisture separator reheaters</i> |
| 2006 | <i>Main transformers</i> |
| | Containment sump improvements |
| 2008 | <i>SBO / Appendix R diesel generator</i> |



Major Improvements

Indian Point Unit 3

- | | |
|------|---|
| 1981 | 4 th battery charger / inverter |
| 1982 | Two new fire water tanks and pumps |
| 1983 | Fan cooler unit heat exchangers |
| 1984 | SBO / Appendix R diesel generator |
| 1985 | Variable speed circulating water pumps |
| 1986 | Rebuilt control room with new computers and human factors |
| | <i>One main transformer</i> |
| | <i>Titanium condensers</i> |
| | <i>Steam generators</i> |
| 1987 | Condensate polishing system and blowdown recovery |
| 1989 | <i>Feedwater heaters</i> |



Major Improvements

Indian Point Unit 3 (cont)

1993

Low pressure turbines

1995

Implemented 24 month fuel cycle

1997

Thermal hydrogen recombiners

2003

Converted to best estimate LOCA analysis

2005

High pressure turbine

Moisture separator reheaters

Converted to alternate source term

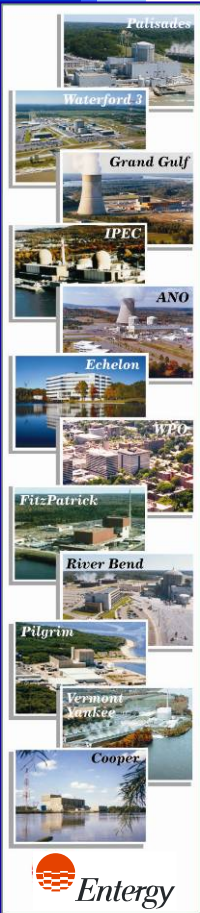
2007

Second main transformer

Containment sump improvements

2008

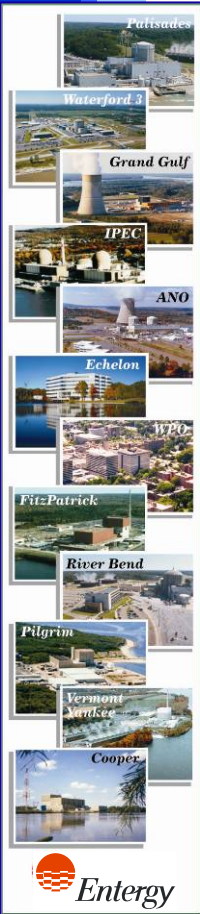
Sodium tetraborate baskets



Major Improvements

Site

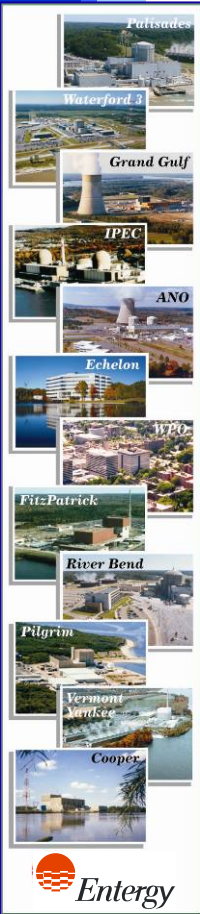
1987	Training building
1997	Water treatment facility
2005	Generation support building
2007	Dry fuel storage
	IP1 - 160 fuel assemblies
	IP2 - 96 fuel assemblies
2008	E-plan siren system
Planned	Emergency operations facility



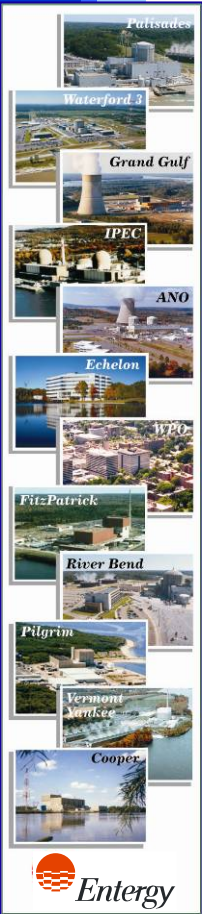
IPEC Plant Status

Current Plant Status

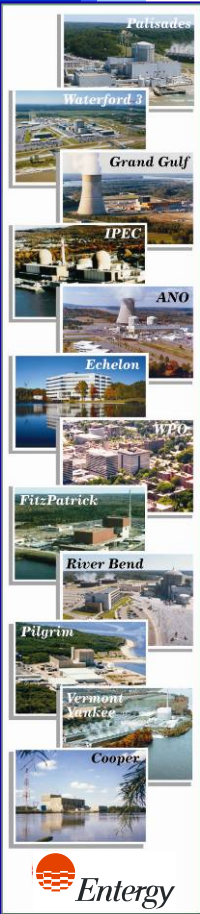
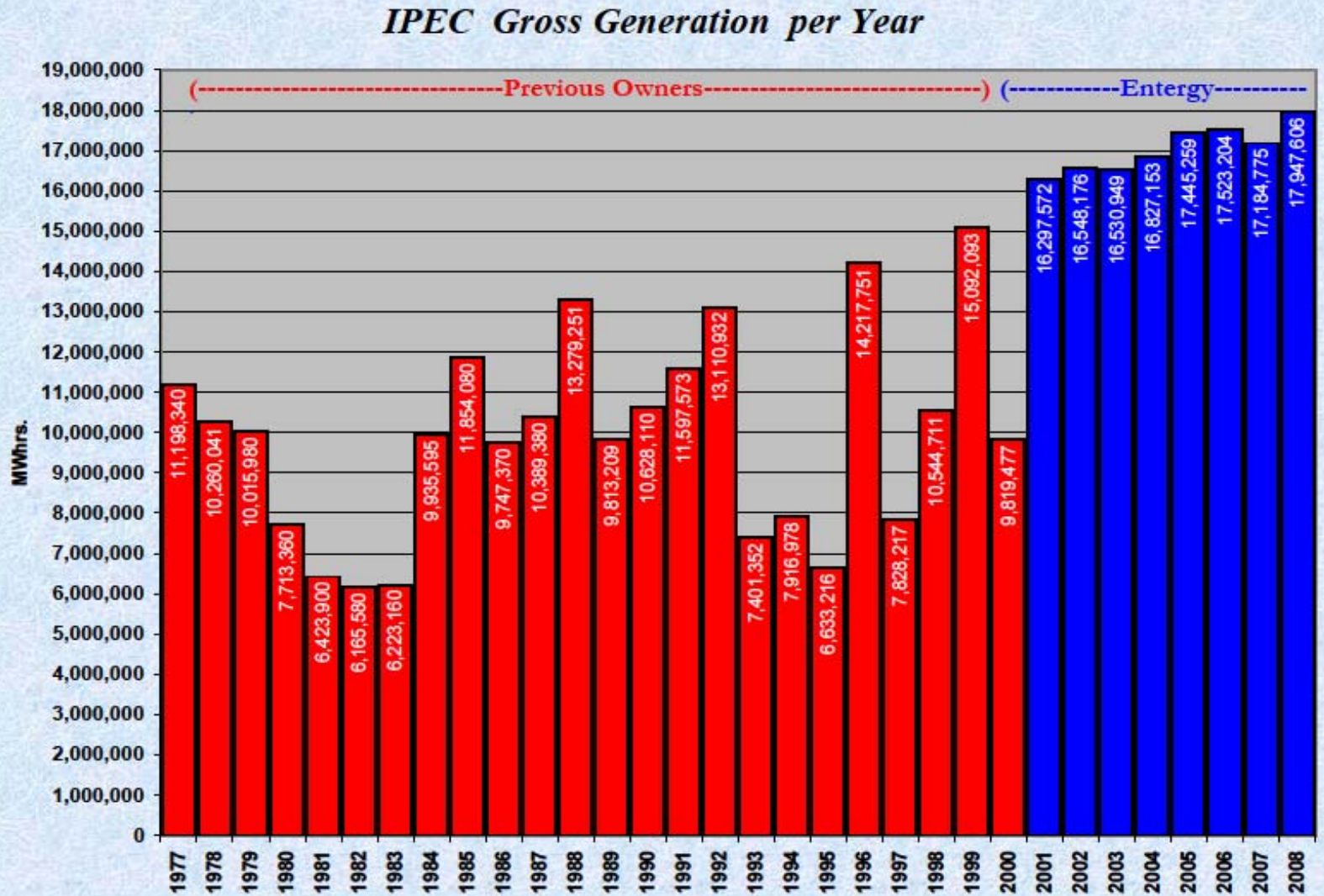
- Both units on-line at full power
 - IP2 continuous days on line - 274
 - IP3 continuous days on line - 672
- Next outages
 - Spring 2009 (IP3)
 - Spring 2010 (IP2)



Indian Point Energy Center



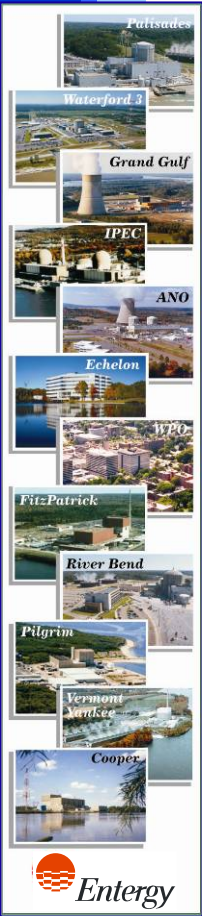
IPEC Generation



IPEC License Renewal Project

LRA Development

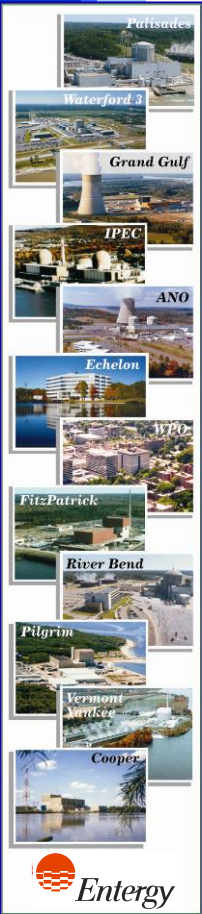
- Incorporated lessons learned from previous applications
- Peer review conducted – NEI and other utilities
- LRA internal reviews (Safety Review Committees and QA)
- LRA prepared by experienced, multi-discipline Entergy team (utilized corporate and on-site resources)
- All comments resolved prior to submittal



Application of NUREG-1801

Aging Management Reviews

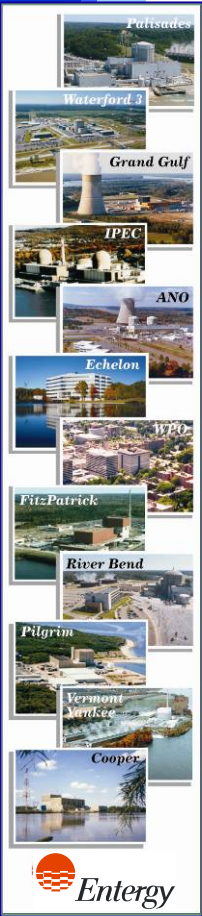
- Aging management reviews consistent with guidance in NEI 95-10
- Aging management review results achieved good consistency with NUREG-1801
- 90% of AMR line items used notes A – E (consistent with NUREG-1801, Rev 1)



Application of NUREG-1801

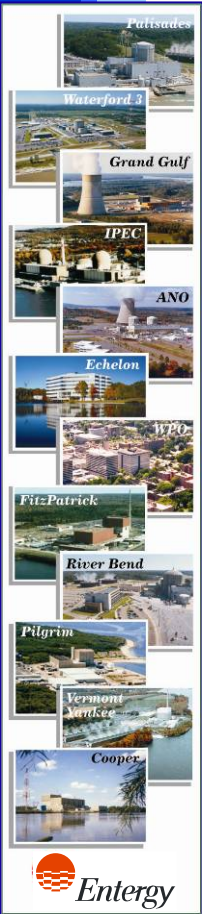
Aging Management Programs

- 41 aging management programs
 - 31 existing programs
 - 10 new programs
- NUREG-1801 / plant-specific breakdown
 - 8 plant-specific programs
 - 33 NUREG-1801 programs
 - 8 with exceptions to NUREG-1801



Commitment Process

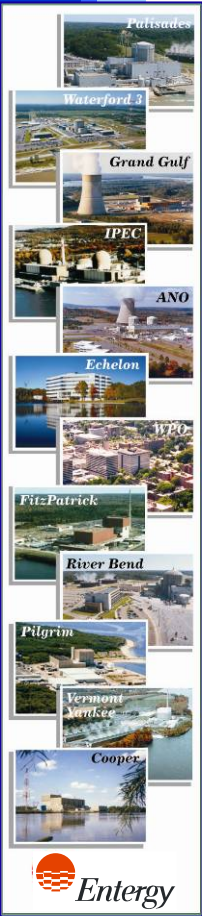
- License renewal commitments (38)
 - Refined during audit / inspection process
 - IP commitment management process
- Commitment management process established consistent with industry guidance
- Entergy periodically inspects commitment management process



Implementation

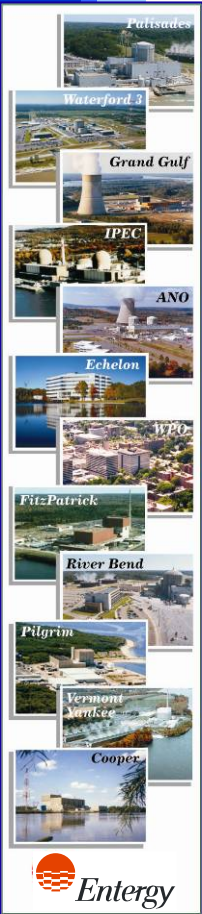
Fleet Approach

- Employing fleet approach to implementation for Entergy plants that have submitted an LRA
- License renewal implementation fleet manager and site coordinator in place
- Develop schedule for Entergy plants as renewed licenses approved
- Several common fleet implementing procedures are being developed for Entergy plants



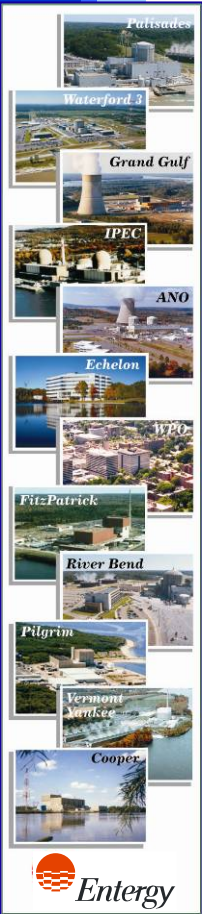
SER Open Items

<u>Item</u>	<u>Status</u>
IP2 Fire Protection – yard hose houses and chamber housings	Ready
IP2 & IP3 Main Feedwater System – stop valves	Ready
IP2 Auxiliary Feedwater Pump Room Fire Event Scoping	Ready
Electrical and Instrumentation & Control Systems – SBO scoping	NRC review
Fire Protection Program – inaccessible fire barrier penetration seals	Ready
Structures Monitoring Program – IP2 reactor cavity	NRC review
Structures Monitoring Program – IP2 spent fuel pool	NRC review



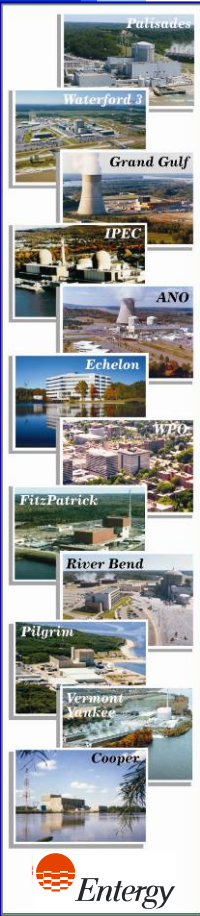
SER Open Items

<u>Item</u>	<u>Status</u>
Containment Inservice Inspection – containment concrete aging mgmt	NRC review
Heat Exchanger Monitoring – visual inspection criteria	Ready
Inservice Inspection Program – Lubrite sliding supports	Ready
Inservice Inspection Program – ASME Code Section XI	Ready
Nickel Alloy Program – program clarification	Ready
Inservice Inspection Program – CASS components	Ready
Service Water System – material / environment clarification	Ready



SER Open Items

<u>Item</u>	<u>Status</u>
Periodic Surveillance and Preventive Maintenance – program elements	Ready
Auxiliary Feedwater Pump Room Fire Event – aging management	NRC review
Containment Structures – water-cement ratios	NRC review
Concrete Structures – Aging management of concrete subject to elevated temperatures	NRC review
Structures and Component Supports – Groups B1 – B5 supports	Ready
Class 1 Fatigue – IP3 heatup and cooldown transients	Ready



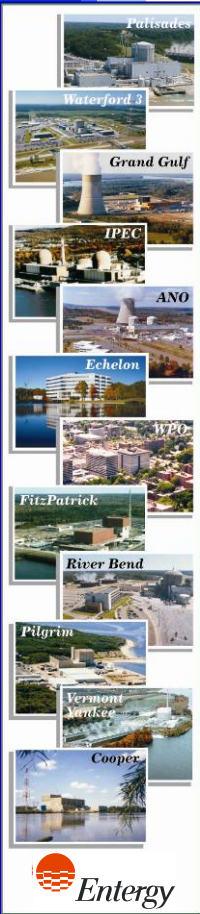
Topics of Interest

• Remaining Open Items

- OI 2.5.1 SBO scoping
- OI 3.4-1 AMR results for systems used during auxiliary feedwater pump room fire
- OI 3.0.3.2.15-1 IP2 reactor refueling cavity structure
- OI 3.0.3.2.15-2 IP2 spent fuel pool structure
- OI 3.0.3.3.2-1 Exterior containment concrete aging management
- OI 3.5-1 Water-cement ratio for concrete
- OI 3.5-2 Aging management of concrete subject to elevated temperatures

• Other Topics of Interest

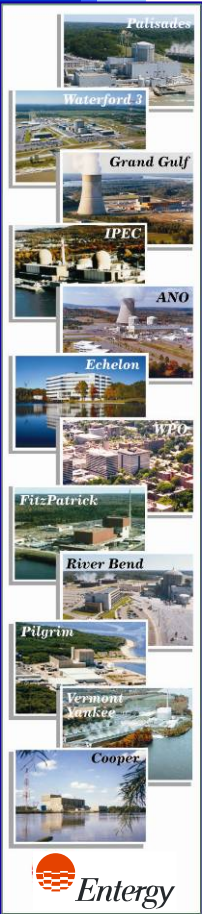
- Reactor vessel integrity
- Buried piping aging management program
- IP2 containment liner – 1973 feedwater event



SBO Scoping

OI 2.5-1 SBO Scoping

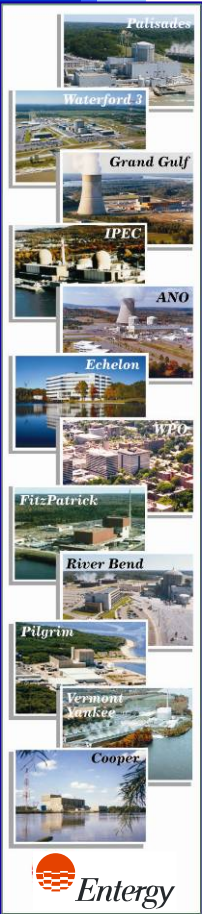
- SBO scoping for IP2 and IP3 meets the requirements of 10 CFR 54.4(a)(3)
- The LR SBO recovery boundary is in accordance with the NRC guidance (NUREG-1800, Section 2.1.3.1.3 and 2.5.2.1.1)
- The LR SBO recovery boundary is also in accordance with the proposed NRC guidance in LR-ISG-2008-01 (Draft issued 3/5/2008)
- Both primary and alternate sources of offsite power are included for SBO recovery for IP2 and IP3



IP2 Auxiliary Feedwater Pump Room Fire Event

OI 3.4-1 Component Aging Management

- Secondary systems credited for alternate flow path to steam generators for a period of one hour in the unlikely event of fire in the room
- Normal plant operation directly demonstrates ongoing ability of the identified systems to perform license renewal intended function
- RAI requested additional detail on component types credited and aging management
- Provided requested information in letter dated January 27, 2009

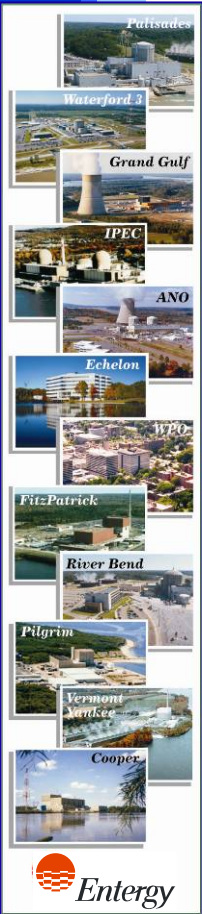


Structures Monitoring Program

OI 3.0.3.2.15-1

IP2 Reactor Refueling Cavity Structural Integrity

- Stainless steel liner leakage occurs only during refueling outages since late 1970s. Corrective actions implemented with mixed results
- Evaluation of concrete samples concluded concrete and rebar behind the cavity lining remain capable of performing license renewal intended function
- New processes being researched to repair leaks in the reactor refueling cavity liner
- Aging management includes SMP inspections, core bore sample of concrete and inspection of rebar



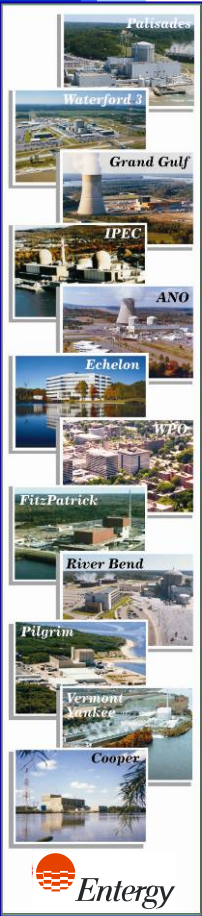
INDIAN POINT REACTOR CONTAINMENT



Structures Monitoring Program

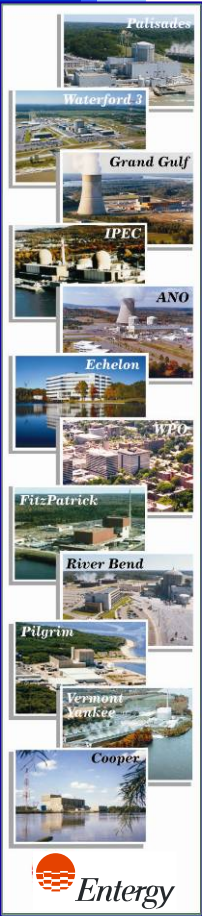
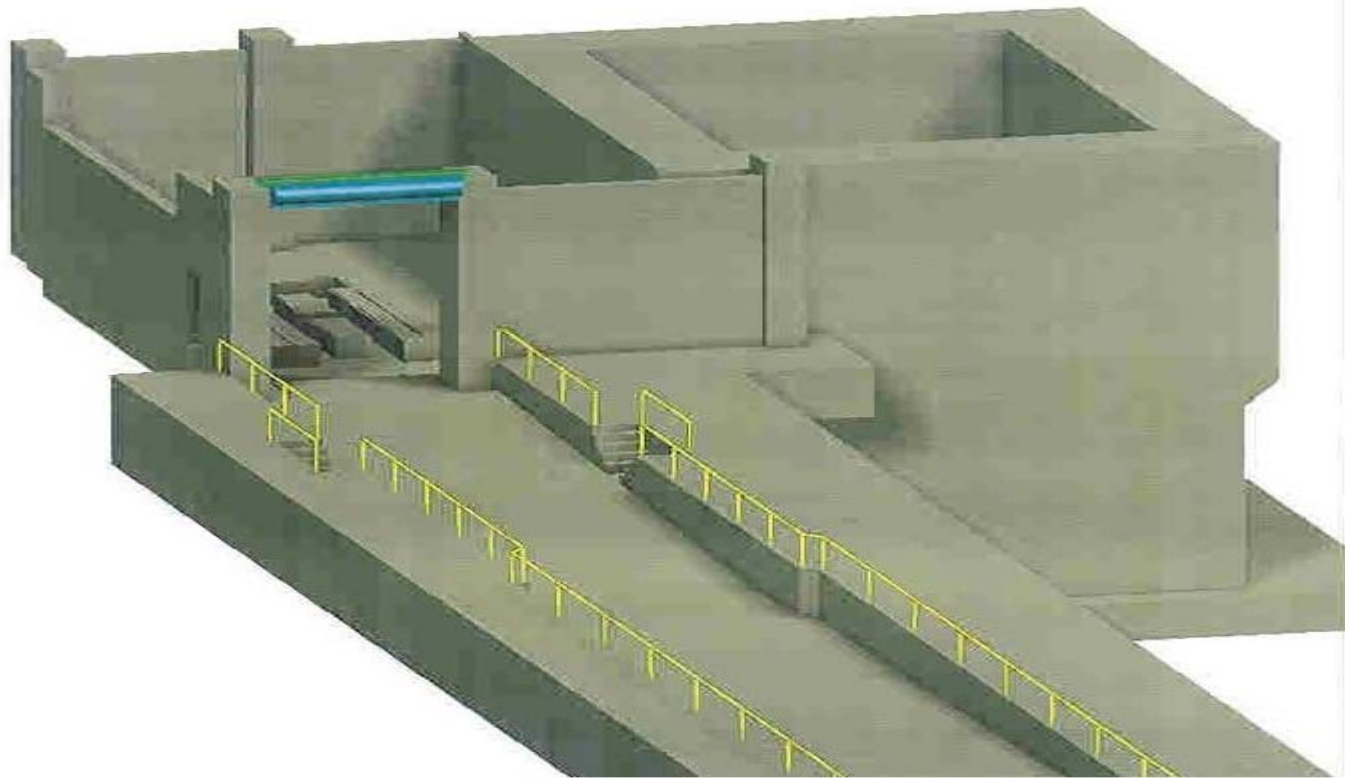
OI 3.0.3.2.15-2 IP2 Spent Fuel Pool

- Pool liner leakage first identified and repaired in 1992
- 2005 during excavation for dry fuel storage, an exterior shrinkage crack in concrete wall was found
- 2007 liner leak found and repaired in transfer canal
- Structural evaluations concluded that the concrete and rebar remain capable of performing license renewal intended function
- Aging management includes SMP inspections, SFP level monitoring and monitoring of groundwater near SFP exterior wall



Structures Monitoring Program

IP2 Spent Fuel Pool

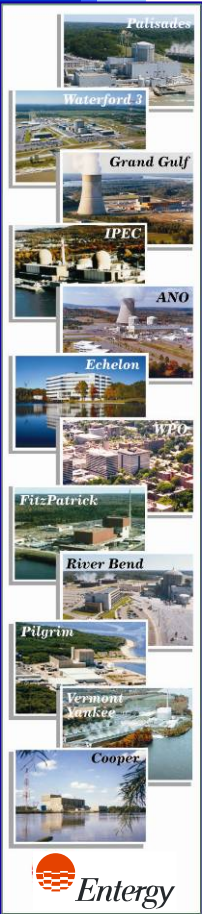


Structures Monitoring Program

OI 3.0.3.3.2-1

Exterior Containment Concrete Aging Management

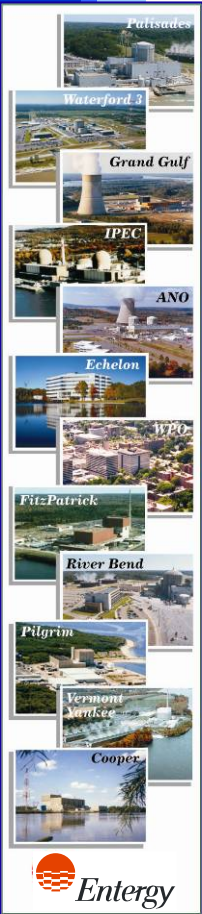
- Isolated areas at Cadweld joints of rebar and at attachment points used for scaffolding during construction
 - First documented during the initial IWL inspection in 1995
- Evaluation of structural impact - reinforcing steel provides most of the strength, observed surface degradation has no impact on ability of containment to perform its intended function
- Areas are monitored by Structures Monitoring Program
- Commitment for program enhancement to better characterize observed degradation through the use of optical aids for improving trending capabilities



Structures Monitoring Program

OI 3.5-1 Water-Cement Ratio for concrete

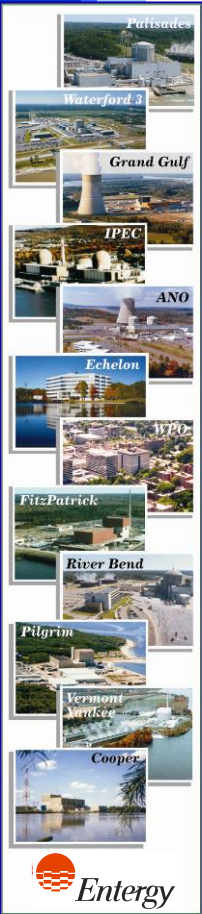
- NUREG-1801 identifies aging effects for concrete in outdoor air environment
- Recommends evaluation considering water-cement ratio
- IPEC water-cement ratios for concrete are outside NUREG-1801 recommended range
- ACI 318-63, original design spec for IPEC, provides two methods to determine the required concrete strength
- IPEC used method 2 for testing of concrete mixtures for containment concrete
- IPEC actual test reports confirm the compressive strength of concrete was above the required 3000 psi of ACI 318-63



Structures Monitoring Program

OI 3.5-2 Aging management of concrete subject to elevated temperatures

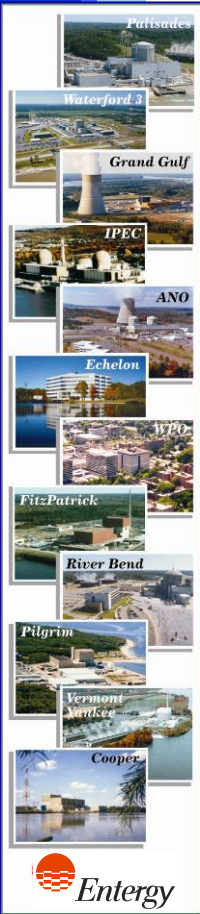
- Concern that IP2 hot piping penetrations are allowed to operate at temperatures greater than 200° F
- NUREG-1801 allows local area concrete temperature greater than 200° F with a plant specific evaluation
- IP2 plant specific evaluation for the effects of temperatures up to 250° F was performed
 - Engineering evaluations determined that a maximum of 15% reduction in the strength of concrete for temperatures up to 250° F
 - Concrete tests showed actual strengths more than 20% above design strength of 3000 psi



Topic of Interest

IP2 Reactor Vessel Integrity

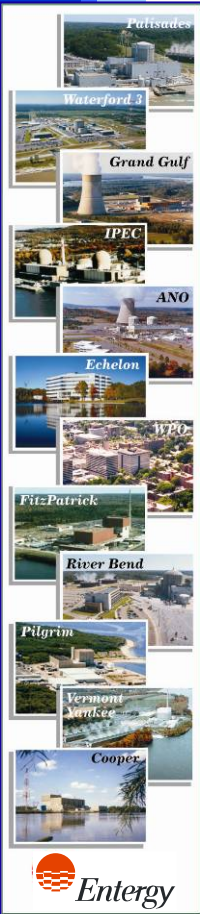
- Vessel was manufactured by Combustion Engineering
- Limiting Upper Shelf Energy (USE) location is Plate B2002-3 at 48.3 ft-lbs. Although less than the Appendix G screening criteria of 50 ft-lbs, it exceeds the 43 ft-lbs required by the WOG equivalent margin analysis.
- Limiting RT_{PTS} location is circ weld 34B009 at 269.4° F which is less than the screening criteria of 300° F.



Topic of Interest

IP3 Reactor Vessel Integrity

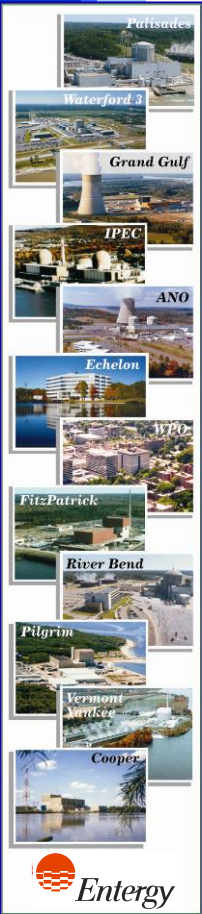
- Vessel was manufactured by Combustion Engineering
- Limiting Upper Shelf Energy (USE) location is Plate B2803-3 at 49.8 ft-lbs. Although this is less than the Appendix G screening criteria of 50 ft-lbs, it exceeds the 43 ft-lbs required by the WOG equivalent margin analysis.
- Limiting RT_{PTS} location is plate B2803-3 at 279.5° F which exceeds the screening criteria of 270° F.
- As required by 10CFR50.61, IP3 will submit a plant-specific safety analysis at least three years prior to exceeding the screening criterion



Topic of Interest

Buried Piping Aging Management

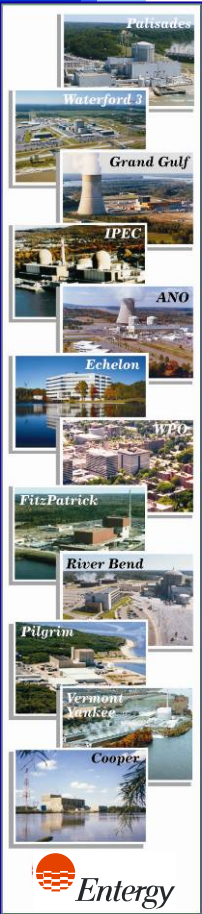
- For license renewal, IP is committed to NUREG-1801 program Section XI.M34
- Program includes consideration of operating experience
- An inspection in Fall of 2008 examined six pipe sections (i.e. three sections at each of two locations)
- Inspections revealed some coating degradation. Pipe wall thickness was measured with UT
- UT indicated that the piping remains at full thickness.
- The coating was repaired and the holes were backfilled.



Topic of Interest

Buried Piping Aging Management

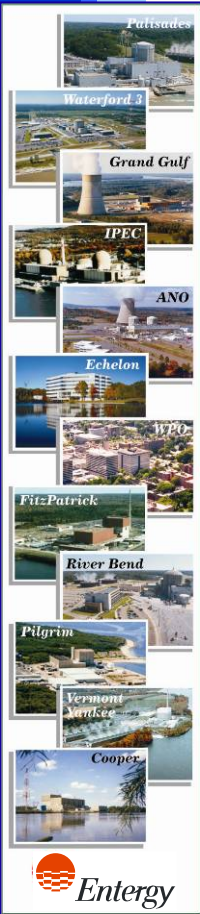
- Recent underground leakage in an 8" condensate line due to external corrosion which led to a through-wall defect.
- The location was excavated, the areas of concern were repaired or replaced and the line was returned to service.
- A failure analysis is on-going on the removed section of piping to establish additional inspection scope as well as future re-inspection frequency.
- This operating experience is being reviewed to establish the scope and frequency of future buried pipe inspections.



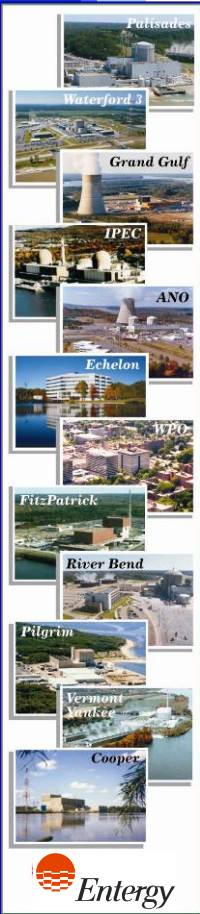
Topic of Interest

IP2 Containment Liner 1973 Feedwater Event

- November 1973 - plant trip from 7% power
- Flashing steam impinged on the containment liner causing a bulge to develop
- Piping was repaired, other modifications made, and liner deformation restored leaving a slight permanent deformation
- During last outage, 2008, visual inspection confirmed liner still in “as-left” configuration
- Continuous weld channel pressurization and ILRTs confirm liner integrity
- Commitment made to perform a one-time visual inspection prior to entering the period of extended operation



Comments and Questions





Advisory Committee on Reactor Safeguards License Renewal Subcommittee

Indian Point Nuclear Generating Unit Nos. 2 and 3

Safety Evaluation Report with Open Items

March 4, 2009

Kimberly Green, Project Manager
Office of Nuclear Reactor Regulation

Introduction

- Overview
- Section 2: Scoping and Screening Review
- License Renewal Inspections
- Section 3: Aging Management Program and Review Results
- Section 4: Time-Limited Aging Analyses (TLAAs)
- Open Items

Overview

- LRA Submitted by letter dated April 23, 2007
- Westinghouse 4-Loop
- 3216 MWth, 1080 MWe
- Operating license DPR-26 (IP2) expires September 28, 2013
- Operating license DPR-64 (IP3) expires December 12, 2015
- Located approximately 25 miles north of NYC limits

Overview

- Safety Evaluation Report with Open Items was issued January 15, 2009
- 20 Open items
- 121 RAI's Issued
- 272 Audit Questions
- 38 Commitments

Overview

- Scoping and Screening Methodology Audit
 - October 8, 2007 - October 12, 2007
- Aging Management Programs (AMP) Audit
 - August 27, 2007 – August 31, 2007
- Aging Management Review (AMR) & Time-Limited Aging Analysis (TLAA) Audit
 - October 22, 2007 – October 26, 2007
 - November 27, 2007 – November 29, 2007
 - February 19, 2008 – February 21, 2008
- Regional License Renewal Inspections
 - January 28, 2008 – February 1, 2008
 - February 11, 2008 – February 14, 2008
 - March 31, 2008 – April 2, 2008
 - June 2, 2008 – June 6, 2008, and June 18, 2008

Open Items

- SER issued with 20 open items
 - 14 with requests for additional information
 - 6 are still under review by staff
- Applicant submitted additional information dated January 27, 2009
- Staff can close out 13 Open Items

Section 2: Structures and Components Subject to Aging Management Review

Section 2.1 – Scoping and Screening Methodology

- Based on audit and review staff concluded that the applicant's methodology is consistent with the requirements of 10 CFR 54.4 and 54.21(a)(1)

Section 2.2 – Plant-Level Scoping Results

- IP2 chlorination and IP3 H₂ systems initially omitted from scope
- Staff concluded applicant identified mechanical systems and structures within the scope of license renewal per 10 CFR 54.4(a).

Section 2.3 – Scoping and Screening Results: Mechanical Systems

- Mechanical Systems: 59 (IP2) and 87 (IP3)
- Two Tier Review of Balance of Plant systems:
 - Tier 1 Review: Review LRA and UFSAR
 - Tier 2 Review: Detailed review of LRA, UFSAR, and license renewal drawings
- 100% of mechanical systems identified by applicant as within the scope of license renewal were reviewed

Section 2.3 – Scoping and Screening Results: Mechanical Systems

- Staff identified omission of nonsafety-related components from scope for IP2 containment spray system
- Applicant re-evaluated and identified 3 other systems (IP2 CCW, IP3 CCW, and IP3 BVS)
- Amended LRA and added components to scope

Section 2.3 – Scoping and Screening Results Mechanical Systems

- Three Open Items
 - OI 2.3A.3.11-1 – yard hose houses and chamber housings
 - OI 2.3.4.2-1 – feedwater isolation valves
 - OI 2.3A.4.5-1 – auxiliary feedwater pump room fire event systems
- These OIs can be closed

Section 2.4 – Scoping and Screening Results: Structures

- Staff concluded that there were no omissions of structures or structural components from scope of license renewal in accordance with 10 CFR 54.4(a), and no omissions from AMR in accordance with 10 CFR 54.21(a)(1).

Section 2.5 – Scoping and Screening Results: Electrical and Instrumentation and Control Systems

- OI 2.5-1 – Station blackout scoping
- Issue is under staff evaluation
- With exception of SBO OI scoping, staff concluded no omissions of electrical and instrumentation and control system components from the scope of license renewal in accordance with 10 CFR 54.4(a), and no omissions from AMR in accordance with 10 CFR 54.21(a)(1)

Section 2.6 – Conclusion for Scoping and Screening

- The applicant's scoping and screening methodology is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1)
- With exception of open items, the applicant adequately identified those SSCs within the scope of license renewal in accordance with 10 CFR 54.4(a), and those SCs subject to an AMR in accordance with 10 CFR 54.21(a)(1).



License Renewal Inspections

Glenn Meyer

Region I Inspection Team Leader

Inspection Objectives

- Scoping of Non-safety SSCs
- 28 Aging Management Programs (AMPs)
- 2 Systems: Auxiliary Feedwater; IP2 SBO diesel generator (DG)
- Followup: IP2 SBO DG, electrical cable vault, and containment liner

Scoping

- Scoping of non-safety SSCs – generally accurate and acceptable
- Structural and spatial interactions reviewed
- AMP reviews found 2 component scoping errors

Aging Management Program Review

Resolved by LRA Amendment 3:

- Structural Monitoring
- Oil Analysis
- Diesel Fuel Monitoring
- Water Chemistry
- Metal-Enclosed Bus Inspection

Aging Management Program Review

Resolved by LRA Amendment:

- Selective Leaching
- Non-EQ Bolted Cable Connections

Resolved by LRA Commitment 37:

- Exposed rebar on containment exterior

Aging Management Program Review

Resolved Onsite:

- Metal-Enclosed Bus Operating Experience
- Instrument air heat exchangers
- AMR for transite material
- Condition Reports on isolated degradation

Follow Up Inspections

- IP2 SBO diesel – scoping and system review when operational
- Electrical cable vault – when accessible
- Unit 2 containment liner – when accessible

Inspection Conclusions

- Non-safety SSC scoping and aging management programs are acceptable.
- Inspection results support a conclusion of reasonable assurance that aging effects will be managed and intended functions will be maintained

Current Performance

- Both units – Licensee Response Column
- All Findings - Green
- All Performance Indicators (PIs) – Green

Section 3: Aging Management Review Results

- Section 3.0.3 – Aging Management Programs
- Section 3.1 – Reactor Vessel & Internals
- Section 3.2 – Engineered Safety Features
- Section 3.3 – Auxiliary Systems
- Section 3.4 – Steam and Power Conversion System
- Section 3.5 – Containments, Structures and Component Supports
- Section 3.6 – Electrical and Instrumentation and Controls System

Section 3.0.3 – Aging Management Programs (AMPs)

- 41 AMPs
 - 10 New Programs
 - 31 Existing Programs
- 15 consistent with GALL Report
- 10 consistent with GALL Report with enhancements
- 8 with exceptions to GALL Report
- 8 plant-specific

Section 3.0.3 – AMPs

- 8 Open Items
- The following 5 OIs can be closed
 - OI 3.0.3.2.7-1 – fire penetration seals
 - OI 3.0.3.3.3-1 – acceptance criteria for visual examinations
 - OI 3.0.3.3.4-1 – inspection methods, etc. for lubrite sliding supports
 - OI 3.0.3.3.4-2 – corrective actions for ISI
 - OI 3.0.3.3.7-1 – Periodic Surveillance and Preventive Maintenance Program

Section 3.0.3 – AMPs

- The following 3 OIs are still under review
 - OI 3.0.3.2.15-1 – IP2 reactor refueling cavity leakage
 - OI 3.0.3.2.15-2 – IP2 spent fuel pool leak
 - OI 3.0.3.3.2-1 – Exterior containment concrete degradation

Section 3.1 – Aging Management of Reactor Vessel, Internals, and RCS

- 2 Open Items
 - OI 3.1.2-1 – Nickel alloy components
 - OI 3.1.2.2.7-1 – Inspection of CASS

These 2 OIs can be closed

Section 3.3 – Aging Management of Auxiliary Systems

- One Open Item
 - OI 3.3-1 – Clarification of material/environment/aging effect for titanium components

This OI can be closed

Section 3.4 – Aging Management of Steam and Power Conversion Systems

- One Open Item
 - OI 3.4-1 – AMR results for components needed during a fire in IP2 auxiliary feedwater pump room

This OI is still under staff review

Section 3.5 – Aging Management of Containments, Structures and Component Supports

- 3 Open Items
- The following 2 OIs are still under staff review
 - OI 3.5-1 – Water-cement ratio for IP concrete
 - OI 3.5-2 – Reduction of strength and modulus of concrete due to elevated temperatures

Section 3.5 – Aging Management of Containments, Structures and Component Supports

- The following OI can be closed
 - OI 3.5-3 – Aging management of concrete surrounding B1 supports

Section 3.6 – Aging Management of Electrical and I&C Systems

- LRA identified no aging effects for IP2 138-kV high-voltage cable
- Staff issued RAI
- Applicant amended LRA to add cable to Periodic Surveillance and Preventive Maintenance Program

Section 3.7 – Conclusion

With the exception of the Open Items, the applicant has demonstrated that aging effects will be adequately managed during the period of extended operation in accordance with 10 CFR 54.21(a)(3)

Section 4: Time-Limited Aging Analyses

- 4.1 Identification of Time Limited Aging Analyses (TLAAs)
- 4.2 Reactor Vessel Neutron Embrittlement
- 4.3 Metal Fatigue
- 4.4 Environmental Qualification of Electrical Equipment
- 4.5 Concrete Containment Tendon Prestress
- 4.6 Containment Liner Plate and Penetration Fatigue
- 4.7 Other Plant-Specific TLAAs

Section 4.2: Reactor Vessel Neutron Embrittlement – Upper Shelf Energy

Limiting Beltline Material—Lower Shell Plate (B2002-3)

Unit 2

% CU	48 EFPY Fluence (E>1 MeV) at 1/4T 10 ¹⁹ (n/cm ²)	Initial Charpy V notch USE Value (ft-lb)	Irradiated Charpy V notch USE Value at 48 EFPY (ft-lb)	Acceptance Criterion per 10 CFR 50, App. G (ft-lb)
0.25	1.136	74	48.3	≥50

- Equivalent margins analysis submitted which meets Appendix G of ASME Section XI and 10 CFR Part 50, Appendix G

Section 4.2: Reactor Vessel Neutron Embrittlement – Upper Shelf Energy

Limiting Beltline Material—Lower Shell Plate (B2803-3)

Unit 3

% CU	48 EFPY Fluence (E>1 MeV) at 1/4T 10 ¹⁹ (n/cm ²)	Initial Charpy V notch USE Value (ft-lb)	Irradiated Charpy V notch USE Value at 48 EFPY (ft-lb)	Acceptance Criterion per 10 CFR 50, App. G (ft-lb)
0.24	0.9298	68	49.8	≥50

- Equivalent margins analysis submitted which meets Appendix G of ASME Section XI and 10 CFR Part 50, Appendix G

Section 4.2: Reference Temperature for Pressurized Thermal Shock (PTS) Values

Limiting Beltline Material—Lower Shell Plate (B2803-3) Unit 3

%CU %Ni	48 EFPY Fluence (E>1 MeV) (@clad/steel interface) 10 ¹⁹ (n/cm ²)	Initial Charpy RT _{NDT} °F	RT _{PTS} °F	Acceptance Criterion per 10 CFR 50.61 °F
0.24 0.52	1.56	74	279.5	≤270°F

Commitment 32: As required by 10 CFR 50.61(b)(4), IP3 will submit a plant-specific safety analysis for plate B2803-3 to the NRC three years prior to reaching the RT_{PTS} screening criterion. Alternatively, the site may choose to implement the revised PTS rule when approved.

Section 4.3: Metal Fatigue Analyses

- 60-year fatigue analyses were performed for all NUREG/CR-6260 locations, except 2 locations (IP2) and 3 locations (IP3)
- Entergy will manage aging for NUREG/CR-6260 locations in accordance with 10 CFR 54.21(c)(1)(iii) (Commitment 33)

Section 4.3: Metal Fatigue Analyses

Section 4.3 – Class 1 Fatigue

- One Open Item
 - OI 4.3-1 – Number of IP3 plant heatups and cooldowns

This OI can be closed

Open Items Still Under Staff Review

- OI 2.5-1 – SBO scoping
- OI 3.0.3.2.15-1 – IP2 reactor refueling cavity leakage
- OI 3.0.3.2.15-2 – IP2 spent fuel pool leak
- OI 3.0.3.3.2-1 – Exterior containment concrete degradation
- OI 3.4-1 – AMR results for the auxiliary feedwater pump room event
- OI 3.5-1 – Water-cement ratio for IP concrete
- OI 3.5-2 – Reduction of strength and modulus of concrete due to elevated temperatures

- OI 2.5-1 – SBO scoping
 - Applicant revised LRA Figures 2.5-2 and 2.5-3, the “Offsite Power Scoping Diagram(s)” for IP2 and IP3 for primary and secondary offsite power paths
 - By letters dated March 24, 2008 and August 14, 2008, the applicant revised and clarified its response
 - The staff is completing its review of the applicant’s information on the SBO scoping boundary and will document its conclusion in the final SER

- OI 3.0.3.2.15-1 – IP2 reactor refueling cavity leakage
 - IP2 refueling cavity leaks at the upper elevations of the stainless steel cavity liner when flooded during refueling outages
 - Attempts have been made to mitigate this condition
 - An action plan is being developed for permanent fix
 - Applicant has committed to perform one-time inspection prior to entering period of extended operation to confirm absence of degradation (Commitment 36)
 - Applicant has not identified augmented inspections for period of extended operation
 - Staff sent draft RAI to request how the AMP will monitor condition during period of extended operation

- OI 3.0.3.2.15-2 – IP2 spent fuel pool leak
 - IP2 spent fuel pool (SFP) has experienced leakage
 - IP2 SFP does not have leak chase channels
 - Applicant committed to test the groundwater outside IP2 SFP every 3 months (Commitment 25)
 - Applicant does not plan to perform augmented inspections of SFP during the period of extended operation.
 - Staff sent draft RAI to request how the AMP will monitor this condition during period of extended operation

- OI 3.0.3.3.2-1 – Exterior containment concrete degradation
 - External surfaces of IP2 and IP3 containments have locations of concrete spalling
 - Applicant explained that areas of spalling occur at cadweld sleeves and scaffolding anchor locations
 - Applicant concluded there is sufficient design margin for exposed rebar
 - Applicant committed to perform enhanced inspections of containment (Commitment 37)
 - Staff sent draft RAI requesting information on how the applicant will use the above within its Containment Inservice Inspection Program

- OI 3.4-1 – AMR results for the IP2 auxiliary feedwater pump room fire event
 - Applicant stated that systems are continuously in operation and monitored
 - Applicant stated aging related degradation that occurs during 1 hour is negligible
 - Applicant concluded that there are no aging effects; therefore no AMPs are necessary
 - Applicant provided additional information on January 27, 2009
 - Staff is still evaluating applicant's response

- OI 3.5-1 – Water-cement ratio for IP concrete
 - LRA identified the water-cement ratios for IP concrete
 - Staff identified a discrepancy and asked for clarification
 - Applicant stated it used Method 2 in ACI 318-63 standard to determine concrete strength
 - Applicant stated that compressive strength > 3,000 psi
 - Staff sent draft RAI to define water-cement ratios and provide results of original concrete strength tests. Alternatively, the applicant may identify applicable aging effects and how they will be managed

- OI 3.5-2 – Reduction of strength and modulus of concrete due to elevated temperatures
 - LRA stated concrete surrounding IP2 penetrations can reach 250 °F
 - GALL Report recommends further evaluation to manage reduction of strength and modulus of concrete structures due to elevated temperature (>200 °F)
 - Applicant concluded that reduction of strength and modulus is not an aging effect requiring management
 - Applicant determined a reduction in strength of 15% from elevated temperatures which is acceptable
 - Staff sent draft RAI about how strength margin was determined and if reduction in modulus of elasticity was considered. Alternatively, the applicant may explain how the aging effect will be managed



Questions?

SBO Recovery

IP2 Offsite Power Scoping Diagram

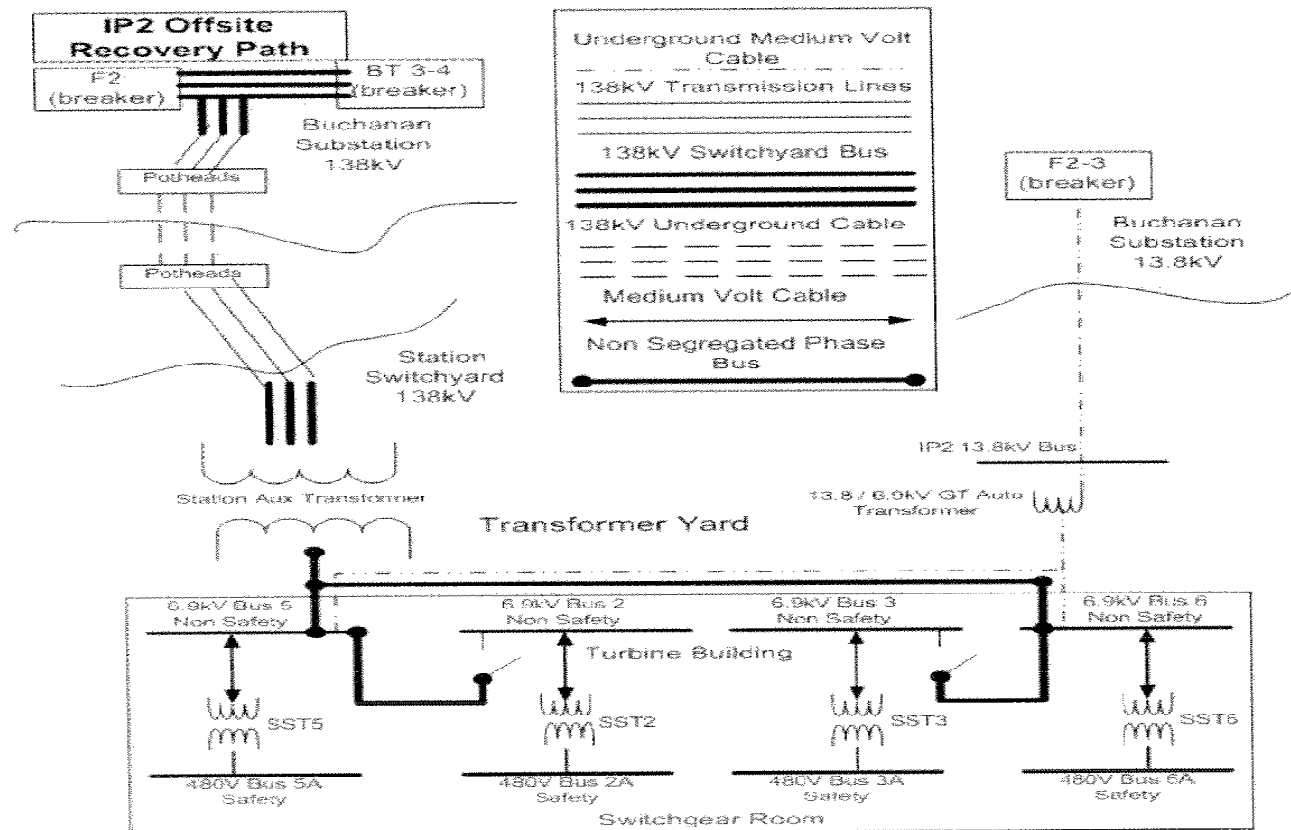


Figure 2.5-2

SBO Scoping

Buchanan Substation

