

Official Transcript of Proceedings
NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards
 521st Meeting

Docket Number: (not applicable)

Location: Rockville, Maryland

Date: Thursday, April 7, 2005

Work Order No.: NRC-311

Pages 1-129

NEAL R. GROSS AND CO., INC.
Court Reporters and Transcribers
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

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

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

521st MEETING

+ + + + +

THURSDAY, APRIL 7, 2005

+ + + + +

ROCKVILLE, MARYLAND

The Advisory Committee met at 8:30 a.m. at the Nuclear Regulatory Commission, Two White Flint North, Room T2B3, 11545 Rockville Pike, DR. GRAHAM B. WALLIS, Chairman, presiding.

COMMITTEE MEMBERS:

- GRAHAM B. WALLIS Chairman
- WILLIAM J. SHACK Vice-Chairman
- MARIO V. BONACA Chairman
- GEORGE E. APOSTOLAKIS Member
- THOMAS S. KRESS Member
- GRAHAM L. LEITCH Member
- DANA A. POWERS Member
- STEPHEN L. ROSEN Member
- VICTOR H. RANSOM Member
- JOHN D. SIEBER Member

1 ACRS STAFF PRESENT:

2 JOHN T. LARKINS Director, Designated Federal
3 Official

4 MICHAEL L. SCOTT Chief, Technical Support
5 Branch

6 SAM DURAISWAMY

7 HOSSEIN NOURBAKHS

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

I-N-D-E-X

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

| Agenda Item | Page |
|--|------|
| 1) Opening Remarks by the ACRS Chairman | 5 |
| 1.1) Opening statement | 5 |
| 1.2) Items of current interest | 6 |
| 2) Final Review of the License Renewal Application for Joseph M. Farley Nuclear Plant, Units 1 and 2 | 8 |
| 2.1) Remarks by the Cognizant Subcommittee Chairman | 8 |
| 2.2) Briefing by and discussions with representatives of the Southern Nuclear Operating Company and the NRC staff | 8 |
| 3) NUREG-1792, "Good Practices for Implementing Human Reliability Analysis" | 84 |
| 3.1) Remarks by the Cognizant Subcommittee Chairman | 4 |
| 3.2) Briefing by and discussions with representatives of the NRC staff | 87 |

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

(8:31 a.m.)

1) OPENING REMARKS BY THE ACRS CHAIRMAN

1.1) OPENING STATEMENT

CHAIRMAN WALLIS: Good morning. The meeting will now come to order. This is the first day of the 521st meeting of the Advisory Committee on Reactor Safeguards. We will only be meeting for two days. We will not be meeting on Saturday.

During today's meeting, the Committee will consider the following: the license renewal application for the Joseph M. Farley Nuclear Plant, Units 1 and 2; NUREG-1792, "Good Practices for Implementing Human Reliability Analysis"; subcommittee report on the interim review of the license renewal application for Millstone Power Station, Units 2 and 3; and the preparation of ACRS Reports.

In addition, the Committee will meet with the NRC commissioners between 1:30 and 3:30 in the commissioners' conference room, One White Flint North, to discuss items of mutual interest.

This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act. Dr. John T. Larkins is the designated federal official for the initial portion of the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 meeting.

2 We have received no written comments, nor
3 requests for time to make oral statements from members
4 of the public regarding today's sessions. A
5 transcript of portions of the meeting is being kept,
6 and it is requested that the speakers use one of the
7 microphones, identify themselves, and speak with
8 sufficient clarity and volume so that they can be
9 readily heard.

10 1.2) ITEMS OF CURRENT INTEREST

11 CHAIRMAN WALLIS: I will begin with some
12 items of current interest. Starting this week, Ashok
13 Thadni has been appointed as the Deputy Executive
14 Director, ACRS/ACNW.

15 Since May of 2004, Ashok was serving as
16 Director for International Research and Development
17 Projects, reporting to the NRC Chairman. He joined
18 the NRC in 1974. And he has served in a series of
19 progressively more responsible positions in areas
20 dealing with domestic and international nuclear safety
21 issues.

22 He was Director of the Office of Nuclear
23 Regulatory Research from June '97 until May of 2004.
24 He also served as a Deputy Executive Director for
25 Operations for a year.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 Ashok will assist the ACRS and ACNW in
2 various significant matters, such as the potential for
3 new reactor licensing and prelicensing activities for
4 a high-level radioactive waste repository at Yucca
5 Mountain.

6 Is Ashok here?

7 MR. THADNI: Yes.

8 CHAIRMAN WALLIS: Yes. Please welcome
9 Ashok to the ACRS, ladies and gentlemen.

10 (Applause.)

11 MR. THADNI: Thank you very much.

12 CHAIRMAN WALLIS: Another matter of
13 current interest, you'll notice in the handout there
14 are four very interesting speeches by commissioners at
15 the reactor information conference. And at the back
16 end of this package, there is Insight, NRC article on
17 50.46, which looks to me very much like Nucleonics
18 Week article, which some of you may already have read.

19 Now let's get down with the real business.
20 And I would invite Mario Bonaca to take us through the
21 first item, which is the license renewal application
22 for Joseph M. Farley.

23 MEMBER BONACA: Thank you, Mr. Chairman.

24 2) FINAL REVIEW OF THE LICENSE RENEWAL
25 APPLICATION

1 FOR JOSEPH M. FARLEY NUCLEAR PLANT, UNITS
2 1 AND 2

3 2.1) REMARKS BY THE COGNIZANT SUBCOMMITTEE
4 CHAIRMAN

5 MEMBER BONACA: We are here to perform the
6 final review of the Farley nuclear plant license
7 renewal. We met, the subcommittee, on November 3rd,
8 2004 to review the interim SER. I point out that the
9 SER at that time already came without any open items.

10 This application is the first to use newly
11 revised NEI format as well as the first pilot license
12 renewal review to be reviewed by the NRC through the
13 approach of consistency with GALL audits or exceptions
14 to those.

15 With that, I'll turn to Dr. Kuo.

16 DR. KUO: Thank you. Good morning, Dr.
17 Bonaca.

18 2.2) BRIEFING BY AND DISCUSSIONS WITH
19 REPRESENTATIVES OF THE SOUTHERN NUCLEAR
20 OPERATING

21 COMPANY AND THE NRC STAFF

22 DR. KUO: My name is P. T. Kuo, the
23 program director for the license renewal and at the
24 moment the impacts program. To my right is Mr. Frank
25 Gillespie. He's the Deputy Director for the Division

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 of Regulatory Program Improvements. And to my far
2 right is Tilda Liu, who is the project manager for
3 this review. She's going to lead the presentation
4 this morning.

5 Mr. Gillespie would like to make a few
6 remarks before we go to the presentation. And the
7 staff presentation will follow the applicant's
8 presentation later.

9 MR. GILLESPIE: Yes. Thank you.

10 I would like to first thank Farley in a
11 very public forum for being our first guinea pig.
12 They came to a meeting about a month before they were
13 going to submit their application. And I said, "We've
14 designated Farley a pilot plant."

15 And I looked across the table, and there
16 was this look of shock on the Farley team's faces.
17 And they said, "Okay." They got caught betwixt and
18 between. As Mario said, they are the first where we
19 tried this audit process.

20 And compliments to Farley and Southern
21 Company. They had to do some catchup because past
22 precedent was becoming very important to us for two
23 things. The staff didn't want to keep making the same
24 decision over and over as if it was starting from a
25 clean piece of paper. And the other thing was we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 wanted to be consistent in our decisions.

2 Farley was a big step in that. They were
3 the first plant that showed us what we could do with
4 GALL if I could say it that way. The new GALL was
5 published as a draft at the end of January. And if
6 you thumb through it, you'll see that the scope of the
7 new GALL has doubled.

8 When we looked back at how many times now
9 that we'll go 50 percent through the industry, we have
10 made the same decision. We realize we were making the
11 same decision over and over again with similar
12 programs.

13 So Farley was the first step in coming up
14 with a more standardized approach, basically an
15 agreement on what acceptable aging management programs
16 are in a much wider scope.

17 I think you're going to see some more
18 internal changes. They are also a plant which
19 demonstrated -- I know the staff is going to hit me
20 when I say this -- the potential for coming up with
21 scheduling ACRS meetings at 20 months, rather than 22
22 months, where industry is cooperating with us and we
23 end up with draft SEs with no open items.

24 What we found was we were sending our
25 schedules to ACRS. And then we would finish early.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 And then, through no fault of anyone else, you
2 scheduled it fine. But we were sitting on the
3 application for like two or three months kind of
4 waiting for an ACRS meeting.

5 And so the solution to that was for us to
6 change the schedule long term we're giving you.

7 CHAIRMAN WALLIS: This is unusual behavior
8 by the staff.

9 MR. GILLESPIE: Yes. And so I think
10 Farley also demonstrated that working in a very timely
11 way on things like RAIs in the process of developing
12 the draft SE, there should be a payoff. And so we're
13 going to be talking to the industry. And this came up
14 in a management meeting with them about the idea of a
15 carrot and a stick.

16 The carrot is schedule the ACRS meeting as
17 if it were going to be 20 months away. And if
18 everyone doesn't cooperate and play nice, then we add
19 two months later. And so we're going to be talking to
20 industry about doing that. And that way we're not
21 trying to perturbate anyone's long-term schedule at
22 the last minute.

23 So, again, thank you to Farley. It was
24 extra work. It cost the utility extra money to
25 demonstrate this to us. And it was the first step in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 four plants.

2 I'll come up to Millstone, which is the
3 other one that we went to submit on. Millstone,
4 really, was almost like the fourth pilot. And
5 Dominion stepped up and just did it also, so good
6 interface there.

7 I do feel that at this point I do have to
8 make a comment. You know we put out a letter on
9 Beaver Valley. I'm sure you've seen the press
10 clippings on the quality of the application. And
11 there was a letter we received after some give and
12 take from Nine Mile.

13 I would like to emphasize that those are
14 plant-specific issues. We do not see that as an
15 incrimination of the entire industry. There were
16 specific quality issues with those applications. And
17 what I don't want to do is let that issue kind of
18 linger. So I thought it was kind of important to
19 mention that.

20 We are doing acceptance review right now
21 for Monticello and Palisades. And the staff will be
22 done probably in two or three more weeks. Our
23 acceptance review is now several engineers from the
24 audit team actually looking at the application to see
25 is this sufficient for us to actually go out and do an

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 efficient audit and have the rules been followed, is
2 the list of systems adequate. We're not going to
3 argue over A-2 issues of safety systems anymore.

4 We find ourselves as writing a standard
5 set of RAIs every single time. And so we're getting
6 past that and standardizing the whole thing a little
7 bit more.

8 So that's kind of what is going on. I did
9 want to emphasize we have two plant-specific issues
10 with two specific plants. And that should not be
11 painted with a broad brush. We're going to review
12 each one individually.

13 Anyway, with that, so thank you. I
14 appreciate the opportunity to say thank you again to
15 Farley in a public forum. And I appreciate the ACRS'
16 indulgence as we have probably changed the schedule,
17 but now we'll give you enough notice so we're not
18 trying to do it at the last minute. And so that is
19 kind of where we are going with it.

20 CHAIRMAN WALLIS: Thank you.

21 DR. KUO: And I will call on the applicant
22 to make the presentation.

23 MR. PIERCE: Thank you.

24 My name is Charles Pierce. I've been the
25 manager for the Farley license renewal program. Good

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 morning, Dr. Wallis and fellow ACRS members.

2 First of all, I want to thank Frank
3 Gillespie for his kind remarks. It was a shock to us
4 when we were first told that we were the first pilot,
5 but, again, we did strive to work very hard to address
6 the NRC issues. And I think that we worked very well
7 together.

8 We are pleased to be here today to discuss
9 our results of the license renewal process with you.
10 I have brought our technical team, much of our
11 technical team with me, our technical experts.

12 Mike MacFarlane, who was to my right and
13 is now up front, is basically my technical license
14 renewal manager. And he has been with us for the
15 entire Farley process. He will be making the
16 presentation this morning to you for Southern Nuclear.

17 So I will just keep it brief and close
18 with that and let us move ahead with the discussions.

19 MR. MacFARLANE: I would like to thank
20 you, thank the Committee for letting us come here and
21 present a little bit about the Farley application.
22 The layout of our presentation based on some feedback
23 we got from the staff on what the ACRS would like to
24 see.

25 Essentially what we start with is just a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 real brief description of the plant and some of the
2 features just to bring those members that were not in
3 the subcommittee and also in the audience up to speed.

4 The operating experience, significant
5 operating experience, for Farley over the years,
6 current performance, we're going to look at some of
7 our major plant improvements that we have done at
8 Farley. Then we're going to get into the general
9 description of the application and GALL exceptions and
10 then talk about corrective action program and how we
11 handle commitments for the Farley license renewal
12 application.

13 So, with that, I'll go ahead and get
14 started. Just briefly a description of Farley. It's
15 located near Ashford, Alabama, which is actually
16 southeastern Alabama. The largest town near there
17 would be Dothan, Alabama if anybody is familiar with
18 that area.

19 It's a three-loop Westinghouse PWR. The
20 architect-engineer was combined with Bechtel and
21 Southern Company Services, which is part of Southern
22 Company. The current power rating for Farley is 27
23 and 75 megawatts thermal. And our mission operating
24 license for Unit 1 was 1977 and for Unit 2 was 1981.

25 I put this in here to kind of give you a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 little bit of a view of what the plant looks like.
2 The site is so large we can't get all of the features
3 in here, but this gets the majority of the features in
4 here.

5 Of interest usually is how we accomplish
6 our cooling, particularly for the safety-related
7 stuff. The source of cooling water for the safety
8 systems is our cooling water pond, which is a seismic
9 pond. And it is the ultimate heat sink.

10 The makeup to that pond would be our river
11 water system, which pulls out of the Chattahoochee
12 River. And what we do for service water is a
13 once-through system. In other words, we pull out of
14 that pond and we return either to the pond or to the
15 river depending on. In safety mode, it will return
16 back to the pond. In normal mode, it returns back to
17 the river.

18 And for the circ water system, which is
19 for cooling the condenser in the turbine cycle, we use
20 the cooling tower system. And it gets its makeup also
21 off the surface water system.

22 Farley has six off-site power sources.
23 Two of them are 500-kV sources. And then we also have
24 -- what was the other one? Two hundred and thirty kV
25 is the other four.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 Of interest to the Committee last time was
2 our PRA results. It doesn't really fit in the slides
3 very well, but this seemed to be the best place since,
4 really, it's based on plant features and those kinds
5 of things. The CDF for Farley is 3.35 times 10-5 is
6 the current PRA result.

7 Significant operating experience for
8 Farley, in looking at --

9 MEMBER APOSTOLAKIS: Excuse me. What was
10 the dominant contributor? Do you remember?

11 MR. MacFARLANE: It's loss of an
12 on-service surface water train, basically loss of your
13 critical cooling. It impacts a closed cooling water
14 system and then impacts things like charging pump
15 sealant, sealant cooling, and those kinds of things.

16 MEMBER ROSEN: The number was 3.35 you
17 say?

18 MR. MacFARLANE: 3.35 times 10-5.

19 MEMBER BONACA: Do you remember the
20 external events?

21 MR. MacFARLANE: Pardon?

22 MEMBER BONACA: Does it include external
23 events?

24 MR. MacFARLANE: This is for the internal
25 events. The external events is a separate evaluation.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER APOSTOLAKIS: Do you remember what
2 the LOCA contributions were?

3 MR. MacFARLANE: I actually have it back
4 in my notebook.

5 MEMBER APOSTOLAKIS: That's okay. LOCA is
6 due to the break of a pipe.

7 MR. MacFARLANE: LOCA contributors is --
8 the percentage of total CDF is just below six percent.

9 MEMBER APOSTOLAKIS: Six percent.

10 MR. MacFARLANE: But it's 1.97 times 10^{-6} .

11 MEMBER APOSTOLAKIS: Okay. Thank you.

12 MEMBER ROSEN: We're going to keep going.
13 Fire and shutdown risk.

14 MR. MacFARLANE: I already closed the
15 page. Hold on a second. I don't have it broken out,
16 let's see, in that manner. I have it by initiating
17 event categories. Fire is probably under the special
18 initiators. I don't have that value.

19 I do know we do have some unit differences
20 that caused some issues. One of them is like the fire
21 water header, and it's a flooding event. But I don't
22 have the numbers for the fire event PRA.

23 MEMBER ROSEN: Are they available
24 someplace?

25 MR. MacFARLANE: I'm sure we can get them.

1 MEMBER ROSEN: Do you have a feel for
2 percentage-wise the total that fire represents?

3 MR. MacFARLANE: Fire?

4 MEMBER APOSTOLAKIS: I don't think you
5 should close that page.

6 MR. MacFARLANE: Yes. I keep trying to
7 get off of this.

8 MEMBER ROSEN: I mean, is it a large
9 contributor or a small contributor, the total CDF?

10 MR. MacFARLANE: I think it's in the low
11 to medium category in terms of how that would work.

12 MEMBER APOSTOLAKIS: So fire is an
13 internal event? It's included in the 3.3, 10-5?

14 MR. MacFARLANE: I'm no PRA expert. All
15 I know is they generally model the fire events very
16 conservatively. And so you do --

17 MEMBER APOSTOLAKIS: I know, but --

18 MR. MacFARLANE: You do get higher values
19 in fire events --

20 MEMBER APOSTOLAKIS: Right.

21 MR. MacFARLANE: -- just because of how it
22 is modeled.

23 MEMBER APOSTOLAKIS: Yes. I know that,
24 but you gave us a number for CDF.

25 MR. MacFARLANE: Right.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER APOSTOLAKIS: And you said that was
2 internal events only.

3 MR. MacFARLANE: Right. And it's included
4 in there.

5 MEMBER APOSTOLAKIS: It's included in
6 that?

7 MR. MacFARLANE: That's correct.

8 MEMBER APOSTOLAKIS: So you have not done
9 a seismic analysis or you have done it but separate?

10 MR. MacFARLANE: Correct. The external
11 events is a separate evaluation.

12 MEMBER BONACA: Yes, I know that, but, I
13 mean, does this plant also have an external events
14 PRA?

15 MR. MacFARLANE: Yes. The one that we
16 have maintained generally is the internal events, but
17 there is an external events that is out there as part
18 of the IPEEE.

19 MEMBER BONACA: All right.

20 MR. MacFARLANE: Getting on to the
21 operating experience, the --

22 MEMBER POWERS: Well, I guess I'm really
23 confused because the IEEE typically includes both fire
24 and seismic. I mean, fire is not usually considered
25 an internal initiator.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER ROSEN: For some strange reason.

2 MEMBER POWERS: It's not really a strange
3 reason. It's just the way that it happened to be done
4 historically.

5 MR. MacFARLANE: You may be correct for
6 Farley. I'm not the PRA expert.

7 MR. PIERCE: Yes. Mike is not a PRA
8 expert. And we have not brought along our PRA expert.

9 MEMBER POWERS: I don't think you have to
10 be an expert. I mean, in today's environment,
11 everybody ought to understand what the general
12 categories of this are.

13 MR. MacFARLANE: Now you're talking about
14 which evaluation it's in.

15 MR. PALLA: Excuse me if I might. I'm Bob
16 Palla with the NRC PRA staff.

17 Not as part of the safety side review but
18 as part of the environment review, we looked at severe
19 accident mitigation alternatives. And we do use the
20 PRA there to help guide the identification evaluation
21 of potential plant improvement. As part of that
22 review, we didn't review the PRA, but we looked at the
23 PRA and the information contained thereon.

24 The information from IEEE on fires
25 indicates a frequency of 5 times 10⁻⁵ fire events.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER APOSTOLAKIS: So it was not part of
2 the --

3 MR. PALLA: No. And it normally not be.
4 It's separate.

5 MEMBER ROSEN: And it is essentially
6 equivalent to the internal events initiated.

7 MEMBER SIEBER: I don't know that it's --

8 MEMBER APOSTOLAKIS: Bob, what was the
9 seismic? Do you remember?

10 MR. PALLA: I don't. I am looking in our
11 evaluation that we prepared. I don't see a number
12 there. So probably a margins approach was used in a
13 --

14 MEMBER APOSTOLAKIS: So the total, then,
15 probably is around 10-4.

16 MEMBER POWERS: It sounds to me like the
17 total is a little over 10-4 .

18 MR. PALLA: Probably is. Well, from what
19 we learn and from the feedback we get from analysts
20 that develop these fire event frequencies, there's a
21 lot more conservatism in the numbers. They're more
22 screening values than they are what you might
23 associate with level 1 PRA internal events are more
24 close to the mark. I think you tend to see a lot more
25 screening-type numbers in the fire assessment.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 So a direct comparison of internal events,
2 core damage frequencies, and fire screening values,
3 you have to be careful if you compare them.

4 MEMBER POWERS: How much do you want to
5 bet that for every conservatism you can find in the
6 fire analysis, I can find a non-conservatism?

7 MR. PALLA: Well, you probably could on a
8 one-to-one basis, but our understanding is that you
9 could probably argue that the numbers that you
10 generate could be reduced. As you move more towards
11 a fire PRA, I think you would tend to see the numbers
12 from the screening analysis be reduced.

13 MEMBER ROSEN: I don't think that you can
14 make a generalization that's valid. I think what you
15 will see is that some plants will, in fact, be
16 reduced, but there will be outliers at plants that
17 turn out to be higher. And you'll see a more relevant
18 picture.

19 MEMBER POWERS: Okay. So the \$64 question
20 is, which one is Farley?

21 MEMBER ROSEN: I think the applicant
22 should answer that.

23 MEMBER POWERS: I mean, it seems to me
24 that fire is a significant issue here.

25 MEMBER ROSEN: Absolutely. I think it is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 a significant issue in almost every plant.

2 MR. MacFARLANE: I don't think I can
3 answer all on fire. I do know we are using a
4 risk-based approach right now in terms of eliminating
5 some raceway fire wrap that we have, particularly in
6 our surface water intake structure. And that process
7 is ongoing. So there is some specific fire modeling
8 going on and using a risk-based approach.

9 MEMBER APOSTOLAKIS: So you are doing this
10 as a result of the fire risk assessment or as --

11 MR. MacFARLANE: It is a result of cable
12 elimination. Farley had an exemption for cable. And
13 we have committed to eliminate reliance on that for
14 our Appendix R basis. And in that particular area,
15 that happens to be a large open structure. And that's
16 one of the approaches. They're using that and some
17 other things.

18 For that particular area, there will be a
19 very detailed modeling of fire scenarios and looking
20 at ultimate risk, but that's ongoing right now. I
21 don't have results or anything like that for that.
22 There is a place where we are using risk-based
23 approach.

24 MEMBER ROSEN: I think, suffice it to say,
25 that even though Farley has only done what is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 characterized as a screening, the number is
2 substantial. It's even higher than the internal
3 events number. And it bears attention.

4 MR. MacFARLANE: Okay.

5 MEMBER APOSTOLAKIS: I guess the question
6 in my mind is, how is that relevant to license renewal
7 approvals? Is there any message in this result that
8 one should take and consider in the context of license
9 renewal?

10 I know that if you go formal, the PRA is
11 not part of the renewal. It's not part of the rule.
12 But in terms of a technical approach, I mean, is there
13 anything there that I should worry about?

14 MEMBER BONACA: Well, I mean, if it is a
15 concern, it should be a concern under the core license
16 basis.

17 MEMBER APOSTOLAKIS: See, that's my point,
18 that it --

19 MEMBER BONACA: Okay. So now I'm saying
20 that the fire issue is a very important issue. Maybe
21 it could be pursued further for all plants. But there
22 is a specific requirement at this stage to do anything
23 to address whatever number comes up.

24 So we are left here with a question, to
25 the extent 5 times 10-5 is a conservative assessment,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 a non-conservative assessment, we're making a debate
2 on that. And I don't think we will ever know until
3 somebody does more work on it. But the --

4 MEMBER APOSTOLAKIS: I, frankly, don't
5 think it's conservative. I'm with Dana on that. I
6 think there are many places where --

7 MEMBER BONACA: Because we have seen many
8 other plants that --

9 MEMBER APOSTOLAKIS: Arbitrary assumptions
10 that --

11 MEMBER BONACA: That is a number that
12 seems to be pretty consistent for other plants that --

13 DR. DENNING: Let's look back at
14 historically at IPEEE and what kind of requirements we
15 placed. They weren't very stringent as far as the
16 quality of the fire PRA. And it was good enough at
17 that point. The question is, are we suggesting we
18 reopen that issue from a probablistic viewpoint or the
19 deterministic requirements on fire, which are pretty
20 stringent, are they adequate to make us feel that we
21 can move forward?

22 MEMBER ROSEN: As an agency, there hasn't
23 been a reopening of this issue, but there are new
24 tools available. And this fire risk requantification
25 effort between Research and EPRI is coming to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 fruition.

2 Having looked at the document somewhat,
3 although I have more work to do, I think it is an
4 improvement. If plants were to follow the new
5 guidance in the risk requantification work, they would
6 have better PRAs, fire PRAs.

7 MEMBER KRESS: I'm having trouble, like
8 George, figuring out what this has to do with license
9 extension. Since we seem to be bound by a certain set
10 of rules and ways to go about it, it does not include
11 any considerations of CDF as I can see.

12 Not only that, this is a large dry
13 containment in a low-population area. So the LERF
14 probably is pretty low. I don't know what it is. I
15 suppose he may tell us, but --

16 MEMBER BONACA: As I pointed out, I mean,
17 if it is an issue, it is an issue under the current
18 licensing basis. And I don't know --

19 MEMBER KRESS: Yes. It's --

20 MEMBER BONACA: -- why the fire issue is
21 open now, but certainly it's not pertinent to the
22 license renewal.

23 MEMBER KRESS: That was my feeling.

24 MEMBER ROSEN: I think it's like a lot of
25 things we discuss here. They may not be directly

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 relevant to license renewal. They are just ACRS is
2 interested in a particular technical subject.

3 MEMBER APOSTOLAKIS: Absolutely, but it
4 matters in terms of what we are going to address in
5 our review ultimately.

6 CHAIRMAN WALLIS: And if we go on talking
7 about it too long, we won't finish this presentation.

8 (Laughter.)

9 MEMBER POWERS: Spoken like a good
10 chairman.

11 MEMBER KRESS: But we have all day
12 Saturday.

13 MR. MacFARLANE: I would like not to be
14 here Saturday if I could.

15 MEMBER BONACA: With that, let's proceed.

16 MR. MacFARLANE: Operating experience for
17 Farley. In 1983, we had an issue with a fuel cladding
18 failure on Unit 1. The cause of that intended to be
19 a baffle jetting issue. It has to do with the flow in
20 the reactor vessel getting through the baffle plates
21 and causing a jetting action on the fuel.

22 The correction for that was we changed
23 that unit to an upflow design, which eliminates that
24 flow path and also reduces loading on the baffle
25 bolts.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 In 1985, on Unit 2, in preparation for an
2 inspection, they noticed some failed tendon anchor
3 heads. The root cause evaluation of that ended up
4 determining that it was caused by some
5 hydrogen-induced stress cracking.

6 There was a big inspection effort,
7 replacement of all of those tendons, those tendon
8 anchor heads, and then the same thing, inspection in
9 the other unit and inspection of all of these. These
10 were on a particular set of tendons.

11 And then there were follow-up inspections
12 in two successive intervals with no other failures
13 noted. And we haven't had any since. So it seems to
14 be somehow related to initial construction and
15 manifested itself early in the life.

16 MEMBER SHACK: So you didn't change
17 materials or lubricants or --

18 MR. MacFARLANE: They did come up with a
19 new greasing process in terms of how they put these
20 heads in, making sure they're greased on the back side
21 and front side and the cans were full. But the anchor
22 heads themselves, the material didn't change or
23 anything like that.

24 In 1987, you're probably familiar with
25 this bulletin. Farley in coming up out of an outage

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 had a crack on a safety injection line into the RCS.
2 This is kind of the initiator for the 8808 bulletin.
3 It was caused by some valve leakage and then basically
4 some thermal cycling that was going on at that
5 interface with the main RCS loop caused by turbulent
6 penetration.

7 Of course, the valve leakage was fixed.
8 The monitoring was put in place. And there's been a
9 lot of work in the industry in terms of identifying
10 types of configurations that can lead to these types
11 of problems and instrumentation. And this is actually
12 factored into our fatigue-monitoring program. So we
13 continue to monitor this. We haven't had any problems
14 since then, but it's still part of the program.

15 FNP performance. For 2004, all our
16 performance indicators are green. They've been green
17 for many years at Farley. Farley has been
18 historically a very good performer. In 2004, we did
19 have our highest net plant capacity for a two-outage
20 year. And we also had the shortest refueling outage
21 for Unit 2, which for us was significant.

22 CHAIRMAN WALLIS: These highest and
23 shortest are compared with the entire industry or just
24 with your own history?

25 MR. MacFARLANE: No. With our own

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 history, like our shortest outage is not shortest by
2 industry by any stretch. Later on we'll talk about
3 improvements. A lot of this is reflective of our
4 steam generator replacement has allowed us to go a
5 little bit shorter because we don't have anywhere near
6 the work in the generators that we used to.

7 Out of significance that we think is
8 significant, is our radiation dose levels for outage
9 work and just overall plant operation are extremely
10 low. We tied the U.S. record for lowest radiation
11 dose for a refueling outage. And we attribute this to
12 our zinc addition project that we had.

13 We put it in Unit 2 first. And we've also
14 put it in Unit 1. And what we're seeing is much
15 better performance in terms of crud burst that we do
16 in going into an outage and keeping doses down.

17 MEMBER ROSEN: How short was the shortest
18 Farley outage?

19 MR. MacFARLANE: It was 33.7. In terms of
20 major improvements, one of our most significant major
21 improvements was our steam generator replacement. We
22 replaced the entire generators. They're a
23 Westinghouse model 54F design. So it's the latest
24 generation design, has the Alloy 690 thermally treated
25 tubing and stainless steel support plates.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 Another major improvement we're doing in
2 response to some of the issues we have on Alloy 600 is
3 we are replacing our reactor vessel heads. We've
4 already replaced the Unit 1 head. We did that in Fall
5 of 2004. And, once again, we had the second lowest
6 dose for a head replacement in the U.S.

7 CHAIRMAN WALLIS: Looks like a gold-plated
8 head to me.

9 MR. MacFARLANE: It's just shiny. The
10 cost of it, maybe it could be. I don't know.

11 The Unit 2 head replacement is scheduled
12 for the fall of this year. And just a note that we
13 use Alloy 690 in that head.

14 Another big item, although this is not in
15 the scope of the license renewal but it is a major
16 ticket item, high expense, and shows the commitment to
17 the long-term operation of the plant, is a cooling
18 tower replacement project.

19 The original cooling towers for Farley
20 were a wooden structure design, the old redwood,
21 Douglas fir towers. And we have replaced all of those
22 towers on the site for both units.

23 It's somewhat of a unique project in that
24 we have some space limitations within the site in
25 terms of trying to site these towers. And we came up

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 with a unique way to do this cycling towers on and off
2 as we built them out. And, as a result, it was
3 awarded an NEI top industry practice award for the
4 innovative way we did that.

5 This is a big bonus to the plant and frees
6 up a lot of maintenance craft work for other
7 activities because the old towers were really a drain
8 on the maintenance staff. You're familiar with that,
9 I guess.

10 (Laughter.)

11 MR. MacFARLANE: There were a couple of
12 other improvements I wanted to just briefly mention.
13 They are not as significant as those, but we talked
14 about the zinc addition project. Of interest, we did
15 replace the baffle formal bolts in the units. There's
16 a partial replacement of the number of bolts that are
17 required to meet the design requirements.

18 We also are doing a dry cask installation.
19 And we already talked about the zinc addition, which,
20 you know, one of its benefits is to reduce the
21 potential for primary water stress corrosion cracking.
22 It's one of the reasons it was put in.

23 Brief overview of the application. You
24 know, we submitted it in September of 2003. We
25 discussed there was a format change that was put

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 together for this current class of applications. It's
2 affectionately called the Class of '03 format. We
3 were the first to use that.

4 In our process -- and that format drives
5 this as well -- we emphasized the use of GALL and
6 previously approved approaches. We didn't call it
7 past precedence. That came about a little bit later,
8 after us. That was this late-breaking process change.
9 But we did use past precedence, so to speak, in terms
10 of how we did our strategies. And we were the first
11 to use this new NRC review process.

12 The Committee has expressed interest in
13 GALL exceptions. Mainly our GALL exceptions would
14 fall into these three categories. We had several that
15 are related to using different or later versions of
16 codes and standards.

17 Expansion of a program scope beyond that
18 described in GALL occurs in a couple of places or use
19 of some later NRC guidance or precedence. Part of
20 that is the ISG process. Part of it is using
21 alternatives that have been approved by the staff.

22 Some specific GALL exceptions of note:
23 reactor vessel surveillance program. We came in.
24 We're a high lead plant. And we have already pulled
25 our 60-year capsules. And we had an exception to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 allow us to leave our last capsules in place until 80
2 years equivalent, effective full-power years, and pull
3 those things out at that point. They will be pulled
4 out in 2007. They will have gotten to that point.

5 Reactor vessel internals program. This is
6 an item that really reflects the latest staff
7 thinking. There are a lot of issues going on there.
8 And we agreed that we would submit our inspection plan
9 for review and approval at least two years prior to
10 the period of extended operation to give the staff
11 time to look through that and be in agreement with our
12 final version.

13 We're a participant in the MRP and for the
14 reactor vessel internals program. Non-EQ cables is an
15 example where really there is an approved ISG out
16 there of an alternative program, and that's what we
17 use. So that is an exception, but it is a previously
18 approved exception.

19 The Southern Nuclear Corrective Action
20 Program is a common process across our fleet. Our
21 fleet would be the Hatch site, the Vogtle site, the
22 Farley site, and corporate. And it uses one set of
23 procedures that addresses all of that. It's common to
24 all of those locations.

25 Everything starts out as a condition

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 report. Under the corrective action program,
2 condition report is going to look at, assess the
3 impact, the immediate impact, on the unit. It's going
4 to look at severity levels and types of is root cause
5 required and those kinds of items.

6 And then what will happen, it dispositions
7 the CR. And one of the items that can be
8 dispositioned is the action items. And so the system
9 includes a process for identifying action items and
10 owners of those action items and schedules and
11 tracking those things to completion. And it also is
12 the repository for the documentation of all of this
13 resolution.

14 It's integrated into our work control
15 system. We have initiated a project that's been
16 implemented in all of those sites called a SNC Power.
17 It's a common database system that we do our work
18 order systems, our CRs, our action items, all of that.
19 Our documents are stored in there. And so that one
20 system integrates all of those four sites.

21 On top of that, there is a weekly status
22 report that is sent out to all the supervision to keep
23 status on all of this, make sure that people are aware
24 and keeping it in front of them of what their due
25 dates are and that they're working these items off.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 And there are rules in terms of if you're late and
2 those kinds of things. It keeps those things up and
3 makes sure that nothing falls through the cracks.

4 That kind of leads us in to commitment
5 tracking because we do use that system in terms of how
6 we're going to implement commitments for Farley. The
7 commitments start with several sources, but ultimately
8 they're going to end up in a safety evaluation report,
9 the LRA and RAI responses. And we also provided
10 what's called a future actions list, which shows up in
11 the safety evaluation report. Identify those future
12 actions that we have to perform.

13 Those items are loaded in to the
14 commitment-tracking system. That commitment-tracking
15 system is an independent system that also attracts
16 these things. Completion is done at the commitment
17 level.

18 For license renewal, the license renewal
19 project has built license renewal implementation
20 packages. Those packages include what the commitments
21 are, how they're being translated into implementing
22 procedures. It has the drafts of those implementing
23 procedures. It has a cross-reference list for the
24 commitment numbers and the future action list numbers
25 and those kinds of things.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 We use those to package the work by how
2 it's going to be implemented. In other words, you may
3 have three commitments only implemented by one person.
4 It's one program. And so it's a kind of packaging
5 tool.

6 We used that. What we did is we created
7 a condition report to address license renewal
8 implementation and assigned action items out of that
9 for these implementation packages.

10 So every commitment we have, every
11 implementation package now resides out in the action
12 item with an assigned person and assigned dates.

13 Those implementation packages right now
14 are just waiting, really, on the issuance of a
15 license. We have them all prepared. And once we get
16 the license, we will do a final review to make sure we
17 have these latest versions of the procedures in there.
18 And we will issue those out to the cognizant personnel
19 at site and corporate that own these programs to
20 perform these procedure changes and get them
21 implemented.

22 I know the Committee has been interested
23 in what our plan is in terms of how soon we're going
24 to implement commitments. And our plan is to do that
25 immediately after we issue the license. We'll issue

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 these packages out. And then there is a short time
2 window that is given for the plant and corporate
3 personnel to turn those procedures around into the
4 system.

5 The only items that won't fall under that,
6 there are some items, commitments, that are
7 time-based, like one-time inspection. The program
8 document will be done in the short time frame.
9 However, the actual inspections are not permitted five
10 years prior to the period of extended operations. So
11 there are some commitments that do have later time
12 limits in them, but they're part of the commitment.

13 This is just an example of a page out of
14 one of these implementation packages. It kind of
15 gives you the front-end matter before you get to one
16 of the procedures. But it gives you the commitment.

17 This happened to be a late-breaking
18 commitment that we made. It talks about where the
19 source was, identifies this AI number you see in the
20 right column as the action item. That tells you the
21 action item number that actually is tracking this
22 item. And then underneath that, it is telling you
23 where in the procedure we are putting that. And then
24 within this package, you would find that mark-up for
25 that procedure.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER BONACA: This is a change, right?
2 I mean, the --

3 MR. MacFARLANE: Correct.

4 MEMBER BONACA: Yes. Okay.

5 MR. MacFARLANE: With that, we would just
6 like to close in saying that, you know, we think that
7 the inspection bore out that it was a quality
8 application. You know, we emphasized the use of GALL
9 in positions previously accepted by the staff. I
10 think that's why it went pretty smoothly and that the
11 NRC review is very thorough.

12 The consistent with GALL process really
13 allows a lot of interaction with the staff. And I
14 think both sides really benefitted from that.

15 Okay. That's all I had.

16 MEMBER ROSEN: I have one further question
17 on the commitment. Let me see if I understand what
18 you're saying. What you said is that by, say, six
19 months or a year from now, you could send a team out
20 to look at your commitment implementation and find
21 that, despite the fact that you're not going to enter
22 the period of extended operation until 2017 for Unit
23 1, many of the commitments have already been
24 implemented. Is that correct? And that would be
25 continuing through the period until 2017?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MR. MacFARLANE: Well, most of the
2 commitments in like the future action list are minor
3 improvements. And those are going to be in process.
4 And they will be at some stage of completion. They
5 should be.

6 Six months may be a little too soon, but
7 within that year, we would expect them to have
8 processes, procedure changes. A lot of what we are
9 doing has to do with things we are already doing that
10 now have become ingrained in the license renewal
11 commitment. So it's going into existing activities
12 and noting that those now are commitments as well.

13 So there's a lot of that in terms of this
14 process of marking something that we're currently
15 doing that this is now a commitment. It's a way to
16 prevent them from changing it without being aware of
17 what they are doing.

18 MEMBER ROSEN: Yes. I am not so concerned
19 about those things that are just being marked.
20 They're already being done. They're just being marked
21 as licensing renewal commitments. I'm really talking
22 about -- and I'm not worried about the one-time
23 inspections. I'm just worried about the class of
24 things that are new to the procedure that are new to
25 Farley and that that implementation begin soon.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MR. MacFARLANE: That's correct. Some of
2 the activities, like I said, do have some time
3 constraints on it. They're analysis-type items if you
4 actually look through the future action commitment
5 list. But not that many of them are really
6 program-related that they're minor enhancements and
7 those kinds of things or scope.

8 An example would be testing a sprinkler
9 head for fire protection at year 50. Well, we'll put
10 that in, but we won't actually do the testing until
11 off in the future.

12 But yes, we will be processing the changes
13 and putting, like in those cases, we'll put a task out
14 there in the maintenance system that would trigger off
15 the date. And we will put those in place.

16 DR. DENNING: Could I ask a question about
17 instrumentation and control system? What do you
18 expect to happen over the time period of future plant
19 operations as far as upgrading of that? Do you have
20 any major modifications that have occurred or are
21 expected to occur?

22 MR. MacFARLANE: I'm not really the right
23 one to answer that. The things that I'm aware of, I
24 know we have done a lot of module changes in how the
25 7300 system cards are put together. I believe there

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 have been significant changes there, but the base unit
2 is the same.

3 We have done digital controls. Digital
4 electrohydraulic controls for the turbine are already
5 in place.

6 DR. DENNING: I'm just curious. Will that
7 just evolve over the time period? I mean, one worries
8 about obsolescence and the availability of replacement
9 cards and stuff like that. Is there a plan for that
10 or does it just evolve?

11 MR. MEYER: Chalmor Meyer with Southern
12 Nuclear.

13 Because we have got three sites, we have
14 got initiatives going on for all three sites that want
15 studying obsolescence and particularly looking at
16 instrumentation systems, whether we would go to
17 digital or other things.

18 So those are ongoing studies, and it is an
19 active process for all three sites. I don't know of
20 any decisions at this point, but that is the mind set
21 for all three.

22 MR. MacFARLANE: What he is describing, we
23 have what's called a long-term planning process and
24 reliability improvement program. Also, just thinking
25 about after you asked the question, the plant computer

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 is one area that we're replacing. So we are hitting
2 these types of things.

3 I just can't answer to you what all the
4 actual plans are, but there is a process in place to
5 keep our eyes on that and get them out into the
6 planning process and on to budgeting and scheduling to
7 get those things implemented.

8 MEMBER RANSOM: Out of curiosity, is the
9 SNC Power database system one that will improve safety
10 culture or contribute to safety culture, I guess,
11 through looking for common indicators of problems,
12 like Davis-Besse, for example, where there were a lot
13 of things that should have been caught, you know,
14 early on and were put together basically to come to a
15 conclusion that something detrimental was really going
16 on.

17 MR. MacFARLANE: It does have that process
18 built into it. I want to say the SNC Power system
19 itself is the reason for that, but there are a bending
20 of issues to be able to evaluate them from a common
21 thread standpoint to look at, are you having a trend
22 or is there a common thread through a couple of
23 different items that indicate, say, a process or
24 programmatic type problem?

25 One thing it has done is that the way the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 system was changed is CRs are used for lots of
2 different things to where it is not a big deal to
3 write a CR. So from a safety culture standpoint, I
4 think that is an improvement that there is no issue
5 with writing one. So everybody knows that we do it
6 all the time. And so that really makes you feel good
7 about things are going to get identified.

8 MEMBER BONACA: Okay. Thank you.

9 If there are no further questions, Mr.
10 Kuo?

11 DR. KUO: While Tilda is getting ready, I
12 would like to say a few words about Tilda. Tilda is
13 a senior project manager in our group, but she is now
14 moving up to bigger, better things. She has been
15 selected for the office TA effective April 18th. So
16 this may be the last major action she is doing for our
17 group.

18 I would like to thank her for her effort
19 she put in for this project and the time she spent on
20 nights and weekends into this project. I wish her
21 every success in her future endeavor.

22 Thank you very much.

23 MS. LIU: Thank you, P. T.

24 MEMBER BONACA: Thank you.

25 MS. LIU: Good morning, Dr. Wallis and

1 very distinguished members of the full Committee. My
2 name is Tilda Liu. And I am the Farley license
3 renewal application TM. It is my pleasure to come
4 back since the last meeting to brief you on the
5 staff's status on the SER.

6 With me is Ms. Kimberly Corp. Most of you
7 know her already. She has been helping with Farley
8 while I was on rotation the last few months. Kimberly
9 will be assisting me with the presentation this
10 morning.

11 To give an overview, the draft SER was
12 issued back in October 15, 2004. As you will recall,
13 there were no open or confirmatory items. The SER was
14 issued on March 3rd. And staff concluded at that time
15 that there were no issues and that the Farley
16 application has met the requirements of 10 CFR Part
17 54.

18 Going on to the highlights of the review,
19 as the applicant mentioned and as you all know, this
20 was the first application to use a newly revised NEI
21 format. It's also the first pilot review to implement
22 the consistency with GALL audit in terms of AMPs and
23 AMRs.

24 The staff achieved significant efficiency
25 with the implementation of this new process. This is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 evidenced by reduction in the number of RAIs and that
2 the audits provided direct interaction with the
3 applicant, which resulted in a minimal number of
4 correspondence.

5 Continuing on on highlights of the review,
6 we have three license conditions. The first is that
7 there ought to be FSAR updates on the issuance of the
8 renewed license and that the commitments contained in
9 Appendix A to the SER should be completed in
10 accordance with the schedule.

11 The third license condition is related to
12 the reactor vessel surveillance program, that the
13 applicant needs to continue reading the STM standards
14 and that any changes to the capsule withdrawal
15 schedule or the storage requirements must be approved
16 by the NRC staff.

17 There were additional components brought
18 into scope as a result of the applicant's revised
19 methodology under 10 CFR 54.4(a)(2). There were eight
20 subsystems of auxiliary systems that were brought into
21 scope.

22 We had one aging management program added
23 after the applicant's submittal of the application.
24 This was a class-specific A&P. It's the periodic
25 surveillance and preventive maintenance activities

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 program.

2 Moving on to section 2, I want to point
3 out that during the review process, the applicant
4 revised its original methodology to the criteria
5 pursuant to to 10 CFR 54.4(a)(2).

6 Initially the mechanical scoping criteria
7 for spray interaction for low-energy lines assumed a
8 spray interaction of 20 feet radius and limited the
9 valid targets to only electrical SSCs. The applicant
10 revised its criteria by using a spaces approach,
11 eliminating the 20 feet criterion and expended valid
12 targets to include mechanical and structural SSCs, in
13 addition to the electrical SSCs.

14 We had a third optional inspection
15 conducted on Farley. This was conducted from March
16 9th through 10. We have concluded this was a regional
17 conducted inspection, and it was to evaluate
18 applicant's commitment-tracking system.

19 As documented in the inspection report,
20 which I hope some of you had a chance to take a look
21 at, this was issued on March 21st. The inspection
22 verified that all 20 commitments listed in Appendix A
23 to the SER had the loadings to come into the
24 applicant's commitment-tracking system and that the
25 applicant's planned commitment-tracking system

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 contains many more detailed items for the aging
2 management program implementation than those listed in
3 the SER.

4 We found that the inspection verified
5 clear traceability in the applicant's documentation
6 and commitment-tracking system for the future action
7 items list. And we also noted that the implementation
8 guidance has been incorporated into license renewal
9 basis documents and the plan procedures are being
10 developed right now.

11 MEMBER RANSOM: I have a question. Does
12 the NRC have a procedure for tracking these
13 commitments or an inspection basically to assure that
14 they have, indeed, been met?

15 MS. LIU: Right. In Appendix A to the
16 SER, that's where we have all of the commitments. So
17 the purpose of the inspection was to verify each
18 single one of those are included into the applicant's
19 system.

20 MR. LEE: Yes. This is Sam Lee. I'm from
21 the license renewal program.

22 There is an inspection procedure, number
23 71-003, that actually contains the Appendix A table
24 from the safety evaluation report. This is for the
25 region to implement at year 40.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER RANSOM: Thank you.

2 MEMBER ROSEN: At year 40, Sam?

3 MR. LEE: Yes. After they completed the
4 commitment, the license condition would direct them to
5 notify us. And then the region would implement
6 71-003.

7 MEMBER ROSEN: Okay. So many of them will
8 be done before year 40?

9 MR. LEE: That's correct, yes. When they
10 compare, they will notify us.

11 MS. LIU: Okay. Moving on to section 3,
12 aging management review results, we had a total of 22
13 aging management programs, 9 of which are considered
14 common, 11 of which are considered component and
15 structural group-specific aging management programs.
16 Of these 22 aging managing programs, 8 of them are
17 existing programs, 5 enhanced, and 9 are new aging
18 management programs.

19 In terms of GALL consistency, eight of
20 which are consistent with GALL. With enhancements,
21 there were five. With exceptions, there were five.
22 And not consistent with GALL, there were four A&Ps.

23 For the buried piping and tank inspection
24 program, we wanted to mention this A&P because since
25 the issuance of the draft SER but prior to the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 issuance of the final SER, the applicant revised this
2 A&P by providing initiative information to this A&P as
3 well as revising its commitments associated with it,
4 as the applicant mentioned earlier today.

5 As you recall, this is a new A&P that
6 would be consistent with GALL with exceptions. It
7 included the provisions for our inspection of buried
8 stainless steel and copper alloy piping.

9 The applicant provided additional
10 information that for coded and unwrapped piping,
11 visual inspection will be used to examine external
12 services to confirm that there is no loss of material
13 and that loss of material and piping will be reported
14 and evaluated in accordance to site corrective action
15 procedures.

16 As a result, the applicant took the
17 initiative and revised commitment item number 9 that
18 you will perform an inspection of buried piping would
19 in ten years after entering the period of extended
20 operation unless opportunistic inspection has occurred
21 within this period and that prior to the tenth year,
22 the applicant will perform an engineering evaluation
23 to determine if sufficient inspection had been
24 conducted to draw a conclusion regarding the ability
25 of the underground coatings to protect the underground

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 pipings and things from degradation.

2 If not, the applicant will conduct a
3 focused inspection to allow that conclusion to be
4 reached.

5 MEMBER BONACA: That is a change that is
6 also generic to other plants, right? You have made
7 this change as a requirement in GALL?

8 MS. LIU: That is correct.

9 MEMBER BONACA: Okay. Because, I mean,
10 there was always a requirement for this program to be
11 periodic inspections. And, yet, everybody was using
12 opportunistic inspections. So just for clarification,
13 now there is a new requirement in general --

14 DR. CHEN: That is correct.

15 MEMBER BONACA: -- that if you haven't
16 performed an opportunistic inspection by ten years,
17 you then go in. Another question I had was, is this
18 any inspection or is it going to be in more
19 susceptible locations? That was another criterion in
20 GALL.

21 MS. LIU: I would like to ask Dr. Ken Chen
22 to address that question further.

23 DR. KUO: In the new GALL, we are
24 attempting to specify locations, basically away from
25 the straight long piping, say, for instance, and going

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 to the band and elbows and all of that, where we see
2 most of the degradation will occur.

3 MEMBER POWERS: What we're struggling with
4 a little bit is how you go about doing this
5 engineering evaluation. Suppose that we have, just
6 for the sake of argument, 25 identified locations of
7 enhanced potential for degradation.

8 How many do I have to inspect in order to
9 be able to draw a conclusion on whether there has been
10 sufficient inspection or not?

11 DR. CHEN: This is Ken Chen. I'm license
12 renewal section B. And I'm also the auditing leader.

13 This item became surfaced after the SER
14 was open item. That's what we reported here.
15 Although I haven't said a word yet regarding this,
16 Mike MacFarlane has already done a lot of groundwork
17 for us.

18 This is a program that, although in the
19 SER, is listed for exception. However, these are
20 exceptions categorized as, as Mike says, we ask the
21 program to do more than the GALL asked to do.

22 So in my opinion, it's not exceptions.
23 There is only one exception. That is one listed as a
24 commitment in --

25 MEMBER POWERS: But you're not answering

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 my question. My question is, how do you do this
2 engineering evaluation?

3 DR. CHEN: How you do this engineering
4 evaluation is before the end of the tenth year, the
5 applicant has agreed to do an engineering evaluation
6 based on how much opportunistic excavation has already
7 been done. Does that cover enough piping category,
8 material categories to satisfy?

9 Now, these excavation activities will
10 ensure that the underground piping is well-protected
11 by the coating and the wrapping. Since it's an
12 engineering evaluation, we will have to see how do the
13 results of the engineering evaluation come up? If
14 there are insufficient locations being inspected by
15 opportunistic excavation, additional focusing
16 inspection will be done.

17 MEMBER BONACA: But, you see, the question
18 I have is that assume now -- the way I write it, you
19 start with the first year of the standard operation
20 and you go for nine years without any opportunistic
21 inspections. And then the requirement comes in that
22 says you will inspect at ten years. Okay?

23 Now, so if I perform an engineer
24 evaluation knowing nothing because I haven't gone in
25 that through the site, how do I make the conclusion?

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 How do I use the results of an opportunistic
2 inspection that I have not performed?

3 DR. CHEN: It's a good question, but I
4 don't think the applicant is intended to go that way.
5 Actually, there are several opportunistic inspections
6 already performed. And based on the review of the
7 operating experience, it seems that the frequency of
8 the excavation or buried components under the
9 activities would be sufficient to justify most of the
10 coatings and wrappings effective.

11 And there may be one or two areas it's not
12 going to be effective. Then that would belong to the
13 category of performing focused excavation. See, we
14 are not in that time zone yet. We cannot say with
15 that opportunistic excavation recovered, 90 percent or
16 95 percent of the high-risk locations.

17 As a matter of fact, this applicant
18 pointed out to us that the GALL report, the new GALL,
19 did not explicitly say what should be inspected. And
20 those would be incorporated through the commenting
21 period and will be put into the revised GALL.

22 So when the revised GALL comes out, there
23 will be the requirement of focused inspection if the
24 opportunistic inspection is not doing its job.

25 MEMBER POWERS: You're not helping me at

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 all.

2 DR. CHEN: Sorry. I think the answer is
3 --

4 MEMBER POWERS: No. You're going to
5 listen to me first so we understand the question.

6 PARTICIPANT: I think the answer to your
7 question is going to be no, there is no definitive
8 criteria.

9 MEMBER POWERS: Well, clearly 100 percent
10 inspection on the ninth year would probably be
11 sufficient. It's hard to argue with that one.

12 DR. CHEN: Right.

13 MEMBER POWERS: Okay. Now, is 90 percent
14 inspection in the ninth year sufficient?

15 DR. CHEN: Supported by an additional ten
16 percent to be performed in the last year. That would
17 also be sufficient.

18 MEMBER POWERS: In other words, we're
19 going to have to inspect the whole damn thing in the
20 last two years.

21 DR. CHEN: You identified a sample of a
22 high-risk area. Whether that identified sample is 100
23 locations or 50 locations, it's up to the applicant to
24 come --

25 MEMBER BONACA: So you are not looking for

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 a high susceptibility? You are looking for a
2 high-risk area?

3 DR. CHEN: High-risk area.

4 MEMBER BONACA: Now I can understand how
5 you can do that.

6 DR. CHEN: I like to see a few welds on
7 the valves, on the T's, on the elbows. Those are
8 inspected.

9 MEMBER BONACA: Let me ask you a question
10 now. Now you have a coated piping system that has
11 been in operation for at this point 49 years and
12 hasn't developed a hole in it. Okay?

13 DR. CHEN: Yes.

14 MEMBER BONACA: I would tend to conclude
15 that that piece of pipe is well-wrapped, I mean, if it
16 isn't stainless steel and it isn't copper but it is
17 just an iron pipe. I mean, I like the idea that you
18 have to have some periodicity to it because it's
19 consistent with GALL, but I begin to question about
20 digging around after 49 years of operation when I
21 haven't had a lick.

22 I don't know you will have a comment on
23 that.

24 DR. CHEN: Yes. In commenting to that, I
25 would like to point out there are two other exceptions

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 that are quoted in the program. The two exceptions
2 are addressing the scope beyond currently required by
3 the GALL.

4 Now, the applicant voluntarily put it in
5 there. They want to inspect stainless steel and
6 copper alloy. They want to inspect unwrapped,
7 uncoated, piping. And if you find lots of material in
8 the uncoated, unwrapped piping area, there has to be
9 an evaluation and going through the plant procedures
10 to evaluate that. Those are beyond the GALL.

11 So all of these exceptions, as I listed in
12 the program, are really enhancement improvement in
13 nature.

14 MEMBER BONACA: Okay.

15 MEMBER POWERS: Given that we don't have
16 a clear understanding of what an engineering
17 evaluation is going to be right now, the licensee is
18 going to come in here. And I will bet that he will
19 say in the tenth year that enough has been done and
20 that everything is good. How are you going to know
21 whether to believe that or not? I mean, he will be
22 totally factual in what he sends you, but whether that
23 is sufficient or not.

24 DR. KUO: Well, Dr. Powers, if I may
25 comment on this, the NRC process really is a process

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 of trust and verify. Okay? To some degree, we have
2 to trust the ability of the applicant to do the right
3 thing.

4 MEMBER POWERS: He's going to write you a
5 very nice report that said, "I did this and this,
6 this, this," and it will be well-justified.

7 DR. KUO: If we have any doubt at all, we
8 could go there to audit to inspect.

9 MEMBER POWERS: Yes, but the question is
10 sufficiency.

11 DR. KUO: Well, let me talk about it as an
12 engineer. As an engineer, when I have problems like
13 this, I would have locations inspected. It may be a
14 few, maybe not a whole lot, maybe just a few.

15 But if I see degradation signs there, I'm
16 going to start looking into more. I'm going to expand
17 my samples. That's the nature of the evaluation.

18 I don't think we can ask the applicant to
19 go there to, say, take 100 percent, to inspection 100
20 percent of locations. I think that's not what we
21 want.

22 They could inspect a few critical
23 locations, but if they ever find any degradation size,
24 then definitely as an engineer, I would expand my
25 samples again.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER POWERS: I mean, you've picked the
2 easy one. Now pick a hard one: the next five
3 locations and there are no signs.

4 DR. KUO: And that is why I am saying I am
5 taking the critical locations.

6 MEMBER POWERS: Take the five critical
7 locations and there are no signs of degradation or
8 not. Is that sufficient?

9 DR. KUO: Well, if there are no signs of
10 degradation in critical locations, I have to conclude
11 that there is no problem.

12 MEMBER POWERS: Well, now, how can you
13 conclude that? I wouldn't conclude that at all.

14 DR. CHEN: If I say we inspect ten and
15 find no problem, would that satisfy your needs?

16 MEMBER POWERS: You haven't helped me a
17 bit. Until you get to 100 percent I'm still asking
18 you, how do you know how to extrapolate from a finite
19 set to the complete set?

20 MR. MacFARLANE: If I may, this is Mike --

21 CHAIRMAN WALLIS: I think we established
22 they don't know.

23 MEMBER POWERS: Okay. How do you find
24 out?

25 CHAIRMAN WALLIS: Well, I think if you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 keep questioning, you won't get an answer.

2 DR. KUO: Instead of answering this tough
3 question directly, can I go indirectly? Inspections
4 and audits are two activities going in this state in
5 parallel to the license renewal application stage, but
6 after granting the license, before entering the
7 extended period of operation, the inspection teams in
8 the regional sites, site inspections, if you're going
9 to verify or check into what extent they inspect.

10 Now, you may say the inspectors, they
11 don't have the knowledge of deciding, they don't have
12 the expertise of deciding what is critical and how
13 many critical are there and how many occasions
14 inspected, but in the last few trips, we went to
15 different sites.

16 The site inspectors and auditing members
17 are working together in several areas. This is one of
18 the areas. So we are kind of transporting the
19 knowledge to the inspectors. And the inspectors by
20 their professional experience, they will identify.
21 When they have lack of professional expertise to
22 handle that, they come back to the audit team. And
23 we'll do that at that point.

24 If you challenge the audit team will have
25 enough expertise, we will have to see at that time who

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 is in the audit team.

2 MR. MacFARLANE: If I may, I'd like to try
3 to help you out with this a little bit. This is Mike
4 MacFarlane.

5 What they are really talking about here is
6 for us for coated piping, it was all put in at the
7 same time. It's all the same pipe. It's all the same
8 process used to coat. So what you're really looking
9 at is a sampling process.

10 And we're looking for an actual failure of
11 coating from the standpoint of adherence and
12 degradation, general degradation. It's not looking
13 for the needle in a haystack of a localized failure
14 due to like a rock. The typical failures we see in
15 these lines are really related to nicking of a coating
16 during installation.

17 And so what this is really looking at, the
18 intent is to verify that with a coating itself in the
19 general sense. It's still staying in here. It's
20 still good quality. It's still a valid coating.

21 The engineering evaluation is to look at
22 how many times have we dug this up, what have we dug
23 up to come up with have we gotten the population, do
24 we have a sufficient basis, sampling basis, to really
25 say we have looked at that.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 I don't know if that answers your
2 question, but that is really the goal of the things
3 that --

4 MEMBER POWERS: Well, what you described
5 as the process -- and I can almost sit down and
6 scratch out at least the table of contents of the
7 report you're going to send to the staff right now.
8 And that's what I would do as well.

9 My question to them is, having gotten this
10 report, which will have all this information you
11 outlined, they placed a sufficiency condition on it.
12 How do you know whether it's sufficient or not?

13 Since you're going to be the first one
14 that's going to trot one of these reports out or at
15 least the first one promised to trot one of these
16 reports out, they can't go looking at a bunch of other
17 reports like this.

18 I mean, you know, you're going to describe
19 a population. You're going to describe your findings.
20 Let us presume, for sake of argument, that there is
21 nothing, zip, everything is in pristine condition and
22 every place you looked, but it's a finite set. And
23 you're going to make an argument. I'll bet you make
24 the basian argument. And you're going to send it to
25 them. And they've got to decide on sufficiency. But

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 there will be a subjectivity to it because I'll bet
2 it's a basian argument.

3 DR. CHEN: There are standards that people
4 follow to evaluate if you're doing a statistical
5 sample. Normally people review those based on the
6 meritory standards for a general sample, but in this
7 case, we are really reviewing a biased sample, I mean,
8 the sample at the locations where those degradations
9 are most likely to occur.

10 So if someone reviews a biased sample and
11 also achieves a 95-95 level, I think that's the best
12 assurance you can get for myself to assure myself
13 that, hey, this program is properly implemented and
14 the likelihood to have no value is very high, 95-95.

15 MEMBER KRESS: You are talking about a
16 random set when you're talking about 95-95.

17 DR. CHEN: Yes.

18 MEMBER KRESS: I don't see much randomness
19 in this process.

20 MEMBER POWERS: We're still on 95. You
21 have to have 95 percent confidence there are zero
22 failures. I mean, you can't tolerate five percent
23 failures in this line.

24 MEMBER ROSEN: Very wet site.

25 MR. MacFARLANE: I understand the status.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER BONACA: All right. Well, then we
2 will proceed now.

3 MS. LIU: All right. For aging management
4 in scope in accessible concrete, it's on this table.
5 PH level colorized itself at Farley as within the
6 acceptable limit. Therefore, the below-grade
7 environment at Farley is not considered aggressive and
8 that there is no history of aging, degradation, or
9 failure of concrete components exposed to a
10 below-grade environment in Farley.

11 While sampling is not performed on a
12 routine basis, the phosphate level is .03 ppm sample
13 from the surface water pond. The surface water pond
14 is a source of water for the surface water system.
15 Structures exposed to the pond water are the surface
16 water structures. The other structures are exposed to
17 groundwater. And there was no detectable phosphate in
18 the groundwater samples.

19 On section 4, time of the aging --

20 MEMBER POWERS: Is that because the
21 phosphate at all reacted with the concrete?

22 MS. LIU: David Jeng, would you like to
23 answer that question?

24 MEMBER POWERS: Well, it didn't take any
25 phosphate in the groundwater. And I just wondered if

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 all phosphate had reacted with the concrete.

2 MR. JENG: This is David Jeng.

3 Phosphate is not known to have any
4 cementing effect on concrete. If you go through all
5 the areas of the research, that has been there. And
6 that's under the industry.

7 So the answer is no. They are not
8 believed to be going to have impact on the integrity
9 of the concrete.

10 MEMBER POWERS: I don't agree, but we'll
11 go on.

12 MR. JENG: Thank you.

13 MS. LIU: Okay. Section 4, time of the
14 aging analysis for the reactor vessel shop energy and
15 PTS, as you can tell from the first table, for both
16 Unit 1 and Unit 2 at Farley, they are both within the
17 acceptable range. And the values calculated by the
18 staff and the applicant are very close.

19 These values are based on a quarter to
20 neutron fluence values at the end of extended period
21 of operation; in other words, 54 effective for power
22 years.

23 The second table is where we have the
24 pressurized thermal shock. As you can tell, the
25 values again are within the acceptable range. And for

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 the staff-calculated value and the
2 applicant-calculated value, they are very close as
3 well. And these are based on fluence values for base
4 metal occasions of the reactor vessels.

5 On metal fatigue, we have the fatigue of
6 ASME class I components. There are two components
7 that make the fatigue cumulative users' factor of 1.0.
8 And they are the charging nozzle and are a safety
9 injection nozzle to the RCS cold leg.

10 The applicant's corrective action would
11 include one or more of the following four options.
12 They are: further refinement of the fatigue analysis,
13 repair, replacement, or management of the fatigue
14 effects through the use of an NRC augmenting
15 inspection program for the fatigue of reactor coolant
16 pump flywheel, which is based on a bounding analysis
17 of 6,000 start/stop cycles, and .08 inches of
18 allowable crack growth.

19 The analysis on the reactor coolant pump
20 flywheel remains to be valid and continue to have
21 sufficient margin against fracture for the period of
22 extended operation.

23 Finally, on the fatigue of ASME non-class
24 1 components, -- these are based on ASME class 2 and
25 3 and ANSI standards -- while most piping systems

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 within the scope of license renewal are bounded by
2 7,000 cycles, sampling was designed for 22,000 cycles.
3 And the analysis for these systems remains to be valid
4 during the period of extended operation.

5 On containment tendon prestress, applicant
6 provided training analysis, as you can tell from this
7 table here. We have the trend line values at 40 years
8 and at 60 years. They are, again, all within the
9 acceptable range.

10 The next slide is the trend line that the
11 applicant provided for this --

12 MEMBER KRESS: Before you leave that
13 slide, as you know, real data turns ACRS on. I'd like
14 to ask a couple of questions about it. Number one,
15 what exactly is the liftoff?

16 MS. LIU: I would like to ask Mr. Hans
17 Ashar to answer this question.

18 MR. ASHAR: I am Hans Ashar. Could you
19 repeat the question again? I didn't because I was on
20 that side --

21 MEMBER KRESS: Looking at the y-axis, what
22 exactly is a liftoff?

23 MR. ASHAR: On y-axis, what we have is a
24 liftoff of forces expressed in caps for a tendon.
25 Pressuring tendon is the one which imparts the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 composition to the concrete.

2 MEMBER KRESS: These are hoop tendons.

3 MR. ASHAR: This is only one example given
4 for hoop tendon here, but they have developed tendon
5 lines for the vertical tendons, long tendons for both
6 the units.

7 MEMBER KRESS: Tell me what a liftoff is.

8 MR. ASHAR: Liftoff, there is a tendon on
9 anchorage. They pulled the anchorage up to a very
10 small amount, about one-sixteenth of an inch, and
11 measured the amount of liftoff testing.

12 MEMBER KRESS: And you get a zero force at
13 some point. Is that --

14 MR. ASHAR: Well, if it is not
15 sufficiently pulled, like one-sixteenth which I'm
16 talking about, from the bearing plate, it would show
17 very low pressuring. But the requirement is it should
18 be completely independent from the bearing plate.

19 MEMBER KRESS: Now let me ask a couple of
20 other questions.

21 MR. ASHAR: Sure.

22 MEMBER KRESS: The trend line, I presume
23 that must be related to creep effects.

24 MR. ASHAR: Yes, yes. That is the whole
25 idea because it is very difficult to predict precisely

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 each and every tendon's pressuring force because we
2 are going by sampling here. And so what we are doing
3 is that at a certain interval, they took these liftoff
4 measurements for the pressuring tendons. And then
5 they combined them together. They used the list
6 square method for regression analysis and developed
7 these trend lines.

8 That means they are to be randomly
9 selected samples for 200 tendons. They make ten
10 tendons every time.

11 MEMBER KRESS: So each of these years'
12 samples are not the same tendons? They are different?

13 MR. ASHAR: No, they are not the same
14 tendons. Correct.

15 MEMBER KRESS: If they were the same
16 tendons, would you be able to predict the trend line
17 because it's creep-related?

18 MR. ASHAR: Well, no. Creep and shrink
19 are part of the lessening of the tension in the
20 pressuring, I mean, the flex itself in the measure of
21 pressuring forces.

22 MEMBER KRESS: Well, I still have a Dana
23 Powers' question on sufficiency here. If these are
24 not the same tendons, --

25 MR. ASHAR: Yes.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER KRESS: -- how many do you have to
2 do to get a trend line?

3 MR. ASHAR: Well, I can give you quite a
4 history on this one because we have gone through a lot
5 of gyrations on the sample size of the tendons during
6 the earlier years during when the pressure test
7 concrete containments came into the picture. And we
8 had a number of people suggesting that, hey, you've
9 got to take at least ten tendons, even for the
10 infinite population of the tendons. It will take at
11 least ten tendons to make it a more valid statistical
12 correlation here.

13 And so we started with the first reg guide
14 on this particular item, in which for hoop tendons,
15 they were supposed to take ten tendons. For vertical,
16 they were a little less because the population
17 generally is less.

18 The whole idea here was to not put
19 licensees into kind of heavy expenses for doing this
20 work because it is an expensive item taking liftoff
21 testing, sometimes detationing also. And so there was
22 a compromise reached with the industry through a
23 number of negotiations through about 30 years of
24 history on pressuring tendon.

25 MEMBER KRESS: Is the assumption that this

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 trend line applies to the whole population of tendons?

2 MR. ASHAR: The whole tendon. That's
3 correct, yes.

4 MEMBER KRESS: Well, how does that
5 translate into potential containment failure? How
6 does that affect the containment failure probability?

7 MR. ASHAR: Well, there is a separate
8 study done. And we also had a separate model testing
9 done by the Office of Research on pressure test
10 concrete containment models. That gives certain
11 insight into how much loss you can really tolerate
12 without compromising the capacity of the containment.

13 MEMBER KRESS: Is that the basis for this
14 red --

15 MR. ASHAR: No, no, absolutely not.

16 MEMBER KRESS: What's the basis for the
17 minimum --

18 MR. ASHAR: This is completely estimated.
19 There is no risk-informed. The only thing, it is a
20 statistically derived trend line.

21 MEMBER KRESS: What is the basis of the
22 red line?

23 MR. ASHAR: The red line is a minimum
24 pressuring force that they need to have in order to
25 satisfy the design conditions.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER KRESS: What is the basis for it,
2 though?

3 MR. ASHAR: The basis is to take the force
4 that they are going to impart. This is all estimated.
5 Then they considerably put the break coefficient, the
6 shrinkage factor, the arrestical stressing of steel,
7 and arrestic shortening of the structure itself. All
8 these things are considered arriving at that line,
9 that red line.

10 That is done during the construction of
11 the line. It's not done later on. They have to make
12 sure that they can take the internal pressure without
13 too much of a tension into the concrete.

14 MEMBER KRESS: I wouldn't worry about a
15 trend line that is completely dominated in one set of
16 data at three years.

17 MR. ASHAR: It's not one set of data. And
18 model dosers is a continuing process. This is not the
19 end of this line. Okay?

20 What is going to happen is that the next
21 five years, they will be doing another inspection.
22 They will be taking more liftoff testing. If this
23 trend line changes, it changes, whatever comes out of
24 the regression analysis.

25 MEMBER KRESS: Well, I must say --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER POWERS: Who believes this?

2 MEMBER KRESS: -- this discussed has left
3 me baffled. Let's go on.

4 MEMBER POWERS: Well, really, let me be
5 equally baffled, Tom. That's not a trend line.
6 That's an outlier line.

7 MEMBER KRESS: That's right.

8 MR. ASHAR: Which one is that?

9 MEMBER POWERS: That's not a trend line.
10 That's an outlier line.

11 MEMBER KRESS: I would wonder about those
12 samples taken a --

13 MEMBER POWERS: I mean, I have no idea how
14 they ran that line through there, but if they did a
15 least squares analysis, they're crazy. Do an L-1
16 analysis on that. And that trend line will disappear
17 in an instant. It will be a constant.

18 MEMBER KRESS: Yes, yes. Constant would
19 be better --

20 MEMBER POWERS: Yes.

21 MEMBER KRESS: -- for sampling safety. I
22 have no argument with that, but still it baffles me.

23 MEMBER RANSOM: It also looks like if you
24 were to put a 95 percent confidence limit in that,
25 that it would probably be lower than --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MR. ASHAR: Yes. You are quite right.
2 And if you consider if there is enough statistical
3 liftoff testing done and you can come out with a 90
4 percent confidence level, it will be lower than this
5 trend line I give you.

6 MEMBER KRESS: I would assume that the red
7 line has some consideration of that kind of certainty
8 in. That's why I asked, what's the basis for the red
9 line? I really don't yet. It's, you know --

10 MR. ASHAR: I can explain to you again how
11 the baseline -- and if the applicant wants to put
12 their own thing as to how they have constructed the
13 red line, I would appreciate that.

14 MR. MacFARLANE: The red line is basically
15 the containment design analysis value for tension that
16 we use to prove that the containment design will be
17 sufficient for design, which is 54 psig. And then
18 there's always conservatism in that calculation, but
19 that's the basis of it.

20 MEMBER KRESS: At least I understand that.

21 MEMBER POWERS: Thank you.

22 MS. LIU: There are three other TLAs, one
23 being the ultimate heat sink, 1,325-acre feed for
24 surface water pond. That's the ultimate heat sink,
25 what was used in the FSAR. The average measured pond

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 volume is 1,418.5-acre feed taken from 12 sets of data
2 over the last 22 years.

3 Staff performed an independent linear
4 regression analysis. And the minimum recorded
5 ultimate heat sink pump volume is 1,403-acre feed, as
6 you can tell. So they are all within the acceptable
7 range.

8 For the RHR relief valve capacity
9 verification calculations, the applicant has committed
10 in commitment number 15 that it is to update an
11 analysis to include a calculated 54 EFPY PT limit
12 curves prior to the period of extended operation.

13 And, finally, on the leak before break
14 analysis, the applicant's LBB analysis has been
15 demonstrated and continues to be valid during the
16 period of extended operation.

17 So, in conclusion, as I stated earlier,
18 Farley's new application has met the requirements of
19 10 CFR Part 54 in terms of scoping and screening A&Ps,
20 AMRs, and TLAA.

21 That concludes the staff's presentation.

22 DR. KUO: Thank you, Tilda. And that
23 concludes the staff part of this presentation.

24 MEMBER RANSOM: I have a kind of a general
25 question, nothing I guess related to this specific

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 one, but as we are moving towards new plant building,
2 the expectation is that they will actually have lower
3 risk in terms of core damage frequency than the
4 existing plants. And I'm wondering if there shouldn't
5 be an expectation of license renewal that there will
6 actually be an improvement in safety during the
7 license renewal period.

8 I mean, this is overlapping at a time when
9 we expect significant improvement in safety margin.
10 That may not be in the current rule, but it would seem
11 like it ought to be an expectation.

12 Everything you point to points to a
13 reduction in margin with time. So I don't think you
14 can argue that there is no reduction in margin. The
15 only arguments I've ever heard are that we simply meet
16 the current licensing basis in terms of safety
17 conditions.

18 MEMBER BONACA: Anybody else?

19 MEMBER SIEBER: No.

20 MEMBER POWERS: Yes. I mean, it's outside
21 the scope of the current rule. It would take a rule
22 change to do that.

23 MEMBER BONACA: This is the first time
24 that we have raised this question. I think it's a
25 valid question.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER POWERS: Yes. We brought it up
2 before renewal.

3 MEMBER BONACA: What criteria. And at
4 some point we have evaluated whether or not we felt
5 the rule was appropriate. It was. And I think it is
6 an important question. And I think it certainly
7 places further burden on the existing operators to
8 assure that all these commitments, et cetera, that we
9 made because of aging are fulfilled because clearly
10 there is a reduction in some margin of components.

11 I think, however, in terms of reduction of
12 the margin, it's true that most of these components
13 have substantial margin. And what we are looking for
14 is confirmation that the reduction in margin, in fact,
15 is not going to affect the safety of the component
16 itself.

17 I think some of the studies we have had,
18 for example, the one on the PS rule, where we sharpen
19 our pencils there, it seems to indicate, in fact, a
20 level of margin that was beyond what was thought to be
21 there in the vessels, for example.

22 I dare say that if we did the same
23 evaluation on other components, we will find probably
24 very similar results. So I don't think we should
25 leave an impression that these plants are degrading,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 I think it is my judgment, to the point of creating a
2 separate issue.

3 It is a fact that for new plants, there
4 are expectations that go beyond what this current
5 generation of plants is capable of.

6 MEMBER SHACK: I just had one question.
7 Back on this scoping criteria for the spray
8 interaction with the low-energy lines and the spaces
9 approach, is that the industry recommended? Is that
10 NEI guidance on the way to do that? Are we going to
11 see that for most of the applications in the future?

12 MS. LIU: Yes. I believe Mr. Greg
13 Galletti is here. He can address that question for
14 you.

15 MR. GALLETTI: I'm Greg Galletti from the
16 staff.

17 You are speaking specifically of the
18 20-foot criteria?

19 MEMBER SHACK: Yes versus the spaces
20 approach.

21 MR. GALLETTI: They are really not
22 different. What was going on here is in general all
23 applicants use a spaces approach. What they try to do
24 is limit, of course, that space. So what they do is
25 they implement some additional criteria.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 For instance, you would have a
2 safety-related building. Essentially the entire
3 safety-related building would be in scope. But then
4 in certain cubicles or certain areas, they would then
5 try to limit further what exactly would be --

6 MEMBER SHACK: Things like where you had
7 walls, rather than 20 feet.

8 MR. GALLETTI: Right, right, right.
9 Normally if you have barriers like that, a wall of
10 some sort, a physical device, like a spray shield,
11 something like that, they would limit what's the A-2
12 items to include within that that boundary.

13 In this case, the 20-foot criteria was
14 something that the industry was proposing.

15 MEMBER SHACK: Okay.

16 MR. GALLETTI: And, again, in the I-9510,
17 Rev. 5, I guess draft Rev. 5, Appendix F, which is the
18 document, essentially that was the impetus for doing
19 that. We have taken exception to that.

20 And since that, that revision has been
21 changed. But at the time Farley was going through it,
22 that's where we were.

23 CHAIRMAN WALLIS: Are there any more
24 questions from Committee members?

25 (No response.)

1 MEMBER BONACA: If none, I'll give it back
2 to you, Mr. Chairman.

3 CHAIRMAN WALLIS: Well, thank you very
4 much for a good presentation from the industry and
5 from the staff. We appreciate it. And we'll adjourn
6 for 15 minutes, time for a break. Recess.

7 (Whereupon, the foregoing matter went off
8 the record at 10:06 a.m. and went back on the record
9 at 10:22 a.m.)

10 MEMBER POWERS: "Good Practices for
11 Implementing Human Reliability Analysis." George, I
12 want to hand it over to you.

13 MEMBER APOSTOLAKIS: Okay. Thank you.

14 3) NUREG-1792, "GOOD PRACTICES FOR
15 IMPLEMENTING
16 HUMAN RELIABILITY ANALYSIS"

17 3.1) REMARKS BY THE COGNIZANT SUBCOMMITTEE
18 CHAIRMAN

19 MEMBER APOSTOLAKIS: The staff has
20 developed a draft NUREG report entitled "Good
21 Practices for Implementing Human Reliability
22 Analysis." And we received the first draft in April
23 of last year.

24 Now, what the staff means by "good
25 practices" is that there are a number of processes and

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 analysis tasks that are expected to be found in any
2 HRA if the HRA is to be of some value.

3 We reviewed the first draft. And we
4 issued a letter in May of last year. And we stated
5 that the draft NUREG report should be issued for
6 public comment. And we recommended that it should be
7 peer-reviewed by domestic and international experts.
8 We expressed our usual disappointment of not seeing
9 organizational issues be treated the way we think they
10 deserve to be treated.

11 A month later, in June of 2004, we
12 received the EDO's response, in which the staff stated
13 that they agreed with us that developing a set of good
14 practices for assessing human reliability is very
15 challenging and that the draft NUREG report would
16 benefit from a review by domestic and international
17 experts. They also agreed with us that organizational
18 issues are potentially significant performance-shaping
19 factors.

20 And they issued the report for public
21 comment. They received the public comments. And on
22 March of this year, the staff issued the revised
23 version of the report, which we have. And it was
24 revised to address the comments the staff received
25 through the public review and comment period, which

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 lasted until, I understand, October of last year.

2 And they have an Appendix C, where they
3 note how they responded to the comments they received.
4 And they state, the staff states, that very few
5 comments, if any, actually, took real issue with the
6 draft NUREG. And most of the comments addressed
7 issues of clarification. I'm sure the staff will walk
8 us through them today.

9 As a result of this, this revision that we
10 have really is not very much different from the first
11 draft we had except for the five or seven points that
12 have been clarified.

13 Of course, the issue of organizational
14 factors has to wait for better times, when we will not
15 know more about it. The staff plans to have
16 additional interactions with HRA experts.

17 I understand they are in the process of
18 organizing a workshop sometime maybe in June or July.
19 And the only point, if there is a point, of potential
20 disagreement here is the way the staff interpreted our
21 recommendation for a peer review. Essentially what
22 they did, my understanding is what they did, is they
23 sent a report to people. And they said, you know,
24 "Would you please read this and tell us what you
25 think?"

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 And given the record this agency has with
2 peer reviews, that's probably not one of the best peer
3 reviews, but we will have to listen to the staff and
4 see what they learned from this. Certainly the ACRS
5 had something else in mind when we recommended a peer
6 review.

7 The reason, really, for the peer review or
8 a more formal peer review is that the whole effort on
9 HRA has been going on now for a number of years within
10 the agency and its contractors, but also there are
11 other groups, both domestic and internationally, that
12 have been developing their own methods and models.

13 My impression is that the two groups or
14 the many groups, they talk to each other at meetings,
15 but I haven't really seen, say, a report from the NRC
16 that says, you know, "We are changing ATHEANA this way
17 because this group is developing their own method, and
18 we think this is a good idea, what they are doing."

19 In other words, there doesn't seem to be
20 a cross-fertilization. And I think at some point, we
21 have to have that, especially for such an important
22 issue. And maybe this report is a good place to
23 start. But, again, we'll have to hear from the staff
24 what kinds of comments they got and how they handle
25 them and what we can do about this issue of peer

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 review. And I guess one of the questions is, is
2 holding a workshop a substitute for a peer review?

3 So, with those preliminary remarks, I will
4 turn it over to Erasmia or David.

5 3.2) BRIEFING BY AND DISCUSSIONS WITH
6 REPRESENTATIVES OF THE NRC STAFF

7 MR. LEW: Good morning. Yes. My name is
8 Dave Lew. I am the Chief of the PRA Branch. I just
9 wanted to make a couple of introductory remarks before
10 I turn the presentation over to Erasmia.

11 First, I do like to thank the Committee
12 for the comments that you provided us last year. I
13 think we have taken some of them. And I believe we
14 have proved the authority of the HRA guidance. So we
15 do appreciate that.

16 The purpose of today's meeting is a status
17 briefing of the practices. This is an informational
18 briefing. So we are not requesting a letter from you.
19 We are planning to issue the practices this month as
20 a NUREG CR. So with that --

21 MEMBER SHACK: As a NUREG or as a NUREG
22 CR?

23 MS. LOIS: NUREG.

24 MR. LEW: NUREG. I'm sorry. Yes. That's
25 right. NUREG.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 With that, let me just introduce the
2 people supporting this. We do have Erasmia and Susan
3 and myself. We also have Alan Kolaczkowski on the
4 phone. And Jay Persensky is here on the side to help
5 answer any questions because I know there was some
6 interest with regard to organizational factors and
7 such. And we have gotten different --

8 MEMBER APOSTOLAKIS: And Jay has solved
9 the issue?

10 (Laughter.)

11 MEMBER ROSEN: I want to make sure that
12 you don't underestimate the importance of this
13 document in the sense that practitioners will begin
14 using and modifying and improving things and enhancing
15 the way they do business on the basis of this. So it
16 will begin to prompt change. So if it's not complete,
17 if it's wrong, it has impacts.

18 MR. LEW: Okay. With that, let me just
19 turn it over to Erasmia for presentation.

20 MEMBER APOSTOLAKIS: Good.

21 MS. LOIS: Thank you very much.

22 I would like to remind that the names
23 here, mine, Susan's, and Alan's, are just the people
24 who are going to hep out. Probably we will have Jay
25 help out in the presentation. However, the work has

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 been done by Sandia National Laboratories. And many
2 other people contributed, John Forester of Sandia
3 National Laboratories as well as Gareth Perry. He
4 really helped out in a significant way on this work as
5 well as Susan and several others in NRC and
6 consultants.

7 The good practices is what we call phase
8 one in developing and human reliability. And now this
9 is guidance. Phase two includes the comparison of
10 existing methods or the evaluation of existing methods
11 with respect to the good practices.

12 So we view the good practices as kind of
13 the foundation for discussing the differences and
14 methods and their capability to address specific
15 regulatory applications.

16 MEMBER APOSTOLAKIS: That is a very
17 interesting comment you just made, Erasmia. In other
18 words, this document will be the standard against
19 which these other methods would be evaluated.

20 MS. LOIS: In a way because, of course, it
21 expresses the NRC staff views, but it documents the
22 practices, the widely accepted practices, for
23 performing human reliability analysis.

24 As a matter of fact, we started out by
25 this work, developing actually guidance development,

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 by evaluating looking at this individual method; for
2 example, prepare ATHEANA, et cetera, and making
3 statements, "This is good" and "This is not good
4 enough." And we had to say, "Good enough with respect
5 to what?"

6 So then we realized that we need to
7 express out to document our opinion on what are good
8 practices and then go to the next step, which is
9 evaluation the strength and limitations of methods
10 with respect to availability to be used by regulatory
11 applications.

12 MEMBER APOSTOLAKIS: But what if there is
13 some idea in some other model that you were not aware
14 of or have not appreciated? So you have not included
15 the result in good practice her.

16 In other words, it shouldn't be a one-way
17 street, where you use this as a standard and you say,
18 "Now I'm going to look at this guy's method and say
19 whether it is good or bad because there may be some
20 good elements in that method that should be in the
21 good practices document."

22 MS. LOIS: That's why the good practices
23 stayed at the generic level, not method-specific
24 level. And once we started talking about the various
25 methods and their strengths and limitations, we may

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 have to come back and say, you know, some aspects have
2 not been encompassed.

3 MEMBER APOSTOLAKIS: Yes. That's a point.
4 That's a point.

5 MS. LOIS: Yes.

6 MEMBER APOSTOLAKIS: Good.

7 MS. LOIS: Okay. So the objective of this
8 briefing is to explain to the ACRS how we addressed
9 your comments mentioned before -- we briefed you in
10 April, both the subcommittee and the full Committee,
11 and also we received a letter from you -- and also to
12 explain what are the comments we received from the
13 public and what we did, how we addressed that.

14 Overall where the ACRS comments made for
15 a more international representation practitioners
16 within now peer review, we acknowledged the work
17 outside of the NRC and even the U.S., clarified the
18 purpose and the use of the document, clarified how
19 good practices compare with the state-of-the-art,
20 address management organizational issues, and also
21 provide a variety of individual comments.

22 In obtaining food from international
23 representations, we actively pursued it. Yes, we did
24 not have a peer review in a formal sense. However, I
25 should note that we received more specific comments

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 from the international stakeholders.

2 Domestically, the EPRI provided formal
3 comments and just one individual. Here we have many
4 more people participating and probably encompassing
5 the well-known HRA --

6 MEMBER APOSTOLAKIS: Did these people send
7 you e-mails or letters with comments?

8 MS. LOIS: E-mail.

9 MEMBER APOSTOLAKIS: They did?

10 MS. LOIS: Yes.

11 MEMBER APOSTOLAKIS: And they had detailed
12 comments?

13 MS. LOIS: Detailed comments that -- I
14 mean, I have probably glanced through backup slide.
15 I thought you would ask the question, George.
16 Sixteen, would you please? Oh, I have to do it
17 myself?

18 MEMBER APOSTOLAKIS: We don't have 16.

19 MS. LOIS: No, you don't have 16. It's a
20 backup.

21 MEMBER APOSTOLAKIS: Yes. We should still
22 have the backup slides. So what do you want? You
23 want to find number 16? Okay.

24 MS. LOIS: Yes, I want to find number 16.

25 MEMBER APOSTOLAKIS: Very good.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MS. LOIS: Okay. I'm sorry. Apparently
2 I don't have slide 16.

3 MEMBER APOSTOLAKIS: Okay.

4 MS. LOIS: I cut it off. But I can
5 summarize it here.

6 MEMBER APOSTOLAKIS: Yes.

7 MS. LOIS: We have several positive
8 comments. It's of high-quality, useful to
9 practitioners, level of detail appropriate,
10 state-of-the-art, adequately reflected, and
11 discussions on specific PSS may help to reduce the
12 risk from overlooking core conditions. Those are the
13 positive comments.

14 A couple of accurate domestic comments on
15 the use of existing plan and industry experimental
16 data: recommending to use the experimental data. And
17 we had some strong criticism for not emphasizing
18 enough the use of errors of commission and providing
19 more detailed guidance and strongly recommending their
20 use. As a matter of fact, verbally I did not do a
21 list because if I go to slide 8, that includes the
22 international comments.

23 MEMBER ROSEN: Lois, that reminds me. Did
24 you get the EPRI comments you mentioned?

25 MS. LOIS: Yes.

1 MEMBER ROSEN: Was it easy to see
2 practitioner comments or was it just the EPRI staff?
3 Could you tell that they were coming from people who
4 were out there in the industry via EPRI?

5 MS. LOIS: Yes, yes, because the EPRI
6 comments included not just "complaints," "How come
7 now?"; I'm going to cover it, "Are they going to be
8 back to the comments?"; et cetera, but they did
9 provide specific comments to clarify the good
10 practices. Some of them were suggesting to add
11 criteria. So they were very good detailed comments.

12 MEMBER ROSEN: So you think EPRI solicited
13 comments from --

14 MS. LOIS: EPRI solicited comments. And
15 I am aware of HRA practitioners in the industry, Doug,
16 where it says are provided. His comments through EPRI
17 are supposed to go directly to this.

18 MEMBER ROSEN: Well, that's good.

19 MS. LOIS: So to go down --

20 MEMBER APOSTOLAKIS: Did EDF have a chance
21 to review it?

22 MS. LOIS: EDF sent us very specific, very
23 detailed comments, but it was too late for
24 incorporating them?

25 MEMBER APOSTOLAKIS: So they did send you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 comments?

2 MS. LOIS: They did, yes.

3 MEMBER ROSEN: So what would you do with
4 them?

5 MEMBER APOSTOLAKIS: What was the flavor
6 of those comments?

7 MS. LOIS: Some of them were, "How come,"
8 you know, that "10-3 is a good value to reduce the
9 screen?" Some of them were along the lines of
10 everybody else. But we did not have the chance to
11 really go through in detail to incorporate to make
12 changes in this, but we're going to have more
13 discussions with EDF during this phase of work.

14 MEMBER ROSEN: And you plan a future
15 revision of this to incorporate the knowledge?

16 MS. LOIS: I think it should be on the
17 basis of experience we get from potentially licensees
18 using the good practices and also what it will come
19 out from the phase two, which is the evaluation of
20 methods.

21 MEMBER APOSTOLAKIS: Are you going to talk
22 about the phase two later?

23 MS. LOIS: Yes, if needed. So, then,
24 quickly, acknowledging the work outside, we audit
25 references, clarify the purpose.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 CHAIRMAN WALLIS: Did acknowledging this
2 work lead to any changes in what you did or did you
3 just acknowledge it?

4 MS. LOIS: We felt that the draft version
5 reflected the international work because --

6 MEMBER APOSTOLAKIS: Susan is
7 international.

8 MS. LOIS: Susan is international. Alan
9 is international. I don't want --

10 MEMBER APOSTOLAKIS: Yes. But you
11 remember the workshop in Brussels, that both you and
12 I were there. The French representative from EDF kept
13 telling us that their method is different from
14 everybody else's. You know, whatever issue would come
15 up were different.

16 When are we going to put an end to that?
17 Did they buy into this and they said, "No," you know?

18 MS. LOIS: Oh, yes, they did.

19 MEMBER APOSTOLAKIS: If we implement our
20 methodology or if somebody applies this practices
21 document, then that is a good foundation for us to
22 apply our method that we expect to see all of these
23 things or this is just ATHEANA and we are going a
24 different way? That is what disturbs me, when people
25 or major organizations say, "We are different. We are

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 going a different way."

2 MS. LOIS: Let me answer these two
3 questions and then if Susan wants to answer it.

4 MEMBER APOSTOLAKIS: Yes.

5 MS. LOIS: The comments that the French
6 sent would not alter the good practices. There were
7 specific comments to say, "Why? How do you know that
8 10-3 is good enough?"

9 The other thing is that MERMOS would like
10 to compare HEEN and MERMOS with IDUC. So then at that
11 point, we will be able to actually understand what
12 MERMOS is and how different that is.

13 Now, could that stop the French saying
14 that we're different? I'm not quite sure because they
15 have --

16 MEMBER APOSTOLAKIS: No, but that's why I
17 want you to talk about phase two later. You say
18 you're going to compare the various methods that are
19 out there, MERMOS or IDUC from Maryland and whatever
20 else is there, compare them with this document. But
21 you will compare them also to each other to see what
22 differences there are?

23 MS. LOIS: We believe that through
24 comparing with the good practices the individual
25 methods we will identify if there are differences.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 And then it should be phase three where we can now
2 say, sit down and say, "Okay. These are the
3 differences among methods, how important they are, the
4 differences. Should we come into the meeting of the
5 minds and try to address the differences, et cetera?"

6 MEMBER APOSTOLAKIS: Susan?

7 MS. COOPER: Yes. Susan Cooper.

8 I guess the one thing that I think
9 deserves reiteration from the presentation from last
10 year is that the good practices focuses on the process
11 for performing HRA, not so much the quantification
12 method.

13 In fact, many HRA methods really just
14 focus on that quantification step and are silent,
15 really, on the point of the actual process. There are
16 very few methods or approaches out there that can
17 really be said to address the process. That is, these
18 are the steps for performing HRA.

19 You collect information. You identify the
20 human failure events. You model the human failure
21 events. You incorporate them in the PRA. You
22 quantify them. Those are the kinds of steps that are
23 principally addressed in the good practices.

24 Now, there are some things about
25 quantification that are addressed in the good

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 practices document, but, as Erasmia mentioned, because
2 we wanted to keep this generic so that we could use it
3 as a basis for reviewing methods, there is not a lot
4 of information in the good practices document about
5 quantification. There is some but not a lot.

6 So the principal differences between
7 methods are going to be in the area of quantification.
8 So I think that's important to remember. And many of
9 the methods that differ in their quantification
10 approach will probably use the same approach to
11 actually do the HRA, how they collect information, how
12 they model events, how they put them in the PRA, that
13 sort of thing.

14 MEMBER APOSTOLAKIS: But quantification is
15 not just numbers. I mean, there may be different
16 modeling. Some parts of the model are common, I
17 guess, with other models, but there may be others that
18 are different.

19 In other words, quantification is not just
20 playing with numbers. It's like I remember the IDUC
21 presentation at that workshop. It looked different
22 from ATHEANA. Now, if I have to spend three hours to
23 actually dig in and figure out that it's not that
24 different, that's a separate story. But it really
25 looked different the way it was presented.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 The question is, is there anything there
2 that is part of the process that Susan mentioned that
3 is different from what ATHEANA does and should be
4 here? And are you reasonably confident that there
5 isn't such a thing, that you have covered all bases?

6 MS. COOPER: I think at this point in time
7 we are, but, as Erasmia mentioned, if something should
8 come up in this second phase, where we are reviewing
9 the methods on the basis of the good practices, then
10 we can revise the good practices.

11 MEMBER APOSTOLAKIS: Okay.

12 MS. COOPER: I mean, the good practices
13 report is not intended to create a brand new process
14 for performing HRA. Rather, it's to provide guidance
15 on sort of the quality or the standards by which you
16 do things, make sure that gathering information
17 includes certain things, like you go and talk to the
18 operating staff.

19 And some of these things have been done.
20 We formalized it. In some cases, we might have raised
21 the bar just a little bit or at least in some people's
22 minds, we have. But for the most part, it is simply
23 putting down in a formal way what people have been
24 doing and what we expect.

25 MS. LOIS: And, then, to emphasize a

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 little bit more, for example, what we saw in the IP
2 review, people were forgetting the under-dependencies
3 as part of the human reliability. And that was a big
4 weakness. It doesn't matter what method you used. If
5 you forget to address the dependencies, your bottom
6 line number will be wrong.

7 So in a way, what we tried to address here
8 is if you view the lack of consistency among HRA
9 members to perform HRA overall from the minute you
10 start to work until you use your quantification tool
11 to come up with a number, in a van, having that
12 quantification tool will have to address on the next
13 phase how that --

14 MEMBER APOSTOLAKIS: So in a sense, this
15 is really similar to the ASME standard for PRA, which
16 tells you what things ought to be in the PRA, but it
17 sort of shies away from telling you this is how you
18 would do common cause values, for examples, although
19 sometimes it does give some additional advice. But,
20 basically, it says this is the stuff that we want to
21 see in a PRA. And you are doing the same thing here.

22 MS. LOIS: Exactly. As a matter of fact,
23 I should have a slide to remind the Committee of that.
24 The motivation for this guidance is to help to support
25 the implementation of reg guide 1-200.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER APOSTOLAKIS: Yes.

2 MS. LOIS: And its elements are directly
3 related to the ASME standard. So it provides a lower
4 level, more detailed document, guidance on those
5 standards. That's why we did it.

6 MEMBER APOSTOLAKIS: Okay. Let's move on.

7 CHAIRMAN WALLIS: It reminds me a bit of
8 the courses on the scientific process that students
9 suffer through and really learn nothing because until
10 they have actually done some science, they have no
11 idea what it is about.

12 You can emphasize all the process. That
13 doesn't really teach people how to do it. So where do
14 they learn how to really do this stuff, really
15 evaluate some numbers which are meaningful?

16 MEMBER ROSEN: When they are actually
17 doing a PRA and there are human actions.

18 CHAIRMAN WALLIS: There's no guidance on
19 that?

20 MEMBER ROSEN: When there are human
21 actions needed to be modeled, that's when they get
22 down to brass tacks.

23 MEMBER APOSTOLAKIS: You remember the
24 Commission has directed the staff that we should have
25 standards and consensus documents and everything by

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 the end of 2008. And if there is a request that comes
2 to the agency that does not comply with these things,
3 then the staff will give it low priority.

4 So if we can view this as part of the
5 development of these consensus documents, in other
6 words, if somebody comes in and ignores three of the
7 good practices that this NUREG will have, then the
8 staff will say this is no good, right, without going
9 further.

10 MS. LOIS: And we'll get a little bit into
11 that.

12 MEMBER APOSTOLAKIS: That's how I -- okay.
13 Six is good. Keep going. Don't go back.

14 MS. LOIS: Okay.

15 MEMBER ROSEN: Well, wait a minute now.

16 (Laughter.)

17 MEMBER ROSEN: I have a set of comments
18 here that, rather than wait until the very end, I will
19 just bring them up as the subject is raised. On the
20 M&O factors, which in case anybody doesn't know what
21 that means, I think it means management and
22 organization.

23 With regard to those, the discussion on
24 the evolution of HRA thinking that's at the beginning
25 of section 3 on page 16 of the good practices, I think

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 it's very useful. And there's a list of context to be
2 considered provided there, you know, such things as
3 plant behavior, timing, indications that the operators
4 have, et cetera.

5 No recognition is afforded, however,
6 through the understanding that a full treatment of
7 context will include a consideration of organizational
8 influences on human performance M&O factors,
9 especially on the modeling of pre-initiated human
10 actions.

11 I'm less concerned, really, about
12 post-initiated human actions. There's so much
13 attention to that. But the pre-initiated human
14 actions, the latent errors that are built into the
15 plant, start to border on the issue of safety culture.
16 It's in that area where the major weakness of what we
17 are now doing is because we don't address that.

18 I understand that consideration of
19 organizational influences beyond the current state of
20 practice now is not probably beyond the
21 state-of-the-art. There are some promising ideas I
22 have seen, even some promising ideas by organizations
23 represented by members of this Committee, famous
24 members of this Committee.

25 So I think reference should be made to the

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 need for continuing efforts to elucidate this
2 important context, the M&O factors, in the document.
3 We're going to go in and say, "No matter how much HRA
4 you do and how well you do it, if you don't do this
5 better, if we don't do this better, we will not be
6 getting the right answer. We're getting an answer.
7 It's better than no answer, but it may not be the
8 answer that we're looking for."

9 So I think it's very important to take the
10 opportunity in this area to put something more in the
11 document.

12 MEMBER APOSTOLAKIS: In this context, I
13 don't remember now. Does the document state
14 explicitly that you are not considering human errors,
15 pre-initiated human errors?

16 MS. COOPER: No.

17 MEMBER ROSEN: Well, I'll go back.

18 MEMBER APOSTOLAKIS: What are the good
19 practices for that?

20 MS. COOPER: Yes.

21 MEMBER APOSTOLAKIS: No. We're not
22 talking about the routine tests and maintenance and
23 the swaying type of things. No. I think what Steve
24 means is actions that may start an incident, an
25 initiating event.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER ROSEN: I want to address your
2 comment, George, because I have a comment specifically
3 about that. Pre-initiated, this is good practice
4 number one in table 2-1 under "Pre-initiated." Let me
5 read you what it says. "All routine (schedule) tests
6 and maintenance as well as calibration procedures that
7 affect equipment to be credited in the PRA should be
8 identified and reviewed," all routine scheduled stuff.

9 MEMBER APOSTOLAKIS: Yes. I know.

10 MEMBER ROSEN: What that misses is that
11 when you use operational event analysis, such as
12 NEROP, we go back and look at an event that happened
13 to try to assess its impact on the ROP, the NUREG
14 needs to identify that, the analysis of unscheduled
15 activities; that is, activities conducted because of
16 emergent conditions, maybe more error-likely than
17 scheduled activities due to they typically have more
18 limited procedural coverage, there's more stress
19 perhaps due to perceived or real time limitations on
20 people dealing with an emergent condition.

21 So I think you ought to broaden the GP,
22 number one, in the pre-initiators to include analysis
23 of unscheduled activities as well as scheduled
24 activities. And at the same time you do that, you
25 might want to think about paying specific attention to

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 recently modified procedures or components because
2 they tend to be involved in emergent conditions.

3 MEMBER APOSTOLAKIS: Yes. This is an
4 issue. I think we have addressed it. And I mentioned
5 it to Erasmia some time ago in three ACRS letters in
6 the past, right, that this is an area where we need to
7 do something, exactly what Mr. Rosen just said.

8 Maybe what you can do, I think this is an
9 area that has not really been explored, how you can
10 start initiators and so on. Maybe the best you can do
11 here is just mention that it is not included,
12 something needs to be done.

13 MS. LOIS: I will have probably Alan
14 respond to that and would like to make a note that the
15 previous version, the draft version, was noting that
16 human influence, human contribution on initiating
17 events typically in PRAs has been incorporated as part
18 of the equipment performance.

19 However, now we extended the text and
20 indicating that it would be beneficial to separately
21 analyze human performance for contributing to
22 initiating events and when we note that the good
23 practices that we have for establishing would be
24 applicable for treating those initiating events
25 contributing practices.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 Alan, do you want to answer?

2 MR. KOLACZKOWSKI: First of all, this is
3 Alan. I think somebody needs to move the mike closer
4 to the phone.

5 MS. COOPER: It is.

6 MR. KOLACZKOWSKI: In section 2.1 of the
7 document, we do address the subject of human-based
8 initiators and the fact that the way PRA tends to be
9 done now, usually the initiator event frequencies that
10 are used already include both human-induced and
11 equipment-induced initiators. To the extent that that
12 is sufficient for whatever regulatory decision you're
13 trying to make, then you're done.

14 You need to treat the human-induced
15 initiators separately or break out separately and
16 model it separately because you actually have to study
17 the human-induced portion of the initiating event.

18 Then we acknowledge that the good
19 practices here to the extent a pre-initiator event
20 would play a role in the initiating event or whatever,
21 that the good practices here apply to however you're
22 modeling the human-induced portion of the initiating
23 event.

24 So I guess what I am trying to say is if
25 it's covered implicitly but we don't address it

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 explicitly in the GP document, they have a statement
2 about it in section 2.1.

3 MS. COOPER: This is Susan. I wanted to
4 add something.

5 I think I agree with your points about the
6 importance of pre-initiator and initiating events.
7 It's been demonstrated and illustrated in lots of
8 analyses of operational events. It's been discussed
9 widely in the literature. Most people recognize that.

10 The problem is that we don't understand it
11 fully yet. It's a research topic in the HRA program.
12 It's a research topic in the human factors program.
13 In a moment, if Jay Persensky wants to say something
14 about that, that would be appropriate.

15 The point is that HRA is an engineering
16 discipline. We take, borrow, use information that is
17 available from other disciplines and then apply it to
18 HRA and PRA. If that base knowledge is not there, we
19 can't use it yet.

20 Since this is a research area, we're not
21 really ready to address it in the way that you would
22 like us to at this point in time. I mean, it's on the
23 HRA program. It's latent failures.

24 MEMBER ROSEN: And I understand that,
25 Susan. I understand that completely. I think it is

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 an opportunity because many people will learn from
2 this document who are coming into this area of
3 analysis, will learn what to do. And they will also
4 learn what needs yet to be done. And I think because
5 of that second point, it's important to say what is
6 not covered by this document but, yet, needs to be.

7 MS. COOPER: I think I agree with you.
8 The other thing, the other point that I wanted to make
9 is that what you are talking about, taking a step
10 closer to being more realistic, more consistent with
11 real accidents, I think that almost is going to mean
12 a change not only in HRA but in PRA in the way that we
13 define PRA.

14 I mean, PRA has been a snapshot over time
15 of what the plant probably would look like at any
16 point in time, but there is lots of averaging of
17 things. There is averaging over equipment conditions,
18 averaging over operating conditions, averaging over
19 operating crews and how they do things.

20 When you start talking about things like
21 emerging conditions or degraded conditions, now we're
22 sort of focusing in on some things that could happen
23 at small pockets of time. And that has sort of
24 changed the definition of the PRA, but I agree at any
25 point in time that's what could be happening.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 But I think that's something that is going
2 to be a larger question. I mean, we are already
3 having some of that discussion with Gareth Parry over
4 in NRR over some things that we have been talking
5 about with ATHEANA and other second generation methods
6 because we are kind of pushing to change the
7 definition of PRA, but it's a bigger question.

8 MEMBER APOSTOLAKIS: I think what we are
9 saying, though, is make it clear in a statement here
10 what you just said, that this is not -- because a lot
11 of people, the vast majority, actually, when they say
12 "HRA," they understand, you know, after they initiate
13 or what do people do.

14 And by making it clear that maybe there
15 aren't any good -- like in the O&M. You know, there
16 aren't any good practices perhaps that you can put in
17 there. Make it clear that there is this other area
18 that is a research area and something --

19 MS. LOIS: Probably we should add the
20 statement in the scope, --

21 MEMBER APOSTOLAKIS: Yes, yes, yes.

22 MS. LOIS: -- where we clarify --

23 MEMBER APOSTOLAKIS: Make people sensitive
24 to the fact that there are these other things that
25 need some exploration.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MS. LOIS: Fair enough.

2 MEMBER APOSTOLAKIS: That's all.

3 CHAIRMAN WALLIS: George, are you going to
4 finish on time?

5 MEMBER APOSTOLAKIS: I am. You're not
6 walking out. I don't know about Erasmia. You have 17
7 minutes.

8 MS. LOIS: I have 17 minutes.

9 MEMBER APOSTOLAKIS: Let me tell you I
10 think --

11 MS. LOIS: Seven explanatory?

12 MEMBER APOSTOLAKIS: -- your Appendix C
13 really doesn't do justice to what you have done. I
14 mean, based on what you told us here, I mean, you are
15 really summarizing a lot of stuff.

16 It would have been nice to quote some
17 people and say how you -- I mean, essentially what you
18 are saying, you are making sweeping statements. I
19 mean, most of these guys, points of clarification, we
20 did. Thank you. Be a little more -- okay.

21 Where are you now, 8?

22 MS. LOIS: I could just walk through. A
23 better way to go is to have the Committee to ask
24 questions of this, summarize all --

25 MEMBER APOSTOLAKIS: Well, let me tell you

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 what the major -- the "major." It's not major, but
2 the other stuff here is -- this issue of peer review,
3 the Committee didn't mean to send this document to
4 people and leave it up to their kindness to respect,
5 which appears to be what you have done.

6 Peer review can take many forms. And this
7 agency has a long record in all reforms used one time
8 or another. I mean, this is not NUREG-1150. So it's
9 not worth the expense and all that stuff that they did
10 there.

11 Now, this Committee cannot get into
12 management issues, you know, how many resources you
13 have to do it and all of that. But let's take the
14 whole man's approach so it doesn't cost you very much.

15 You have a group, say, of two or three
16 domestic experts who are well-known. They have done
17 work on models other than ATHEANA. And you are asking
18 them to serve on a peer review panel because they are
19 good citizens without pay.

20 But there will be a meeting in Washington
21 on such and such a date where the group will come in.
22 They will have their comments. They will be briefed
23 by the staff on what the good practices document is.
24 And then they are expected to write their comments,
25 and the staff would respond.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 The moment you say there will be a meeting
2 in Washington with a group, those guys will feel
3 obligated to read the document in detail and give you
4 comments, even though they are not getting paid.

5 If you just send it to them and say, "Tell
6 us what you think," I don't know that they will take
7 the time. In fact, I know one of them did not. I
8 happened to see one guy and say, "What happened?"

9 He said, "Well, they sent it to me. I
10 really didn't have time to do it."

11 So why? Why not do something like that?
12 In other words, give it a more formal flavor so that
13 you're forcing people to actually spend the time and
14 put their name there and send you something in detail.

15 MS. LOIS: We believe we accomplish that
16 because the industry -- if you look at the HRA, at
17 least domestic HRA petitioners, most of them work for
18 the industry. There are probably a couple in
19 academia. And they do not interact as much. But the
20 industry paid very close attention to it. And they
21 did.

22 They provide comments, of course,
23 complained a little bit they are going to be de facto
24 requirements, et cetera. And we clarified that this
25 is a reference guide, et cetera, et cetera. But they

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 also came in and they explained. They provided some
2 specific comments on how we can improve the practices.

3 Also probably it will help if I explained
4 what we're going to do in phase two.

5 MEMBER APOSTOLAKIS: Okay.

6 MS. LOIS: We are focusing on the methods
7 that are used by the industry: FAIR, ASEP, the
8 calculator that Sandia has been developing, et cetera.
9 So what we do is we are going to ask --

10 MEMBER APOSTOLAKIS: Let me understand
11 this. Why? Why are you focusing only on what the
12 industry is doing?

13 MS. LOIS: Let me explain our approach,
14 and then we will come.

15 Okay. This year we would like to address
16 the HRA method capability and evaluation with respect
17 to good practices because what we are doing is we
18 establish guidance for the industry.

19 And the applications that we see are not
20 -- we haven't seen a MERMOS application. We haven't
21 seen a CAR application. Licensees are primarily using
22 the calculator, which encompasses the causal method,
23 FAIR, ASEP, and HCR, the EPRI methods.

24 In addition, we would like to evaluate our
25 methods, ATHEANA and SPAR human reliability. So we

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 are in the process of contracting Sciencetech to
2 evaluate ATHEANA and SPAR.

3 MEMBER APOSTOLAKIS: And SPAR?

4 MS. LOIS: SPAR. So that we give it to an
5 independent reviewer our methods. We're reviewing the
6 methods that we're very familiar with, SHARP, et
7 cetera, past the calculator that EPRI is going to give
8 it to us.

9 And then we are going to have this meeting
10 where when we meet, we are going to debate our
11 critique and try to come into the agreement as to why
12 we disagree, et cetera.

13 So that is some kind of a peer review in
14 the way you recommend here, but it's on a deeper level
15 on the actual method level and quantification and
16 modeling, as opposed to this.

17 I mean, Jeb Julius, for example, in the
18 calculator I'm pretty sure whatever we have here is
19 good practices. He's having them incorporated as an
20 EPRI good practices. SHARP that had been developed 25
21 years ago had, you know, the basis. The best one of
22 these good practices, you can find one in SHARP. The
23 thing is that nobody was using it. You know, the
24 aging years, give me a number, and everyone would
25 produce a number and forget the overall framework on

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 how you should treat this number into PRA.

2 CHAIRMAN WALLIS: Erasmia, you're eating
3 up your time. I thought we were here to evaluate this
4 NUREG document and you were here to tell us why it is
5 a good one.

6 MS. LOIS: I'm responding.

7 CHAIRMAN WALLIS: Is that what you're
8 doing or are you --

9 MS. LOIS: I'm sorry. I'm responding to
10 George's question.

11 MEMBER APOSTOLAKIS: No, no.

12 CHAIRMAN WALLIS: Is that the purpose of
13 our meeting?

14 MEMBER APOSTOLAKIS: We recommended in our
15 previous letter that they undergo a peer review, and
16 they didn't. They just --

17 CHAIRMAN WALLIS: They didn't. We can't
18 spend all the time on that.

19 MEMBER APOSTOLAKIS: Well, I'm saying the
20 rest of it's --

21 MEMBER ROSEN: Well, I have one other
22 comment that I'd like to make on the prior slide that
23 is not related to peer review, 8. Eight. Just go up
24 and click on 8 on the left-hand.

25 MS. LOIS: Yes.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER ROSEN: Now, this one about
2 industry's expressed concerns with GPs becoming de
3 facto requirements and for including the good
4 practices related to errors of commission.

5 I think the section 6 in the document on
6 errors of commission is entirely appropriate. Absence
7 of consideration, errors of commission is an important
8 unaddressed weakness of current PRA that results I
9 think in universal understatement of real risk.

10 The classic cognitive error followed by an
11 error of commission scenario; for example, the
12 operators doing the right things for the wrong
13 accident, they just don't know an accident theory.
14 They do all of the right things, but they have lost
15 the bubble. Cognitive error really takes them down a
16 road where they perform errors of commission. That's
17 the Three Mile Island scenario among others.

18 And I think that to the extent that we
19 continue to say we're doing HRA without having errors
20 of commission included, we're kidding ourselves. I
21 want to support very strongly your point of view on
22 that.

23 I've taken the time to write down my
24 comments. And I'll be happy to provide them to you.

25 MS. LOIS: Okay. Thank you.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER APOSTOLAKIS: Okay. Why don't you
2 go over the rest of your slides and just point out
3 what you think is important? You don't have to go
4 over in detail.

5 Do you want to go to the slide mode on the
6 left, lower left? Yes. It's that. No. The other
7 one. Go up to the slide show. No, no. You've lost
8 the whole thing now. "ACRS Presentation." There it
9 is.

10 MS. LOIS: I'm sorry. I'm not using a PC
11 in my office, and I'm not very --

12 MEMBER APOSTOLAKIS: "ACRS Presentation"
13 on the right there at the bottom. Right. All the way
14 right. Down. Bottom, bottom. No, no. Cancel.
15 Right, right.

16 Anyway, we have the hard copy. So we can
17 keep going until someone comes to help.

18 MS. LOIS: Okay. If we talk on page 9,
19 the need, clarify the need of the document, again, we
20 state that this supports the reg guide we want to have
21 and missed others, clarifies who should use it is the
22 NRC staff for evaluating human reliability analysis,
23 concerns about de facto requirements. We clarified
24 that this is not a standard we support, standard
25 activities. But then the level of --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 CHAIRMAN WALLIS: Well, let's look at
2 this. I'm sorry. You say it's for internal use by
3 NRC staff. Was there any evaluation about whether or
4 not the staff found this useful?

5 MS. LOIS: We had the document. First of
6 all, it was developed with the interaction of NRR PRA
7 members. And the initial activity, it was this
8 activity was initiated on NRR request. They said, "If
9 you would like to do something useful, the Office of
10 Research should develop a guidance for human
11 reliability."

12 CHAIRMAN WALLIS: So there is some
13 evidence that it answers sort of the concerns that
14 they had?

15 MEMBER APOSTOLAKIS: Well, they would use
16 it presumably the next year or so. And they would
17 pass judgment. I mean, this is the first --

18 CHAIRMAN WALLIS: Okay.

19 MS. LOIS: Yes. That is how the whole
20 activity started out. There was a comment from the
21 industry-wide. It's not tied to the category
22 capabilities of the ASME standard. And we believe
23 that we shouldn't because this is the analyst actually
24 should decide which one of the good practices should
25 apply, as opposed to have the categories.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 There was a comment from an individual
2 that came in. And he says a lack of sufficient input
3 from the broader set of stakeholders and expressing a
4 doubt whether or not the offers are good enough, have
5 the capability to develop such documents, and, again,
6 we're stating that this is not a standard and the IEEE
7 has HRA standard initiatives, but we believe that we
8 have long and strong HRA experience developing
9 methods, performing the PRAs. And also the authors
10 have worked in the industry all through the years, et
11 cetera, and, again, used the peer review for
12 soliciting comments.

13 These comments incorporating experience,
14 operating experience, came from the international as
15 well as domestic reviewers. I think that touches Mr.
16 Rosen's concern about incorporation of organizational
17 factors in the HRA.

18 What we do here is we modify the text.
19 It's not in your version, but we're doing it. To
20 recommend the use of databases and historical
21 experiences, as a minimum for identifying
22 pre-initiators and for identifying important
23 performance-shaping factors. However, we believe that
24 we need to do more work on establishing methods on how
25 you can use operational experience to quantify.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 On errors of commission, we had specific
2 recommendations on how to better improve the guidance
3 there. And we have done it. Also, we have had some
4 complaints about it's too resource-demanding to
5 incorporate errors of commissions.

6 We note here that the NRC experience, at
7 least with the PTS work, shows that it's not as much.
8 And also there are some tools out there that would
9 help that.

10 MEMBER APOSTOLAKIS: That's an irrelevant
11 issue. It's important to safety. I mean, you can't
12 have an HRA good practice document and ignore
13 something that is important because it is too
14 resource-demanding. I mean, your answer should have
15 been "We don't care."

16 I'm sorry. If it's safety-related, you
17 know --

18 MS. LOIS: But, in actuality -- I don't
19 know. Susan may speak more to it. But, in actuality,
20 it does not seem to be --

21 MEMBER APOSTOLAKIS: What?

22 MS. COOPER: Just enjoying your joke.

23 MEMBER ROSEN: Well, I think what George
24 is saying is it's very important. If we could claim
25 to really be trying to estimate the likelihood of

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 human failure during an event or before an event, we
2 have to do it.

3 MEMBER APOSTOLAKIS: My goodness.

4 MS. COOPER: I agree. But if they haven't
5 figured it out, then, you know --

6 MEMBER ROSEN: That's different.

7 MEMBER APOSTOLAKIS: If we are not ready
8 to put it in the good practices document, that's an
9 entirely different thing. But to say it's
10 resource-intensive, yes.

11 MEMBER POWERS: But the other clause in
12 there says, "not necessary." Now, why would somebody
13 say that? I mean, it did say --

14 MEMBER APOSTOLAKIS: You're right.

15 MEMBER POWERS: -- "not necessary." I
16 mean, why did they say, "not necessary"? I mean,
17 there must have been some thought behind that.

18 MS. LOIS: And what we are stating in the
19 document is that it may be very necessary in lieu of
20 the applicants that licensees have for risk-informed
21 --

22 MEMBER POWERS: Sure. But what I am
23 struggling with is why would somebody say it's not
24 necessary? I mean, it's not --

25 MEMBER APOSTOLAKIS: Did that person give

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 any --

2 MEMBER POWERS: The possibility goes with
3 Mr. Rosen's comment. I mean, he may be a little more
4 extreme than many, but he says, "You're not doing HRA
5 unless you do errors of commission."

6 This other fellow was saying, "Well, it's
7 not even necessary to do that." I mean, that seems to
8 be the two poles of the debate here.

9 I understand Mr. Rosen's position. It
10 seems very plausible. The one that says it's not
11 necessary is striking in that it is so
12 counterintuitive.

13 There must have been some thought behind
14 it. What was that thought?

15 MS. LOIS: Traditionally it hasn't been
16 incorporated. That's one reason for one to believe.

17 MEMBER APOSTOLAKIS: But did this person
18 justify the statement?

19 MS. LOIS: Alan, can you help me here?

20 MEMBER APOSTOLAKIS: You don't have to
21 defend it yourself. I mean, we are just asking.

22 MS. LOIS: Yes. Alan may be more familiar
23 with --

24 MEMBER APOSTOLAKIS: Do you know, Alan?

25 MR. KOLACZKOWSKI: No. I can't see why

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 someone would make such a comment in light of what we
2 know today. I really can't provide any rationale for
3 having said what they said, but that's what they said.

4 We don't think that we should be trying to
5 address errors of commission yet. It's not mature
6 enough a process, whatever. It's too
7 resource-intensive, et cetera. Why they said that,
8 you'd have to ask them.

9 MEMBER POWERS: I can well imagine a basis
10 for it. I would come in and say, "No. Don't worry
11 about errors of commission because the operators will
12 follow their procedures and only do what the
13 procedures tell them to do. And all you have to do is
14 worry about what they leave out. They're well-trained
15 in this aspect, and there is no reason to think that
16 they will go beyond that training and start doing
17 things that are not called for in the procedures.
18 That's how I would justify making that --

19 CHAIRMAN WALLIS: Unless they misdiagnose
20 and follow the wrong procedure, which was Steve's
21 point.

22 MEMBER APOSTOLAKIS: Unless the context
23 leads them in to --

24 CHAIRMAN WALLIS: Leads them into the
25 wrong --

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 MEMBER APOSTOLAKIS: The context.

2 MEMBER ROSEN: Then they do exactly the
3 right things. They do the right thing.

4 DR. DENNING: Let me jump in and say --

5 MEMBER POWERS: But with symptom-oriented
6 procedures, they won't do that.

7 DR. DENNING: The question is --

8 MEMBER ROSEN: This debate is getting
9 interesting now, Dana.

10 DR. DENNING: The question is, what is the
11 application of the PRA? If the intent is to gain
12 insights, which I think is the primary value from PRA,
13 then you may not have to do this. The real question
14 is human factors and do you undertake symptom-based
15 procedures and things like that.

16 There are limitations as to what one can
17 really do with HRA. And some of those are
18 fundamental, and we will never be able to really do
19 errors of commission really well.

20 The issue that I see of great concern is
21 I think the Commission right now is going down a path
22 of believing bottom-line numbers of PRA to a higher
23 degree than they should.

24 Now, it's ingrained in our risk-informed
25 regulations as long as we adequately account for

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 uncertainties in those risk-informing, then it's okay
2 if we semi-believe these numbers.

3 I think that there is an application that
4 is occurring of PRA where people are really believing
5 these bottom-line numbers I think to a greater degree
6 than they should.

7 Now, that doesn't mean that we shouldn't
8 delve further into HRA, which is one of the weak
9 elements of PRA, but there are limitations as to how
10 much we can believe those HRA numbers ever. There are
11 limitations as to how much we can believe the
12 bottom-line PRA numbers ever.

13 And I think the big question is, are we
14 going too far in using PRA in our risk-informed
15 regulations? I think it's a valid question and one
16 that we have seen raised recently in the press, one we
17 have to look at first.

18 So that is a reason why one might say,
19 "You really don't have to go to great detail in HRA."
20 It's a matter of how you're going to use the results
21 of the PRA.

22 CHAIRMAN WALLIS: George, can you finish
23 up in a very few minutes?

24 MEMBER APOSTOLAKIS: Yes. Well, first of
25 all, I'd like to note that all members agree with Dr.

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 Denning that the Commission is going too far.

2 CHAIRMAN WALLIS: So you are a believer,
3 are you, George?

4 MEMBER APOSTOLAKIS: I do not believe we
5 are going too far. And, Erasmia, can you finish it in
6 33 seconds? You don't have to go line by line.

7 MS. LOIS: This is the last slide.

8 MEMBER BONACA: We should, however, pick
9 up this issue a little bit later, sometime tomorrow
10 afternoon.

11 MEMBER APOSTOLAKIS: That's fine with me,
12 yes.

13 MEMBER BONACA: It's very important, I
14 think.

15 MEMBER APOSTOLAKIS: Sure. It's very
16 important.

17 MS. LOIS: I think the net slide, we are
18 saying that we had some specific comments and we
19 address.

20 MEMBER APOSTOLAKIS: All right.

21 MS. LOIS: I finish in --

22 MEMBER APOSTOLAKIS: So you are going to
23 issue this NUREG?

24 MS. LOIS: We are going to issue the NUREG
25 to consider whether or not we can add a paragraph in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 this where it would verify the --

2 MEMBER APOSTOLAKIS: Is there any way --
3 my last comment is, again, you said that you will
4 interact with the industry in methods that they have
5 used and all of that.

6 Maybe it's my background, but this bothers
7 me. Is there any way to involve the whole community
8 out there? Why do you assume that just because a
9 utility used the method, it deserves your attention,
10 but if a professor did something, it does not?

11 MS. LOIS: No, I didn't say that.

12 MEMBER APOSTOLAKIS: But you said that you
13 are going to interact with industry in the methods
14 that they are using. If somebody has not used a
15 method, then it's outside your scope.

16 And it does bother me. And you say nobody
17 has submitted anything to the NRC involving MERMOS.
18 Why should they? I mean, that's a French approach.

19 But in your approach, you should try to
20 understand what all of these guys have been doing and
21 make sure that you are on top of the game. So, you
22 know, that's really the issue here. It's not
23 reviewing MERMOS' or anybody else's method.

24 MS. COOPER: I think, George, it is a
25 question of resources and priorities. I mean, our

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 customer, if you will, the person who asked us to
2 initiate this effort, is NRR. They're responsible for
3 reviewing license applications. And so it's of their
4 interest, their interest that we first look at the
5 methods that they're seeing and applications. So
6 that's really why we're beginning there.

7 I think it is Erasmia's intent that we
8 will eventually look at some other methods as well.

9 MEMBER APOSTOLAKIS: Okay.

10 MS. COOPER: And we hope that we will
11 involve some of the people over internationally. She
12 mentioned that there has been some interest over the
13 years from --

14 MEMBER APOSTOLAKIS: Closing comment
15 because we really have to finish it.

16 MS. COOPER: Yes.

17 MEMBER APOSTOLAKIS: What really bothers
18 me is that every time I go to a meeting like the
19 workshop in Brussels, people stand up and say, "My
20 model does this. My model does that." You're
21 wondering, do these people read each other's papers?
22 Do they read each other's documents? Why is it "My
23 model this" and the NRC's model is that? At some
24 point we have to stop this.

25 Thank you very much. Any other comments

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 from the Committee?

2 (No response.)

3 MEMBER APOSTOLAKIS: Back to you, Mr.
4 Chairman.

5 CHAIRMAN WALLIS: I'd like to know what we
6 are going to do with this. Would you like a letter?

7 MEMBER APOSTOLAKIS: No. They said no.

8 MS. LOIS: We did not ask for a letter.

9 MEMBER APOSTOLAKIS: It's information.

10 CHAIRMAN WALLIS: So this is just for
11 information purposes?

12 MEMBER APOSTOLAKIS: Yes.

13 CHAIRMAN WALLIS: So we're not going to
14 write a letter on this?

15 MEMBER APOSTOLAKIS: We will have to
16 discuss that. They are not requesting a letter, but
17 --

18 CHAIRMAN WALLIS: I was wondering if we
19 did write a letter, Erasmia, how could we add some
20 value to this since you already --

21 MEMBER APOSTOLAKIS: We're adding value by
22 not writing a letter.

23 (Laughter.)

24 MEMBER SIEBER: We're here to help you.

25 MS. LOIS: I guess it will add value in

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS
1323 RHODE ISLAND AVE., N.W.
WASHINGTON, D.C. 20005-3701

1 the sense that this is just step number one in
2 developing the reg guidance.

3 CHAIRMAN WALLIS: So it might not value in
4 looking to the next step?

5 MS. LOIS: That's right.

6 CHAIRMAN WALLIS: Thank you. Well, now
7 that's the end of this.

8 MS. LOIS: Thank you very much.

9 CHAIRMAN WALLIS: Thank you for lasting
10 and giving us the benefit of your observations.

11 MS. LOIS: Thank you.

12 CHAIRMAN WALLIS: We have the next thing
13 on our schedule to look at what we are going to say
14 this afternoon. I need to go and collect my
15 documents. Maybe some of you do, too.

16 MEMBER APOSTOLAKIS: Yes.

17 CHAIRMAN WALLIS: So let's go away and
18 come back as soon as possible. And we will look at
19 what we are going to say this afternoon.

20 (Whereupon, at 11:27 a.m., the foregoing
21 matter was adjourned.)

22

23

24

25