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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS)

493rd MEETING

+ + + + +

FRIDAY, JUNE 7, 2002

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ROCKVILLE, MARYLAND

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The ACRS met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B3, 11545 Rockville Pike, at 8:30 a.m., Dr. George E. Apostolakis, Chairman, presiding.

COMMITTEE MEMBERS PRESENT:

GEORGE E. APOSTOLAKIS	Chairman
MARIO V. BONACA	Vice Chairman
F. PETER FORD	Member
GRAHAM M. LEITCH	Member
DANA A. POWERS	Member
VICTOR H. RANSOM	Member
STEPHEN L. ROSEN	Member
WILLIAM J. SHACK	Member
JOHN D. SIEBER	Member

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1	ACRS STAFF PRESENT:	
2	SAM DURAISWAMY	Designated Federal
3		Official/Technical
4		Assistant
5	JOHN T. LARKINS	Executive Director
6	SHER BAHADUR	Associate Director
7	ROBERT S. ELLIOTT	Senior Staff Engineer
8	MAGGALEAN W. WESTON	Special Assistant
9	NRC STAFF PRESENT:	
10	GOUTAM BAGCHI	NRR
11	SUZANNE BLACK	NRR
12	ED CONNELL	NRR
13	JOHN HANNON	NRR
14	GENE IMBRO	NRR
15	PETER J. KANG	NRR
16	GABRIEL KLEIN	NRR
17	P.T. KUO	NRR
18	KAMAL MANOLY	NRR
19	JIM STRAISHA	NRR
20	DAVID TERAQ	NRR
21	ERIC WEISS	NRR
22	LEON WHITNEY	NRR
23	HERMAN GROVES	RES
24	J.S. HYSLY	RES
25	AMARJIT SINGH	RES

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ALSO PRESENT :

FRED EMERSON	NEI
PAUL GUNTER	NIRS
H.D. THORNBURG	CONSULTANT
ROGER HUSTON	LSS

I N D E X

1

2 Opening Remarks by the ACRS Chairman 387

3 Proposed Rulemaking to Enforce National Fire

4 Protection Association (NFPA) 805,

5 "Performance-Based Standard for Fire

6 Protection for Light Water Reactor

7 Electric Generating Plants" 388

8 Generic Resolution of Voids in the Concrete

9 Containment 478

10 Adjourn 495

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P R O C E E D I N G S

8:30 a.m.

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3 CHAIRMAN APOSTOLAKIS: The meeting will
4 now come to order. This is the second day of the
5 493rd meeting of the Advisory Committee on Reactor
6 Safeguards. During today's meeting, the Committee
7 will consider the following: Proposed Rulemaking to
8 Endorse National Fire Protection Association Standard
9 805; Generic Resolution of Voids in the Concrete
10 Containment; Future ACRS Activities; Reports of the
11 Planning and Procedures Subcommittee; Reconciliation
12 of ACRS Comments and Recommendations; and Proposed
13 ACRS Reports.

14 This meeting is being conducted in
15 accordance with the provisions of the Federal Advisory
16 Committee Act. Mr. Sam Duraiswamy is the designated
17 federal official for the initial portion of the
18 meeting. We have received no written comments or
19 requests for time to make oral statements from members
20 of the public regarding today's session. A transcript
21 of a portion of the meeting is being kept and it is
22 requested that the speakers use one of the
23 microphones, identify themselves and speak with
24 sufficient clarity and volume so that they can be
25 readily heard.

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1 Before we start, I'm very pleased to
2 announce that our own Dr. Powers was elected Fellow of
3 the American Nuclear Society recently.

4 (Applause.)

5 MEMBER KRESS: Well deserved.

6 CHAIRMAN APOSTOLAKIS: Well, deserved.

7 MEMBER POWERS: Thanks, Tom.

8 CHAIRMAN APOSTOLAKIS: The next topic or
9 the first topic is --

10 MEMBER ROSEN: Do you want to tell the
11 Members about the picture at 3 o'clock?

12 CHAIRMAN APOSTOLAKIS: Yes, at 3 o'clock
13 we will have our picture taken and at 1:30 there is
14 cake in the room next door celebrating somebody's
15 birthday who is 29 years old.

16 (Laughter.)

17 MEMBER WALLIS: Doesn't give us much
18 choice, does he?

19 CHAIRMAN APOSTOLAKIS: The first item of
20 the agenda is the Proposed Rulemaking to Endorse
21 National Fire Protection Association 805,
22 "Performance-Based Standard for Fire Protection for
23 Light Water Reactor
24 Electric Generating Plants." Mr. Steve Rosen is the
25 cognizant member.

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1 Steve?

2 MEMBER ROSEN: Thank you, Mr. Chairman.
3 We had an exciting subcommittee meeting on June 4th
4 here in this room. It was well attended, scheduled to
5 last all day and contrary to the expectation
6 yesterday, that we did, in fact, stay all day and into
7 quite late hour last night on another subject, the
8 Fire Protection Subcommittee was able to wrap up its
9 work in half a day.

10 CHAIRMAN APOSTOLAKIS: Does this reflect
11 on the chairman of the subcommittee?

12 (Laughter.)

13 MEMBER ROSEN: I think it reflects
14 somewhat on the chairman's ability to run an effective
15 meeting, yes.

16 (Laughter.)

17 CHAIRMAN APOSTOLAKIS: So noted.

18 MEMBER ROSEN: I'm referring to the
19 subcommittee's chairman.

20 CHAIRMAN APOSTOLAKIS: I understand,
21 otherwise, we would not be having this discussion.

22 (Laughter.)

23 MEMBER ROSEN: We did, in fact, discuss
24 two topics at that meeting, not one as we have here
25 today. We talked about the Fire Protection

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1 Association's 805 standard, but we also talked about
2 NEI 00-01, the Resolution of Circuit Failures document
3 that NEI is working on. That is not a topic of
4 today's meeting, but I thought I'd just mention that
5 that was discussed at the tail end of the
6 subcommittee. We'll come back to the subcommittee
7 later on.

8 The NFPA 805 is a standard that the
9 Committee has reviewed before and was critical of in
10 the basic sense that the previous versions did not
11 really move towards risk informing the fire protection
12 rules which, as you know, are very prescriptive. The
13 new standard is different and moves in a significant
14 way to react to comments that this Committee made in
15 1999 and I'll let the presenters tell you about that
16 and then I'll conclude.

17 So if we can go ahead with Mr. Weiss.

18 MR. HANNON: This is John Hannon in Plant
19 System Branch Chief. While Eric is setting up, let me
20 introduce Suzie Black is with us this morning. She's
21 the recently appointed Deputy Division Director for
22 DSSA. Of course, I'm with the Plant Systems Branch
23 and as mentioned, we're here this morning to brief you
24 on the status about risk-informed performance-based
25 rulemaking in the fire protection area.

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1 We, as mentioned, had the opportunity to
2 brief the subcommittee earlier this week and look
3 forward to getting your comments and advice as we move
4 forward in the rulemaking process. We believe this
5 volunteer rulemaking sets the stage to improve the
6 coherency of our regulations in the fire protection
7 area and to the extent it is adopted by licensees, has
8 the potential to enhance our efficiency and
9 effectiveness.

10 With that, let me now turn it over to Eric
11 Weiss who will conduct the briefing for the staff.

12 MR. WEISS: Good morning. I'm Eric Weiss,
13 Chief of the Fire Protection Section. On slide 2, I
14 have a brief outline of the nature of today's
15 briefing.

16 (Slide change.)

17 MR. WEISS: On slide 3, let's begin.

18 (Slide change.)

19 MR. WEISS: As you know, Appendix R is
20 essentially deterministic regulation. Our existing
21 fire protection regulations have some rather
22 prescriptive requirements and the National Fire
23 Protection Association undertook the task of
24 developing a risk-informed performance-based fire
25 protection standard for the existing fleet of light

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1 water reactors.

2 In February of 1999, the ACRS commented on
3 the development of that standard and was critical, in
4 part, because risk assessment as not allowed to alter
5 the basic requirements in many aspects. I want to
6 assure you that the staff has kept this in their mind
7 and we believe that we've been able to resolve that to
8 some extent which I'll describe in the nature of our
9 rulemaking which endorses the standard.

10 We issued a comprehensive reg guide on
11 fire protection, Reg. Guide 1.189 recently, and among
12 other things that Reg. Guide lays out the criteria for
13 an adequate fire protection program.

14 NFPA 05, as a risk-informed national
15 consensus standard was issued in February of 2001 and
16 it was developed in accordance with the approval of
17 the American National Standards Institute which means,
18 in part, that the makeup of the committee that
19 developed this standard had to meet the ANSI
20 requirements for balance on the committee.

21 Slide 4, please.

22 (Slide change.)

23 MR. WEISS: The rule to endorse NFPA 805
24 is consistent with the National Technology Transfer
25 and Advancement Act and OMB Circular A119 in the sense

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1 that these laws and directives require federal
2 agencies to use national consensus standards in lieu
3 of agency developed or specific criteria when they
4 serve the needs of the agency.

5 NFPA 805 takes advantage of the advances
6 in PRA and fire science since Appendix R was issued
7 some 20 years ago. There have been substantial
8 advances in fire modeling and in PRA since then and
9 this is a rule that permits us to move into a risk-
10 informed performed-based area.

11 We can always accept exemptions to our
12 existing regulations at any time on whatever basis
13 licensees choose to justify those exemptions. They
14 can certainly be risk-informed performed-based, but
15 this is a rule that will permit licensees to move
16 forward in this area without exemptions.

17 Before proceeding further, I want to point
18 out that Appendix R and NFPA 805 achieve fire safety
19 through slightly different methods.

20 (Slide change.)

21 MR. WEISS: On slide 5 is a Ven diagram
22 which is not comprehensive in its depiction of the
23 differences, but more illustrative. I have a few
24 examples of this VEN diagram to show you that Appendix
25 R has a plant capable of going to cold shutdown within

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1 72 hours following the event, but it does not apply to
2 all shutdown modes.

3 Conversely, NFPA 805 requires fire safety
4 in all operational modes and does not require the
5 plant to go to cold shutdown. It in effect requires
6 a hot shutdown because it requires a safe and stable
7 condition. There are other differences, but I just
8 wanted to make that point, that it achieves fire
9 safety in different ways.

10 MEMBER WALLIS: I guess the word shutdown
11 is missing after achieving in NFPA -- in the middle
12 there, "the plant from achieving shutdown" -- it has
13 to achieve something.

14 MR. WEISS: Yes, "Safe and stable
15 shutdown."

16 MEMBER WALLIS: Oh, "safe and stable
17 shutdown."

18 MR. WEISS: Yes, it says condition.

19 MEMBER WALLIS: Is missing from after the
20 word "achieving."

21 You can't achieve the fuel. You can't
22 achieve the fuel in a stable condition. I mean it's
23 got to achieve something. Achieving shutdown it must
24 be.

25 MR. WEISS: Slide 6, please.

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1 (Slide change.)

2 VICE CHAIRMAN BONACA: I just want to ask
3 a question. Why now NFPA does not address the path to
4 cold shutdown?

5 MR. WEISS: Well, these standards are
6 designed to achieve fire safety in different ways and
7 I think everyone on the Committee knows that most PRAs
8 end at about 12 hours following the event. It would
9 be difficult to show a risk advantage. In addition,
10 I'm sure the Committee knows that there are more
11 systems available for maintaining hot shutdown.

12 MEMBER POWERS: I think one of the
13 motivations was particularly if you have a passive
14 plant like an AP1000, you really have troubles driving
15 everything to cold shutdown and in the event of an
16 off-normal event and I think people recognize that.

17 VICE CHAIRMAN BONACA: Okay.

18 MEMBER POWERS: And they were saying get
19 to a safe and stable condition.

20 VICE CHAIRMAN BONACA: Condition, rather
21 than --

22 MEMBER POWERS: With the AP1000, it may or
23 may not be cold shutdown and it certainly won't be
24 cold shutdown for some time period after the event.

25 VICE CHAIRMAN BONACA: Okay.

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1 MR. WEISS: One of the chief advantages of
2 NFPA 805 is that it allows licensees to maintain
3 safety through more flexible, efficient and rational
4 processes. In other words, to use engineering as
5 opposed to meeting strict deterministic requirements.

6 We expect that this rulemaking will reduce
7 the number of exemptions and submittals, in part,
8 because the structure of the rule is such that
9 licensees can adopt the methods without making
10 submittals. It allows the use of risk insights, fire
11 modeling, science and engineering that's consistent
12 with NRC's outcome goals and it allows licensees to
13 focus their fire protection program on the most safety
14 significant issues.

15 MEMBER WALLIS: The previous method didn't
16 allow use of science and engineering?

17 (Laughter.)

18 MR. WEISS: The previous method required
19 that you met certain strict deterministic
20 requirements. For example, suppose a licensee goes
21 into a plant and discovers that a fire wrap that was
22 supposed to provide 1-hour barrier protection is no
23 longer capable of providing that one hour of
24 protection. Let's say for the sake of argument that
25 it's worth 40 minutes. Well, then the licensee is

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1 confronted with a choice. They have to restore that
2 to the 1-hour condition or they have to apply for an
3 exemption. Under an 805 process, they could use a
4 fire model and engineering and say in this particular
5 area we can show that we only need 40 minutes. We
6 don't need an hour. And so engineering could
7 substitute for the replacement of the material and
8 that's the point I'm trying to make.

9 Obviously, engineering is involved in both
10 aspects, but there's much more flexibility associated
11 with being able to apply a fire model or use PRA as
12 opposed to meeting a strict deterministic requirement.

13 (Slide change.)

14 MR. WEISS: On slide 7, NFPA 805 allows
15 the transition of the existing Appendix R licensing
16 basis, including the exemptions and the General Letter
17 86-10 equivalencies. So for the most part, a
18 licensee's existing licensing basis would transfer
19 over. It allows future changes to the plant to be
20 either deterministic or risk-informed.

21 And at this point if the Committee will
22 permit me, I'm going to put up a diagram out of 805 on
23 the overhead projector. Let's see here if I can get
24 this right.

25 This is Figure 2.2 out of NFPA 805. At

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1 the top, one enters the process and has certain basic
2 requirements one has to meet, but on the left hand
3 side there's a set of deterministic requirements, a
4 deterministic path and on the right there's a
5 performed-based path. Thank you.

6 There's the deterministic path and this is
7 the performance-based path.

8 The deterministic requirements as I'll
9 outline in a moment are very much like what's in
10 Appendix R right now. To go back to the hypothetical
11 example that I was using a minute ago where at some
12 point in the future a licensee discovers that fire
13 wrap is no longer good for an hour, he still has
14 available to him under the 805 process the option of
15 going to the deterministic path and restoring that
16 wrap to the 1-hour requirement. He isn't required to
17 do the analysis for the performed-based method.
18 That's an option. He can go either way.

19 MEMBER ROSEN: So to clarify that, first,
20 the licensee adopts 805 and does what he needs to in
21 the regulatory framework to do that. And then when he
22 finds a problem, he can use either a risk analysis or
23 the old deterministic basis. So there's two choices,
24 one big choice and then a potential for a whole lot of
25 little choices.

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1 MR. WEISS: I think that's correct, yes.

2 CHAIRMAN APOSTOLAKIS: Well, actually,
3 there is no choice because right now they're supposed
4 to comply with Appendix R and that's a starting point.

5 MEMBER ROSEN: Right, but for a licensee
6 it ends up with a whole bunch of possible future
7 choices, not excluding using as Eric says the old
8 deterministic basis, if he wants to.

9 CHAIRMAN APOSTOLAKIS: That's right.

10 MEMBER ROSEN: So he gives up really
11 nothing.

12 CHAIRMAN APOSTOLAKIS: I'd like to
13 understand in this diagram, if one follows the
14 so-called deterministic approach, how can one to a
15 risk-informed change evaluation?

16 MR. WEISS: The deterministic approach is
17 not a risk-informed performed-based path.

18 CHAIRMAN APOSTOLAKIS: Yes, but you see
19 the way the boxes are, it implies I can one of two
20 things inside the big box, but then I can go on to
21 risk-informed change evaluation.

22 MR. WEISS: One can evaluate -- Ed, can
23 you help me out here?

24 MR. CONNELL: Sure. Of course, as you are
25 all familiar --

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1 CHAIRMAN APOSTOLAKIS: Identify yourself,
2 please.

3 MR. CONNELL: This is Ed Connell from the
4 staff.

5 There are several deterministic options
6 like under 3G2 of Appendix R. You can put 1-hour
7 sprinklers, 1-hour 20 feet of separation or 3 hours.
8 All of those, while under Appendix R space were
9 considered equivalent, they are not necessarily
10 equivalent when assessing the risk. So if you made a
11 change under a deterministic approach, you still have
12 to assess the risk impact of that. We would expect it
13 wouldn't be significant, but consistent with the
14 risk-informed process, whenever you make a change, you
15 assess the risk, whether you're using a deterministic
16 approach or performed-based approach.

17 CHAIRMAN APOSTOLAKIS: So this diagram is
18 a bit misleading, is it?

19 MR. CONNELL: No, it's exactly accurate.
20 If you make a change under the deterministic approach,
21 you still do a risk change evaluation.

22 CHAIRMAN APOSTOLAKIS: Now where is that?

23 MR. CONNELL: It's at the bottom.

24 MEMBER SHACK: It's what you were just
25 pointing out, George. Both of them lead to that box.

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1 MR. CONNELL: Right.

2 CHAIRMAN APOSTOLAKIS: No, only one leads
3 to that box.

4 MR. CONNELL: No, both.

5 CHAIRMAN APOSTOLAKIS: How can the
6 deterministic approach lead to that unless you put an
7 extra line there behind the --

8 MEMBER POWERS: George, once you have set
9 up your fire protection thing, you've done the
10 analyses, be they performed-based or deterministic,
11 then you have to do an overall risk assessment of your
12 fire protection system.

13 CHAIRMAN APOSTOLAKIS: Where does it say
14 that?

15 MR. CONNELL: The only risk assessment
16 that's required is that they -- when you make a change
17 to the plant, from whatever it is today, okay, you
18 make a change to the plant, whether you're using a
19 performed-based approach or a deterministic approach,
20 okay, you change it from one deterministic approach to
21 another deterministic approach, you still have to do
22 a risk change evaluation. You've got to look at the
23 change in risk as resulting from that change, if there
24 is any.

25 CHAIRMAN APOSTOLAKIS: My point is that

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1 this diagram does not convey that. Of course that is
2 what you have to do.

3 MEMBER POWERS: But George, that's not the
4 issue. The issue is whether you -- whether the
5 standard is acceptable. Okay? I mean you have to
6 reach this diagram in the context of the standard
7 which is once you have done any kind of change, you
8 still have to do an overall risk assessment and see
9 how that changed the risk.

10 CHAIRMAN APOSTOLAKIS: We just said with
11 Steve that you have an option. But it seems to me
12 that if you decide to stay in the deterministic
13 approach, you cannot really justify a change.

14 MEMBER POWERS: Yes, you can. I mean --
15 I changed the way I have my stand pipes, okay?

16 CHAIRMAN APOSTOLAKIS: Right.

17 MEMBER POWERS: I did that with a
18 completely deterministic analysis, they have to be so
19 high and so big, things like that.

20 Now I do an overall risk assessment of my
21 fire protection scheme. How did that change change my
22 risk?

23 CHAIRMAN APOSTOLAKIS: And what I'm saying
24 is that this diagram doesn't say that, but anyway, if
25 everybody else understands it, I suppose I'm a

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1 minority of one.

2 MEMBER POWERS: If you're relying on just
3 the diagram without understanding the way the standard
4 is written, okay, then that doesn't communicate to
5 you. But within the standard, it seems to me it makes
6 perfect sense.

7 CHAIRMAN APOSTOLAKIS: So even at the top
8 you have already done a risk assessment.

9 MS. BLACK: George, can I point out that
10 there's an arrow going into the large box and the
11 large box contains both the paths.

12 CHAIRMAN APOSTOLAKIS: Right.

13 MS. BLACK: And then there's another arrow
14 coming out of that large box.

15 CHAIRMAN APOSTOLAKIS: Right.

16 MS. BLACK: If you look at it that way,
17 then either side -- I agree, it's not the best drawing
18 in the world to depict it, but there's an arrow there
19 that comes out of the big box that includes both
20 paths. You get into the big box at the top without an
21 arrow going into anything in the big box either.

22 MEMBER WALLIS: Or coming out.

23 MS. BLACK: Or coming out. See, that's
24 the flaw in the drawing.

25 CHAIRMAN APOSTOLAKIS: Inside the box, I

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1 get the sense that I can go either way, but then when
2 I exit the box, I realize that I really have to do
3 that -- but that's okay. I mean if everybody thinks
4 that's obvious.

5 MEMBER WALLIS: George, it's like
6 university administration. It's in the big box. It
7 really doesn't have arrows going in or coming out.

8 CHAIRMAN APOSTOLAKIS: So 1.174 will be
9 somewhere there in the evaluation of the change? Is
10 the change acceptable? Is that where 1.174 would come
11 in?

12 MS. BLACK: No. This is Suzanne Black.
13 1.174 gives you the same criteria, basically, they're
14 used to acceptability, but that's -- but that one,
15 1.174 is for license amendments.

16 CHAIRMAN APOSTOLAKIS: Is what?

17 MS. BLACK: For license amendments, but
18 the same basic concepts are used.

19 CHAIRMAN APOSTOLAKIS: If I don't use
20 1.174, how can I decide whether the change is
21 acceptable?

22 MR. CONNELL: Well, within NFPA 805, okay,
23 it says it uses CDF and LERF to measure the risk
24 impact.

25 CHAIRMAN APOSTOLAKIS: Right.

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1 MR. CONNELL: So you look at a delta CDF
2 and a delta LERF.

3 CHAIRMAN APOSTOLAKIS: Right.

4 MR. CONNELL: And consistent with 1.174,
5 the increase in risk should be small; defense-in-depth
6 has to be maintained; and safety margins have to be
7 maintained.

8 CHAIRMAN APOSTOLAKIS: Right. So that's
9 where it is?

10 MR. CONNELL: That's all in that little --
11 that's in that little box -- where it says
12 risk-informed change evaluation, all that is explained
13 in the text of the standard.

14 CHAIRMAN APOSTOLAKIS: So 1.174 is there?

15 MR. CONNELL: Well, 1.174 is referenced in
16 the standard, but 1.174, if you look at the scope and
17 the application of 1.174, it's only for license
18 amendments that are submitted by licensees to the
19 staff for review and approval.

20 Under 805, these changes would be made
21 without NRC prior review and approval.

22 CHAIRMAN APOSTOLAKIS: Other criteria that
23 would be used --

24 MR. CONNELL: The criteria is the same.

25 CHAIRMAN APOSTOLAKIS: Yes, so 1.174.

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1 MEMBER SIEBER: 50-59 for fire.

2 VICE CHAIRMAN BONACA: Although 50-59 does
3 not use the criteria. It says negligible.

4 MEMBER ROSEN: But it's like 50-59 in the
5 sense you can go ahead without prior NRC approval.

6 CHAIRMAN APOSTOLAKIS: Right, right.

7 MEMBER LEITCH: Once a licensee selects
8 one method or the other, does that determine the
9 approach he must always take or can this be decided on
10 a case by case basis whether to use the deterministic
11 approach or the performed-based --

12 MR. CONNELL: This can be done on a fire
13 area by fire area basis.

14 MEMBER LEITCH: Fire area by fire area.

15 CHAIRMAN APOSTOLAKIS: In some areas you
16 are risk-informed and some you aren't.

17 MEMBER RANSOM: How do you ever get out of
18 this process? It seems like all paths lead back to
19 the big box.

20 (Laughter.)

21 MEMBER SHACK: That's job security.

22 MR. CONNELL: There's a feedback process
23 here which we don't have right now and if you make a
24 change, let's say you use a specific assumption in
25 your performed-based approach, you assume that the

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1 maximum combustible loading in this area is X value.
2 Well, a couple of years from now you increase the
3 combustible loading in that area to three or four
4 times that X value. Under 805, that change would have
5 to be factored back into the big box, so you see that
6 now that I've made a change to my plant, how does that
7 impact my previous analysis?

8 MEMBER ROSEN: We can go on, I think.

9 MR. CONNELL: Okay, one of the essential
10 elements of a risk-informed performed-based method is
11 that it can have a change control process and as we've
12 just been discussing, NFPA 805 has such a change
13 control process.

14 Now, in response to a key concern of our
15 stakeholders and of this Committee, we incorporated
16 into the rule that risk-informed performed-based
17 methods may be approved by the NRC.

18 MEMBER POWERS: If NRC was looking at a
19 proposed performed-based change, would they ask for a
20 performance indicator? Quite frankly, I don't see how
21 they couldn't.

22 MR. CONNELL: Well, there was a separate
23 effort, I think you're aware of developing performance
24 indicators and the conclusion related to fire
25 protection was there really isn't any good performance

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1 indicators for fire protection. So the feedback
2 approach in 805 really addresses the assumptions that
3 are used in a performed-based analysis. I assume my
4 sprinkler system is reliable. I assume this is the
5 combustibles I'm going to have. I assume this is the
6 heat release rate of the geometry of the material. So
7 that's the feedback process we have in 805 which is
8 different than performance indicator process. The
9 only performance indicator we really have is like fire
10 frequency and that's not very reliable for assessing
11 performance of the fire protection program.

12 MEMBER POWERS: It's not especially
13 useful. I mean that's where I'm struggling a little
14 bit with performed-based. How can anything be
15 performed-based? Maybe it is as you say that indeed
16 I assume my sprinkler has this reliability and over
17 the course of time I find the number. I get an
18 indication of the number of times that I've had to fix
19 it. I know how often it's down because I'm
20 maintaining it just in the course of normal events,
21 but sometimes I have to fix it.

22 It seems to me that you get a -- the
23 number you get out of that is not wildly reliable.
24 Unless you've got some process by which I find I have
25 to fix my sprinkler system. I suddenly have

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1 discovered a day that I have to fix my sprinkler
2 system and so now how many weeks has it been
3 inoperable and I didn't know about it?

4 MR. CONNELL: Well, of course, all the
5 numbers wouldn't be very reliable. That's why we have
6 defense-in-depth. That's why there's a fundamental
7 aspect of 805. So we don't place reliable on safety
8 solely on that sprinkler system. We have other things
9 that are there. So the sprinkler system doesn't
10 perform as expected we still have some level of
11 safety.

12 MEMBER POWERS: I will grant we have that.
13 I'm still struggling with what's performance, how I
14 consider something performed-based in this.

15 MR. CONNELL: Well, the performed-based
16 approach to 805 is you can use a performed-based
17 approach to meeting the specific criteria. In the
18 past, we said okay, you're fire safe if you have a
19 1-hour barrier and sprinklers. Now we can say all
20 right and you have that train, it's used for DK heat
21 removal, let's say. Well, instead of having 1-hour
22 and sprinklers for DK heat removal, we can say hey,
23 I've assessed this fire area. This is the act. I've
24 modeled it. I've assessed the frequency of fires in
25 this area. I've assessed the damage threshold, the

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1 fragility of the components I'm looking at and this,
2 I don't need one hour. Maybe I need 20 minutes.
3 Maybe I don't need anything. Okay? This is the
4 approach that's an 805, to demonstrate that that
5 system is still going to be maintained free of fire
6 damage.

7 MEMBER POWERS: See, what I think you're
8 getting to is in reality, I echo Dr. Kress here, that
9 there is no performed-based system that you either
10 have a probabilistic system or a deterministic system
11 here. And what you've outlined is an analysis that is
12 essentially probabilistic and if I were Dr. Kress I
13 would sit there and say okay, what is your acceptance
14 criteria and for this probabilistic analysis. In
15 other words, the guy says gee, I don't need an hour.
16 I only need 27.5 minutes. And Dr. Kress would say to
17 what level of confidence do you need 27 minutes?

18 MR. CONNELL: Well, we address that as
19 well in the standard. If you're using a fire model
20 and you're using a specific fire scenario, you say
21 well, this is my expected fire scenario and let's say
22 it was 10 gallons of Heptane, okay? I've looked at my
23 area and this is what I typically have in there.

24 You also under 805 have to look at what
25 causes damage. So if 10 gallons of Heptane is your

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1 expected, that doesn't cause you to exceed, not meet
2 the performance criteria and you find out well, where
3 does it cross that threshold where I no longer meet
4 the performance criteria. Let's say that was a 100
5 gallons of Heptane. Then you know what your margin
6 is. You say okay, this is what I expect is 10. I
7 don't get damage until I have 100, so I have
8 confidence in that margin of safety and that addresses
9 the uncertainty.

10 MEMBER POWERS: See, I think it's where
11 Dr. Kress would be really confused. Because you've
12 come along and you've said okay, I've done this
13 probabilistic thing with 10 gallons per minute and I
14 can conclude that it does cause no damage. No you
15 didn't. You concluded as a point estimate that you
16 don't get damage. This is in reality had you gone
17 through and done the analysis correctly with lots of
18 attention to certainty and phenomena you have
19 concluded to a 92 percent confidence level, I don't
20 get damage with 10 gallons. And then you would say is
21 that good enough?

22 MEMBER KRESS: And why is that good
23 enough?

24 MR. CONNELL: I guess as a surrogate for
25 that we find out where we do get damage and if we

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1 have, like I said, if the margin is from 10 gallons to
2 100 gallons, I think everybody would agree that we
3 have adequate safety margin.

4 MR. HANNON: Dr. Powers, this is John
5 Hannon. I would just like to point out that the Fire
6 Risk Research Program does have the development of
7 performance indicators as part of that activity.

8 MEMBER POWERS: They can research until
9 the cows come home. Everybody has looked at this
10 thing and they come back and say there just aren't any
11 good ones and great confidence in the research guys
12 and they may find them, but the fact is we don't have
13 them right now and the fact is I think Dr. Kress is
14 correct. There is no performance in here. You either
15 have got a probabilistic side or a deterministic side
16 and when you go down the probabilistic side, we've got
17 this problem, what's acceptable? And doing a point
18 calculation is just never acceptable. Never
19 acceptable.

20 MEMBER ROSEN: Well, I think I'd like to
21 try to steer us back into the slow lane and go on in
22 this general direction.

23 CHAIRMAN APOSTOLAKIS: The previous slide,
24 the last bullet said something I didn't understand.
25 Can we go back to 7?

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1 What does that mean, new risk-informed --

2 MR. CONNELL: Risk-informed performed-
3 based methods. Yes, I'm going to address that.

4 CHAIRMAN APOSTOLAKIS: "To be approved",
5 is that what it says?

6 MR. WEISS: Yes, to be approved. I'll
7 outline a little more in that, but let me touch
8 briefly on it now since you bring it up. Our
9 stakeholders have made clear that the requirements in
10 Chapter 3 contain a large body of deterministic
11 requirements. It's on one of my slides that follow
12 and that's in a large part because there aren't risk-
13 informed performed-based methods for these things
14 which I'm going to cover in a future slide. But the
15 concern was, and I think part of the concern of the
16 Committee was that if this is going to be a
17 risk-informed performed-based method, should it not
18 allow the use of future risk-informed performed-based
19 methods. So we tried to build into this rulemaking a
20 provision that we could accommodate those methods when
21 the staff approved them.

22 I think it will become clearer later on.
23 If it's not, then please ask again. But could I go on
24 to slide 8, please?

25 (Slide change.)

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1 MR. WEISS: As I indicated before, 805
2 allows either a deterministic approach or the
3 risk-informed performed-based approach. There are two
4 paths and the deterministic requirements read very
5 much like what is in Appendix R right now.

6 CHAIRMAN APOSTOLAKIS: So I can still come
7 to you using Appendix R methods and request an
8 exemption, correct?

9 MR. WEISS: Under any rulemaking you can
10 always request an exemption, but under this
11 rulemaking, if 805 became part of a plant's licensing
12 basis, the point I'm trying to make is a licensee
13 could say okay, I'm going to put in a 3-hour barrier.

14 CHAIRMAN APOSTOLAKIS: Right.

15 MR. WEISS: As opposed to saying I'm going
16 to do a fire model and a PRA to show what the barrier
17 should be.

18 CHAIRMAN APOSTOLAKIS: right, but I mean
19 at some point you require 20 feet separation and your
20 licensee can come and argue that in this particular
21 case 18 feet is good enough and you do your
22 engineering evaluation so you say it's good enough,
23 right?

24 MR. WEISS: Yes, and the huge advantage is
25 that it's no longer an exception. It's being done

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1 under the 805 process.

2 CHAIRMAN APOSTOLAKIS: Oh no, I don't want
3 to do 805. I just want to come to you and do it the
4 old way. I can still do that?

5 MR. WEISS: Yes. A licensee can submit an
6 exemption right now under Appendix R under any basis,
7 under a risk-informed basis, under a performed-based
8 and the staff will review those individual plan
9 exemptions.

10 CHAIRMAN APOSTOLAKIS: Now, is there some
11 analysis somewhere that can tell us -- you have
12 approved numerous exemptions within Appendix R.

13 MR. WEISS: Not 900.

14 CHAIRMAN APOSTOLAKIS: 900, for the last
15 20 years or so. Do you have any idea what the implied
16 delta CDF and delta LERF was?

17 MR. WEISS: I can say that the issue of
18 the cumulative effect of these exemptions did come up.

19 Ed, can you help me out here?

20 MR. CONNELL: Yes, in conjunction with the
21 Office of Research and a contract with Sandia, we
22 looked at the ten highest reported fire induced CDS
23 resulting from the IPEEE program. And then we looked
24 at all the exemptions that were granted to those 10
25 plants. And the conclusion was that the exemptions

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1 granted had little or no risk significance.

2 CHAIRMAN APOSTOLAKIS: So that implies
3 then that if I follow the performed-based approach,
4 presumably it can ask for me.

5 MR. CONNELL: More what? You don't have
6 to ask for anything under the performed-based
7 approach. I can.

8 CHAIRMAN APOSTOLAKIS: You say that the
9 largest approved Appendix R-related exemption led to
10 negligible delta CDF, right?

11 MR. CONNELL: Right.

12 CHAIRMAN APOSTOLAKIS: In the future, if
13 I wanted to do something more serious, then I can go
14 to them for CDF.

15 MR. CONNELL: I guess it depends where you
16 are right now.

17 CHAIRMAN APOSTOLAKIS: That's right.

18 MR. WEISS: Slide 9, please.

19 (Slide change.)

20 MR. WEISS: Here's a list of the
21 requirements in Chapter 3, the fundamental fire
22 protection elements and right now these are somewhat
23 prescriptive, but as I indicated before we've built a
24 provision in the rule to allow for the staff to adopt
25 new risk-informed performed-based methods should they

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1 be justified.

2 Slide 10?

3 (Slide change.)

4 MR. WEISS: The way the rule is structured
5 is that it will be an amendment to 10 CFR 50.48 and
6 adoption of the provision that puts you into 805 is
7 voluntary. This was very important to our
8 stakeholders and that's the way the rule is
9 structured. Licensees can choose to stay under their
10 existing Appendix R licensing basis and the question
11 came up in the subcommittee why would one switch over?
12 How many people would switch over? How many licensees
13 would switch over and I'm going to let NEI address
14 that a little more definitively, but I'll say
15 conceptually I can understand why a licensee that has
16 a perfectly good licensing basis and no reason for
17 change might very well, as a matter of fact, I might
18 expect most licensees to stick with Appendix R until
19 such time as they see an advantage to solving a
20 problem.

21 CHAIRMAN APOSTOLAKIS: I think that's what
22 I just said. They feel they can get an exemption or
23 a change approved by the NRC easier by doing the risk
24 argument, giving a risk argument, especially if you
25 say that the old exemptions led to negligible delta

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1 CDF, if I want my delta CDF not to be negligible now,
2 I have a better way of doing it because my chances
3 that you would approve it under the old Appendix R are
4 very, very small. That's all they have. This is
5 really the appealing feature of this which leads me to
6 another thing. Is the industry still or NEI still
7 saying that the industry will not use this? I mean --

8 MEMBER ROSEN: I think we have Fred
9 Emerson here who is going to address that comment,
10 question. It came up very hard in the subcommittee
11 and he's got a number of points to make on that
12 subject.

13 CHAIRMAN APOSTOLAKIS: Okay.

14 MR. WEISS: As I tried to outline before,
15 the existing licensing basis configuration and
16 procedures largely convey to the new risk-informed
17 performed-based environment. The way the rule would
18 work is that licensees would document and retain the
19 records on site for inspection. The reactor oversight
20 process would monitor future changes and NRC would be
21 allowed to approve new risk-informed performed-based
22 methods in the future on licensees, may use the
23 appendices of 805 which are there for information.

24 Slide 11, please.

25 (Slide change.)

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1 MR. WEISS: This is one of NRC's first
2 risk-informed performed-based rules, not the first,
3 but one of the first and NEI endorsed this rulemaking
4 in September of 2001. We recognize the key to
5 successful implementation of this approach is the
6 development of appropriate regulatory guidance. NEI
7 has agreed to develop a guidance document that we
8 could then endorse in a Reg. Guide. I might also
9 point out that NFPA 805 addresses the existing fleet
10 of light water reactors. There is a separate standard
11 804 for the advanced LWRs, but the staff has written
12 the NFPA and asked them to develop a new NFPA standard
13 to address advanced light water reactors and gas
14 reactors, other advanced reactors in a risk-informed
15 performed-based manner.

16 Slide 12?

17 (Slide change.)

18 MEMBER ROSEN: Why did you limit that to
19 just gas and light water reactors?

20 It says "Future NFPA standard to address"

21 --

22 MR. CONNELL: I know --

23 MEMBER ROSEN: "Advanced light water
24 reactors and gas reactors."

25 MR. CONNELL: It's not limited to the

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1 light water and gas reactors.

2 MR. WEISS: It's all advanced reactors.

3 MR. CONNELL: It's all advanced reactor
4 designs.

5 MEMBER ROSEN: We had a discussion
6 yesterday that there are advanced reactor designs in
7 a Generation 4 program that used neither water nor
8 gas.

9 MR. CONNELL: Right, and the standard --
10 right now, the standard is just an idea, but the
11 intent was to address all advanced reactor designs.

12 MEMBER ROSEN: Okay.

13 CHAIRMAN APOSTOLAKIS: So I can see how
14 the decision whether the proposed changes are
15 acceptable depends on light water reactors. This is
16 Regulatory Guide 1174 gives delta CDF and delta LERF.
17 Are there any other parts of the standard that would
18 be different for advanced reactors besides the
19 acceptance criteria?

20 MR. CONNELL: Well, the performance
21 criteria outlined in several Commission SECY papers
22 for advanced reactors is different than what we have
23 for the existing fleet for fire protection.

24 CHAIRMAN APOSTOLAKIS: Can you give me an
25 example?

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1 MR. CONNELL: Oh, you have to assume all
2 equipment in a fire area is rendered inoperable and
3 re-entry for operation repair is not permitted, so the
4 equivalent of 3G2 of Appendix R would not be allowed
5 for any of the advanced reactors. It's not allowed
6 for the CE system 80. It's not allowed for the GE
7 ABWR. It's not allowed for the AP 600 and it won't be
8 allowed for the AP 1000.

9 CHAIRMAN APOSTOLAKIS: That's Appendix R
10 type of thing?

11 MR. CONNELL: No. No. Appendix R, 3G2 is
12 for redundant systems located in the same fire area.
13 You're not allowed to have redundant systems located
14 in the same fire area with the advanced reactors.

15 That's why 805 wouldn't be applicable to
16 the advanced reactor designs.

17 Most of the issues we deal with are
18 related to redundant systems located in the same fire
19 area.

20 CHAIRMAN APOSTOLAKIS: But would the
21 advanced reactors have some specific features that
22 would require different approach? It seems to me the
23 basic approach that you have here is --

24 MR. CONNELL: Well, there's a different
25 approach like the AP600/1000 safe shutdown for them,

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1 unlike the current fleet is not cold shutdown. They
2 don't get the cold shutdown.

3 CHAIRMAN APOSTOLAKIS: That's what it
4 says. Isn't that what Professor Wallis asked? That's
5 what this says that maintain the fuel in a stable
6 condition.

7 MR. CONNELL: Safe and stable condition,
8 right.

9 Yes. 805 -- I was talking about for
10 Appendix R plan, the current fleet --

11 CHAIRMAN APOSTOLAKIS: No, I'm talking
12 about 805.

13 MR. CONNELL: All right, 805, yeah, that
14 would be consistent. But most of the issues we're
15 relating to in the current fleet relate to redundant
16 systems located in the same fire area. Right, an
17 that's what most 805 addresses, but the administrative
18 controls, the fire brigade, all that kind of stuff, of
19 course, would be very similar.

20 MEMBER ROSEN: You have about five more
21 minutes, Eric.

22 MR. WEISS: Okay, slide 12 is the
23 schedule. We're before you today, we're scheduled to
24 go to CRGR on the 11th. The proposed rule is due in
25 front of the Commission in July. The proposed rule

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1 will then be published in the Federal Register for
2 public comment for a period of one month. I might say
3 that we've been making various drafts of this
4 regulation available on the web and we informed the
5 Commission of that.

6 The final would go to the Commission 15
7 months after the close of the public comment period on
8 the proposed rule and the final rule would be
9 published in the Federal Register one month after the
10 staff requirements memorandum.

11 MEMBER ROSEN: What makes it 15 months
12 mandatory? It seems like an awful long time after the
13 close of public comments before you present it to the
14 Commission.

15 MR. WEISS: I can tell you there are some
16 rules that I've been associated with that went on for
17 seven years and never did see the light of day. My
18 first job in the Commission in 1976 was to lay out the
19 procedures for rulemaking and I used to be in charge
20 of laying out the procedure in the Green Book and what
21 was then the Office of Standards Development. In
22 those days, a rough rule of thumb was that it took
23 about a year to get a proposed rule out and about a
24 year to get a final rule out, but that was a rule of
25 thumb. Controversial rules easily go more than a

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1 year. This is -- this schedule that we developed for
2 the 15-month schedule was not developed by mere
3 judgment as my previous comments might apply. We've
4 actually got a very detailed schedule laid out with
5 what we believe are realistic, not conservative,
6 realistic elements of each of the steps involved. So
7 I guess there is no simple answer to your question
8 other than for me to show you the schedule, but I can
9 tell you from a feeling point of view I've been
10 involved in four rulemakings in my 25-year career with
11 the NRC and some have gone on forever and two of them
12 never saw the light of day, two of them died after
13 years of controversy.

14 MEMBER ROSEN: We don't want this to die
15 and neither does the Commission and neither does the
16 stakeholders, neither does the ACRS. But I would be
17 interested in having you show me this 15 months packed
18 with activities after most of the music has been
19 played.

20 MR. WEISS: We can certainly do that.

21 CHAIRMAN APOSTOLAKIS: Well, after the
22 music, they go to a restaurant --

23 MEMBER KRESS: Have a cigarette, coffee.

24 CHAIRMAN APOSTOLAKIS: A nice cigar.

25 MEMBER POWERS: Fifteen months is what I

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1 would call leaning forward in the trenches schedule
2 quite frankly.

3 MR. WEISS: Winning what?

4 MEMBER POWERS: I mean it sounds like
5 they're fairly optimistic. There is a lot that has to
6 be done. I'd like to see the steps.

7 MR. WEISS: We will do that. Slide 13.

8 (Slide change.)

9 MR. WEISS: We believe that this
10 rulemaking is an important part of a regulatory
11 framework that will move fire protection forward into
12 the
13 risk-informed performed-based arena. It certainly is
14 not the whole answer. There has to be regulatory
15 guidance. There has to be inspector guidance and
16 inspector training.

17 CHAIRMAN APOSTOLAKIS: Regarding guidance,
18 is there any guidance now as to what risk methods are
19 acceptable? If I came to you and I'm saying I'm
20 implementing 805 and I calculated delta CDF this way.
21 Are you going to check that and see whether what I did
22 was right or are there methods that are acceptable or
23 methods that are not acceptable?

24 MR. WEISS: I think maybe Fred could tell
25 you what they have in mind in the early stages of the

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1 guidance document, but one of the things that they had
2 broached with us was endorsing an ANS standard that's
3 to be developed.

4 CHAIRMAN APOSTOLAKIS: For external
5 events? An ANS standard for external events.

6 MEMBER ROSEN: I think you want them for
7 fire and PRA too.

8 CHAIRMAN APOSTOLAKIS: ANS has developed
9 standards for earthquakes, fires, tornadoes. That's
10 what I mean by external events.

11 MR. WEISS: So we see this rulemaking as
12 a necessary first step in providing an opportunity for
13 licensees and NRC to be more efficient and effective
14 in this regulatory environment. That's the conclusion
15 of my presentation.

16 MEMBER LEITCH: Back on Slide 9 you have
17 a list of fundamental fire protection elements that
18 are in Chapter 3 of 805, are those deterministic
19 things? Could you say a little more about that?

20 MR. WEISS: I think Ed could give you the
21 details, but pick an example out of the air. Fire
22 brigade is five people.

23 MEMBER LEITCH: Right.

24 MR. WEISS: We don't have a method of
25 calculating that the fire brigade should be 4.2 people

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1 right now, but conceptually, in the future, if there
2 were such a method and the staff approved it, that we
3 could incorporate that in this rulemaking. We have a
4 provision in the rulemaking that allows the Agency to
5 adopt it.

6 MEMBER LEITCH: But at the moment it still
7 says five people.

8 CHAIRMAN APOSTOLAKIS: But I can come to
9 you and show that I have other compensatory measures
10 that would justify having only four. I mean that's
11 the whole idea of 805, isn't it?

12 MR. WEISS: Yes.

13 CHAIRMAN APOSTOLAKIS: Instead of the
14 five.

15 MR. WEISS: Right now, 805 says five and
16 we haven't approved a method of calculating. You can
17 always apply for an exemption and Ed can speak to this
18 in more detail, but I think we've accepted exemptions
19 on a wide range of deterministic requirements, but the
20 idea behind the rule is to get out from underneath the
21 exemption process because that's relatively
22 inefficient and to have risk-informed performance-
23 based methods that licensees can adopt without making
24 even submittals to the NRC, simply put it in the file
25 draw and then we come around and make sure that they

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1 use the right method, that the people who used it were
2 qualified and so forth and so on and that will make
3 for a much more efficient process and I think a more
4 rational process.

5 MEMBER LEITCH: But in the case, for
6 example, numbers of members in the fire brigade, a
7 licensee couldn't just on his own based on
8 risk-informed performed-based, decide that he only
9 needed four, put that documentation in the file and --

10 MR. WEISS: Not without making an
11 exemption request right now. But conceptually in the
12 future if there were such a way, then the staff could
13 adopt it and then that process could go forward
14 without an exemption.

15 MEMBER LEITCH: But that would be a
16 subsequent change to 805?

17 MR. WEISS: Well, we have a provision in
18 805 that allows us to adopt these new methods. That
19 was one of the stakeholder's key points and we thought
20 we were being responsive to the Committee, to the ACRS
21 in that regard as well.

22 CHAIRMAN APOSTOLAKIS: So right -- it's
23 kind of new to me. Right now, I can -- these bullets
24 that you have on Slide 9, these are requirements. It
25 says the fire brigade has to have five people, for

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1 example.

2 MR. WEISS: Yes.

3 CHAIRMAN APOSTOLAKIS: And I cannot use
4 805 as it is now to do a calculation to show that I
5 can live with four because I don't have a method that
6 you have approved.

7 MR. WEISS: That's right.

8 MEMBER ROSEN: That's right. But if
9 someone came up with a method and it was peer reviewed
10 and discussed in the industry and the NRC looked at it
11 and adopted it, said yes, that's correct, it's a good
12 method, then the licensees who had adopted 805 could
13 use it.

14 VICE CHAIRMAN BONACA: A better example
15 would be if you have a number of fire extinguishers,
16 fire alarm protection, can you use 805 to assess, for
17 example, more risk significant areas where you would
18 concentrate more detection devices or suppression
19 devices?

20 MR. CONNELL: Yes, this is Ed Collins,
21 Staff again. 805, as far as the things that are
22 related to fire protection systems and features, when
23 your performed-based or deterministic approach says
24 you need a specific fire protection feature, a
25 detection system, a suppression system, then Chapter

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1 3 of 805 says okay, if you're going to put this thing
2 in, it has to be designed, installed and maintained in
3 accordance with the applicable NFPA standard for that
4 system. So that's where it gets quasi-deterministic.
5 In other words, you say, okay, I need this system.
6 Under Appendix R it said you had to have this system
7 and you had to design, install and maintain it in
8 accordance with the applicable NFPA code. Under 805,
9 you decide whether you need it or not. If you do need
10 it, then you have to design and install and maintain
11 it in accordance with the applicable --

12 VICE CHAIRMAN BONACA: You don't have a
13 graded, more aggressive --

14 MR. CONNELL: There is no performed-based
15 risk-informed way of designing a sprinkler system.
16 There is no risk-informed performed-based way of
17 designing a detection system.

18 VICE CHAIRMAN BONACA: There is a
19 risk-informed way of determining which areas --

20 MR. CONNELL: Whether you need it or not,
21 right. That's correct.

22 VICE CHAIRMAN BONACA: Which area is more
23 important than others?

24 MR. CONNELL: Right, whether you need a
25 system or not is what 805 allows you to determine in

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1 a performed-based risk-informed approached, whereas
2 Appendix R didn't allow you to do that.

3 CHAIRMAN APOSTOLAKIS: This thing about
4 the approved methods, maybe I don't understand it very
5 well. I mean in a risk assessment, there are all
6 sorts of models and assumptions that one has to make,
7 you know, in a fire risk assessment or any risk
8 assessment. And this notion of pre-approved methods
9 is not clear to me. In other words, I model the
10 susceptibility to damage of the insulation of the
11 cable in a certain way. I don't think that's a
12 standard way of doing it. Some people might say you
13 know, here's a temperature that applies. Somebody did
14 some experiments, so I'm going to use it as the limit
15 and the probability of exceeding it is such and such.
16 Somebody else might do detailed thermal calculations,
17 you know inside the insulation and go more into the
18 physics. And this is just an example.

19 Now what does it mean that there have to
20 be pre-approved methods? I mean that doesn't --

21 MEMBER ROSEN: Let me try on this one and
22 see if I have it right because that's a good question.
23 The answer is that that's what the implementation
24 guidance will say. It will say what the methods are
25 and what's allowed and what's not. And the staff will

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1 approve that guidance in a regulatory guide. Is that
2 the right answer for this question?

3 CHAIRMAN APOSTOLAKIS: Well, I don't know
4 to what extent you can do that. That's my point.

5 MR. CONNELL: Well, the appendices in 805
6 don't tell you how to do these things. What they do
7 is they say here are the things you need to address in
8 order to do them. 805 allows you flexibility in
9 whatever the particular method that you use, okay, so
10 there's no method, a step-by-step cookbook, whatever
11 you want to call it approach in 805, similar to like
12 the five methodologies basically a cook book approach,
13 okay?

14 Let's say five methodologies would be
15 enhanced beyond because it was only intended to look
16 at severe accident vulnerabilities. Well, let's say
17 we had an enhanced five methodology that could be used
18 for regulatory compliance. That could be approved by
19 the staff. That would be in the NEI guide.

20 CHAIRMAN APOSTOLAKIS: Is it correct then
21 to understand that if I do something that I think is
22 innovative, the first time I do it, I have to come to
23 you?

24 MR. CONNELL: That's correct.

25 CHAIRMAN APOSTOLAKIS: But after that I

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1 can use it, if you approve it.

2 MR. CONNELL: That's correct. That's the
3 intent.

4 CHAIRMAN APOSTOLAKIS: That makes much
5 more sense.

6 MEMBER ROSEN: That's the idea.

7 CHAIRMAN APOSTOLAKIS: So the first time
8 I do something, you guys should be aware of it and say
9 we like it, we don't like it, change it this way.

10 MR. CONNELL: That's right.

11 MEMBER ROSEN: And the reason for that, of
12 course, was to allow the state of the art to progress,
13 something we've --

14 CHAIRMAN APOSTOLAKIS: It puts bounds on
15 our --

16 MR. CONNELL: And the standard was written
17 with that in mind. That's why we didn't prescribe a
18 method because when every six months or whatever we'd
19 have to revise the standard.

20 VICE CHAIRMAN BONACA: Just to understand
21 the limit. I was pursuing that before. I didn't
22 understand it, so I assume that right now, Appendix R
23 says this area has this single safety category 1
24 system, therefore you have to have certain protection,
25 fire protection because it's important. My PRA says

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1 that system is not risk significant.

2 And if I make changes which is the grade
3 the fire protection in that particular area, based on
4 the PRA?

5 MR. CONNELL: You'd be able under the
6 umbrella of NFPA 805, you would be able to relax the
7 fire protection systems and features provided,
8 provided you meet all performance, goals, objectives
9 and criteria; provided you still maintain
10 defense-in-depth, provided adequate safety margins are
11 maintained. All that good stuff, you would be allowed
12 to relax the fire protection.

13 Today, you can do that with prior staff
14 review and approval through the exemption process
15 outlined in 50.12.

16 VICE CHAIRMAN BONACA: Yes, thank you.

17 MEMBER ROSEN: Okay, Eric, can you wrap it
18 up?

19 MR. WEISS: I'm essentially done.

20 MEMBER ROSEN: Okay.

21 MR. WEISS: I'll turn it back to you.

22 MEMBER ROSEN: Thank you very much for a
23 good presentation.

24 Now we will hear the industry's
25 perspective on this proposed revision.

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1 Fred Emerson from NEI.

2 CHAIRMAN APOSTOLAKIS: Now the
3 performance, when we say risk-informed performance,
4 the performance is at delta CDF, I suppose? Is that
5 what the performance is?

6 MEMBER WALLIS: Could you move your
7 microphone?

8 MEMBER SHACK: You end up then computing
9 a delta CDF when you're done.

10 CHAIRMAN APOSTOLAKIS: And this is my
11 performance measure, because I make my decision using
12 those.

13 MEMBER SHACK: You make your decision.

14 CHAIRMAN APOSTOLAKIS: Okay, sorry, Fred.

15 MR. EMERSON: Good morning. I'm Fred
16 Emerson from NEI. I'm the Fire Protection Project
17 Manager for fire protection issues. And I'm happy to
18 have the opportunity to come speak to the full
19 Committee. The presentation that I have is slightly
20 modified from the one that I gave on Tuesday to the
21 Fire Protection Subcommittee.

22 Next slide, please.

23 (Slide change.)

24 MR. EMERSON: The topics that I'm going to
25 cover you see on the slide. I'd like to provide a

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1 little bit of background to provide some context. I'd
2 like to give, provide the fundamental industry
3 positions that led to our support for the rulemaking,
4 the current -- minute or two on the current rule
5 language, indicate what we're going to cover in the
6 implementing guidance and close by trying to address
7 a topic that the subcommittee addressed or wanted some
8 additional amplification on on how do we move forward
9 and who's going to use the standard or the rule when
10 it becomes a rule.

11 Next slide, please.

12 (Slide change.)

13 MR. EMERSON: Eric described the fact that
14 this was developed by an NFPA Committee. It was their
15 Technical Committee on Nuclear Facilities and it
16 comprised a several year effort. The industry and the
17 staff were both heavily involved in this activity and
18 a lot of good effort was put forward on both sides to
19 try to make this a useful standard.

20 When the final product was approved by the
21 industry in the fall of 2000, the industry still had
22 some concerns over what was in the final rule, the
23 final standard and as I understand, the NRC did as
24 well. And these concerns were to be dealt with in the
25 rulemaking process.

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1 Next slide, please.

2 (Slide change.)

3 MR. EMERSON: When the rulemaking became
4 a reality, industry agreed to support the rulemaking.
5 We had several concerns. I'd like to just spend a
6 second on those.

7 The first one was the use of performed-
8 based methods to address Chapter 3. We just spent
9 some time talking about that. We felt that there
10 should be an allowance for the use of performed-based
11 methods to address these very deterministic
12 requirements of Chapter 3. Even if there were no
13 specific elements available, we felt that to support
14 a performed-based risk-informed standard there needed
15 to be an allowance for the use of those methods
16 throughout the use -- throughout the standard as a
17 whole, whereas the standard itself and Chapter 3 now
18 specifically prohibits that, so we sought an exception
19 to allow those.

20 We wanted to allow the use of docketed
21 licensing bases as previously -- instead of previously
22 approved alternatives which is also currently the
23 language of Chapter 3 because we felt that there were,
24 the concept of previously approved was fairly vague.
25 When you have an SER covering a specific topic, the

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1 SER may be very general or very specific and if it's
2 very general, you often don't, cannot pinpoint whether
3 something was previously approved or not, so we had
4 submitted some alternate language for staff
5 consideration.

6 The third concern was that we -- that the
7 NRC perform a review of performed-based methods
8 instead of the NFPA Technical Committee and the staff
9 agreed to address that concern.

10 Another issue that I didn't mention on the
11 slide and that the subcommittee asked me to address
12 was the use of --

13 CHAIRMAN APOSTOLAKIS: I'm sorry, Fred,
14 why did you have to request that last one? Isn't that
15 what the NRC is supposed to do?

16 MR. EMERSON: Initially, there was a
17 discussion on the staff's part of allowing the NFPA
18 Technical Committee to review proposals and we thought
19 that was incorrect.

20 CHAIRMAN APOSTOLAKIS: Of course.

21 MR. EMERSON: This is really a dead issue.
22 This has been discussed and resolved. I'm just
23 pointing out what our initial --

24 CHAIRMAN APOSTOLAKIS: So the resolution
25 is that the NRC will review?

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1 MR. EMERSON: Yes, that's correct.
2 Another issue that's not on the slide is how NEI 00-01
3 was to be used and Eric touched on that earlier. That
4 document is intended to be a risk-informed method for
5 resolving the circuit failures issue which we've
6 discussed before in front of this Committee. This is
7 going on in parallel with the NFPA 805 rulemaking. It
8 will be, we believe, will be resolved well before the
9 rulemaking is final and we would like to see that
10 method allowed as a one method of performing
11 engineering analysis for circuit failures as one
12 element of a licensee's risk-informed program.

13 We understand that that will be allowed
14 within the regulatory framework for 805.

15 Next slide, please.

16 (Slide change.)

17 MR. EMERSON: We agreed to develop the
18 implementing guidance for the rulemaking. With a
19 number of issues, the fact that this is a relatively
20 new area for rulemaking, adoption of a risk-informed
21 method, we're moving forward in parallel with the
22 staff in the development of this implementing
23 guidance. Some of the methods for resolving issues
24 that come up and making this an acceptable and a
25 useful rule, some of these might have to be resolved

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1 in the rule language directly and these are issues
2 that we've discussed in the past. Some of them may be
3 resolved by putting information in the statements of
4 consideration for the rule and some of them can be
5 addressed in the implementing guidance.

6 So the implementing guidance is one of the
7 vehicles for addressing issues as they come up during
8 the next 15 months or 18 months, I guess.

9 The implementing guidance, we expect the
10 NRC will utilize in a Regulatory Guide once they have
11 agreed to it. The guidance is being developed by a
12 multi-discipline contractor team which addresses the
13 various areas of fire protection that need to be
14 addressed in a new rule. That includes classic fire
15 protection and safe shutdown, PSA, etcetera.

16 The rule language, as I said because the
17 rule language is being developed in parallel with the
18 implementing guidance, issues will come up and both
19 are going to be vehicles for resolving these
20 differences.

21 I think it's fairly safe to say that both
22 the industry and the staff are interested in coming up
23 with a clearly understood rule and with clearly
24 understood implementing guidance to support it and
25 we're looking forward to getting this in place to

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1 risk-informed fire protection regulation.

2 Next slide, please.

3 (Slide change.)

4 MR. EMERSON: Let me just make sure I'm in
5 sync with the slides on the screen. The fundamental
6 industry positions are the four that I've laid out on
7 the screen here and I'm going to spend each of the
8 next four slides, I'm going to elaborate on those a
9 little bit.

10 Next slide, please.

11 (Slide change.)

12 CHAIRMAN APOSTOLAKIS: So what -- you
13 didn't explain. Let's go back to 6.

14 MR. EMERSON: Back to 6, please.

15 (Slide change.)

16 CHAIRMAN APOSTOLAKIS: Licensees should be
17 able to use tools whether or not they transition to
18 NFPA 805. What does that mean?

19 MR. EMERSON: It means that the intent of
20 this rule was so that a licensee could choose an
21 alternate licensing basis.

22 As Eric pointed out, licensees have had a
23 licensing basis with which they've been comfortable
24 for the last 20 years or so in fire protection. And
25 if they choose, for whatever reason, not to adopt this

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1 alternate licensing basis, we feel very strongly that
2 they should still have the ability to use
3 risk-informed performed-based tools in a structured
4 regulatory environment. So we would like to see the
5 methods that have been crafted over several years in
6 the Technical Committee available to licensees who
7 choose not to use a different licensing basis.

8 CHAIRMAN APOSTOLAKIS: The way the
9 standard is raised, the moment I use risk-informed
10 risk methods, I'm in NFPA 805.

11 MEMBER SHACK: You can use it as the basis
12 for an exemption.

13 MR. EMERSON: That's correct.

14 MEMBER SHACK: That would be the vehicle.

15 MEMBER POWERS: It seems like it should be
16 absolutely noncontroversial. If you want to use risk
17 bases to change something in your fire protection
18 program, and you're within -- you're currently in
19 Appendix R as your licensing basis, it's a perfectly
20 acceptable thing to do.

21 MEMBER ROSEN: But the extent is in 50.12
22 and it may be more difficult to do that if you have
23 805 out there.

24 MR. EMERSON: You can use risk tools now
25 to support exemption requests. What we don't have now

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1 is a regulatory structure for processing that.

2 CHAIRMAN APOSTOLAKIS: But if I use this
3 method, don't I then have to show the CDF is less than
4 the value of -- how would that be different from using
5 NFPA 805? I don't understand.

6 MR. EMERSON: Again, the difference
7 between what we have now and what we're proposing for
8 a licensee that doesn't have -- that isn't going to
9 adopt the alternate licensing basis is he needs a
10 structure and we think the staff needs a structure too
11 for the acceptance of risk analyses to support
12 exemption requests. Right now the beauty is in the
13 eye of the beholder. I don't think -- I can't speak
14 for --

15 CHAIRMAN APOSTOLAKIS: My point is that if
16 the staff develops that kind of guidance it would be
17 an NFPA 805.

18 VICE CHAIRMAN BONACA: No, he's talking
19 about the criteria versus the application. What that
20 means is you can right now go in Appendix R that gives
21 you the criteria that you have to apply or 805 which
22 is a risk-informed criteria. I'm talking about -- it
23 says if somebody is using still Appendix R criteria
24 can use PRA --

25 CHAIRMAN APOSTOLAKIS: To do what?

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1 VICE CHAIRMAN BONACA: Well, to make
2 changes from -- amendments, whatever to justify
3 changes to its own criteria.

4 MR. EMERSON: George raises a good point.

5 CHAIRMAN APOSTOLAKIS: The only way it can
6 be justified is to compare it to 1174 which means you
7 are using now 805.

8 MEMBER POWERS: George, 805 doesn't say
9 anything about this stuff.

10 CHAIRMAN APOSTOLAKIS: 805 says if you use
11 a risk method, you are using me.

12 MEMBER POWERS: No, you're not.

13 CHAIRMAN APOSTOLAKIS: That's what it
14 says.

15 MEMBER POWERS: No, it doesn't.

16 CHAIRMAN APOSTOLAKIS: What does it say?

17 MEMBER POWERS: I would love to see you
18 find that language that says --

19 CHAIRMAN APOSTOLAKIS: Tell me how it
20 would be different if I used risk methods to do it
21 within Appendix R that would be different from 805?

22 MEMBER POWERS: If I don't like something
23 in 805, I mean in Appendix R, nice prescriptive
24 regulation, I don't want to do that any more, I can
25 develop a probabilistic argument that says changing it

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1 to something that I do like and I can develop a risk
2 basis on that and come to the staff and ask them to
3 approve it and never say a word about 805.

4 MR. EMERSON: George's concern is one that
5 --

6 CHAIRMAN APOSTOLAKIS: What I'm saying is
7 don't mention 805, but that's what you're doing.

8 MEMBER SIEBER: No, if you use 805, you
9 don't have to apply with an approved method. You
10 don't have to apply for the exemption. You just go
11 and do it, make a record and then once a year, like
12 50.59 changes, they come in and --

13 CHAIRMAN APOSTOLAKIS: The first time you
14 have to come to the staff.

15 MEMBER SIEBER: First time, yeah.

16 CHAIRMAN APOSTOLAKIS: And that's like the
17 first time what Dennis is talking about. All I'm
18 doing is I'm developing a risk argument. Then I have
19 to show --

20 MEMBER SHACK: No, ever time you want an
21 exception --

22 CHAIRMAN APOSTOLAKIS: That's the only
23 difference.

24 I can't imagine that's what they want.

25 MEMBER SIEBER: The basic rules for 805,

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1 you know, separation, barriers and that kind of stuff,
2 where you have to end up after the fire is over are a
3 little different.

4 CHAIRMAN APOSTOLAKIS: Yes. Right now,
5 whether I like it or not, I comply with Appendix R
6 with exemptions. So the starting point is the same
7 for everybody.

8 MEMBER SIEBER: Right.

9 CHAIRMAN APOSTOLAKIS: I want to use a
10 risk argument now. I don't like it that they want me
11 to have this cable up for 10,000 feet. I'll do it
12 only for 6,000. I'm going to use a risk argument.
13 That means automatically I'll have to have some
14 baseline PRA, otherwise, I can't place it in context.
15 I have to use some model to calculate a difference in
16 risk from the 10,000 to 6,000.

17 MEMBER SIEBER: That's right.

18 CHAIRMAN APOSTOLAKIS: I have to have a
19 delta CDF. I'll have to argue that my
20 defense-in-depth is not suffering very much, right?
21 The usual arguments. And I don't mention 805.

22 MEMBER SIEBER: Right.

23 CHAIRMAN APOSTOLAKIS: Then I want to do
24 an 805. Tell me what I would do different? I would
25 do the same thing.

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1 MEMBER SIEBER: You would do two things.
2 You would apply to use 805 in your plant and that
3 would probably be easily granted.

4 CHAIRMAN APOSTOLAKIS: If the methods have
5 already been approved.

6 MEMBER SIEBER: Well, they approve the
7 methods. You pick from among the methods they approve
8 and then for the very first time that you use it, you
9 say I'm using -- you send docket and say I'm using 805
10 to do this and this and this. Here's my --

11 CHAIRMAN APOSTOLAKIS: So for the very
12 first time, they're the same.

13 MEMBER SIEBER: Right.

14 CHAIRMAN APOSTOLAKIS: There's no
15 difference.

16 MEMBER SIEBER: There's another step for
17 805.

18 CHAIRMAN APOSTOLAKIS: Except for the
19 ultimate state.

20 MEMBER SIEBER: You have to get approval
21 to use it.

22 MR. EMERSON: This discussion points out
23 that the fact that there will be a spectrum of areas
24 where the licensee will fall into, ranging from full
25 Appendix R to full 805. And we, in developing our

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1 implementing guidance are trying to structure it so
2 that wherever the licensee finds himself in that
3 spectrum, he has a consistent set of guidance so that
4 he can move farther along.

5 MEMBER POWERS: Let me understand. My
6 reading of what the staff said was that one is either
7 805 or one is not, that one can't go through and say
8 I'm 805 here. This part of 805 here and for the rest
9 of it I'm Appendix R.

10 MR. EMERSON: I would say in my view that
11 hasn't been completely worked out yet, how the partial
12 cases will be handled, whether you use a declaration.

13 MEMBER ROSEN: It seemed to be pretty
14 clear to me there's a moment in time when the licensee
15 sends a letter in that says I'm adopting 805. If you
16 don't have -- and the staff says okay, in a very
17 simple process. If you don't have such a letter,
18 you're not under 805. That's very clear.

19 MEMBER SIEBER: But the transfer --

20 MEMBER ROSEN: You can still use the
21 methods, but that may be endorsed in the 805 process,
22 but when you do and you want to make a change you have
23 to ask for an exemption.

24 MR. EMERSON: So there are certain
25 fundamental things you have to do to put yourself in

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1 that camp.

2 MEMBER SIEBER: But to move from Appendix
3 R to 805 is supposed to be a bumpless transfer. In
4 other words, if you comply with Appendix R, you
5 automatically comply with 805 and you use 805 when you
6 want to make a change and you do that by area by fire
7 area. So you may have a plant that is 90 percent
8 Appendix R and 10 percent where you have modeled, 10
9 percent is the fire area that you have modeled.

10 CHAIRMAN APOSTOLAKIS: I don't think that
11 there is such a thing as complying with NFPA 805.
12 There is nothing to comply with. It tells you what to
13 do if you want to make some changes.

14 MEMBER POWERS: George, there are a bunch
15 of things in 805 you have to comply with.

16 CHAIRMAN APOSTOLAKIS: Like what?

17 MEMBER POWERS: Eric gave us a whole slide
18 of them.

19 CHAIRMAN APOSTOLAKIS: These are already
20 complied with.

21 I already do that.

22 MEMBER POWERS: And you're going to have
23 to comply tomorrow and the next week and the week
24 after that.

25 CHAIRMAN APOSTOLAKIS: Right.

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1 MEMBER POWERS: And so there's a lot in
2 805 you have to comply with.

3 CHAIRMAN APOSTOLAKIS: If I say today, I
4 have my plant that's operating. I declare as of noon
5 today, I comply with NFPA 805, but I'm not going to do
6 anything to my fire protection, am I going to change
7 anything? No. Unless I decide to change something,
8 NFPA 805 doesn't do anything to me.

9 MS. BLACK: This is Suzanne Black.
10 Actually, 805 applies in all modes of the plant
11 operation, whereas Appendix R only applied for the
12 operating mode. So there are certain things that you
13 would have to consider in putting your fire protection
14 plan up front before you started to use 805.

15 CHAIRMAN APOSTOLAKIS: If I want to change
16 something.

17 MS. BLACK: If you want to change
18 something.

19 CHAIRMAN APOSTOLAKIS: If I don't want to
20 change anything, I don't have to change anything.

21 MEMBER POWERS: George, if you said I
22 don't want to comply with 805, I'm currently in
23 compliance with branch technical position and today I
24 declare I am 805, there are a lot of things we have to
25 do. One is that you have to do a site safety

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1 assessment.

2 CHAIRMAN APOSTOLAKIS: If I don't plan to
3 go to the NRC and make some changes, I don't have to
4 do any of that.

5 MEMBER ROSEN: Yes, you do. If you're in
6 compliance with 805, you've done a site safety
7 assessment.

8 CHAIRMAN APOSTOLAKIS: I would be crazy to
9 say I'm in compliance with 805 when I already have
10 approval of Appendix R if I don't plan to change
11 anything.

12 MEMBER ROSEN: No, not crazy. I think
13 you'd be crazy like a fox, myself, because although
14 you will have to look at fire protection provisions
15 during shutdown which is the expansion that Suzie just
16 mentioned, you now have a world of flexibility to undo
17 the prescriptiveness of Appendix R where it doesn't
18 make any sense.

19 CHAIRMAN APOSTOLAKIS: Undoing means
20 changing something.

21 MEMBER ROSEN: Yes.

22 CHAIRMAN APOSTOLAKIS: And if I don't want
23 to change anything, nothing happens.

24 MEMBER ROSEN: You still have to --

25 MEMBER SHACK: You get an up front cost.

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1 MEMBER ROSEN: Yes.

2 CHAIRMAN APOSTOLAKIS: Only if I want to
3 change something.

4 MEMBER SHACK: No, if you went with 805.

5 MEMBER POWERS: Why are you denying that
6 you have to do a site safety assessment?

7 CHAIRMAN APOSTOLAKIS: Because the whole
8 purpose of this, it seems to me, is to justify
9 changes.

10 MEMBER POWERS: No, it's not.

11 CHAIRMAN APOSTOLAKIS: Okay.

12 MR. EMERSON: You can also use it to put
13 yourself on a position to address future issues as
14 well without being subject to Appendix R directly.

15 CHAIRMAN APOSTOLAKIS: And future issues
16 again means changes, right? It might lead to changes.

17 MEMBER ROSEN: Revealed problems and then
18 you have some flexibility. Right now, you don't have
19 any.

20 It's not something you want to do by
21 volition, but the battleship in the desert is an
22 analogy which is you find something, you don't know
23 how the battleship got there, but you find something
24 and now the question is it acceptable.

25 CHAIRMAN APOSTOLAKIS: Right.

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1 MEMBER ROSEN: And under Appendix R, it
2 may very well not be, but under this NFPA 805, you get
3 a chance to do a rational engineering analysis and so
4 it really doesn't matter.

5 CHAIRMAN APOSTOLAKIS: I agree with that,
6 because that's also change from where I am.

7 MEMBER WALLIS: Okay, so we'll agree there
8 is some change then.

9 CHAIRMAN APOSTOLAKIS: Huh?

10 MEMBER WALLIS: Can we move on, George?

11 CHAIRMAN APOSTOLAKIS: We can always move
12 on.

13 MEMBER ROSEN: Not if you, as the
14 Chairman, is asking questions.

15 CHAIRMAN APOSTOLAKIS: Oh, come up.

16 MEMBER ROSEN: Fred, let's see whether or
17 not George will ask questions.

18 Go ahead to your second bullet.

19 MR. EMERSON: Again, this slide indicates,
20 Slide 6 indicates the industry positions and if I can
21 work my way through the next four slides, I'll address
22 each of those.

23 Slide 7, please?

24 (Slide change.)

25 MR. EMERSON: The use of risk information

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1 is a fundamental element. There's a fundamental
2 reason why we're supporting and participating in this
3 rulemaking is because we would like to see a lot more
4 ability to use in a structured and regulatory
5 environment, risk and performance tools.

6 We just talked about whether the tools
7 should be useful for all licensees or not and it's a
8 strong tenet of our position that they should be.
9 They should be able to avail themselves regardless of
10 what licensing basis they choose to put themselves
11 under. And a structured process for doing that needs
12 to be in place for both ends of the spectrum.

13 We see this as potentially an evolutionary
14 process where a licensee may choose to use 805 to
15 address certain specific issues that he's dealing with
16 at his plant and so he will change his licensing basis
17 to allow himself to address that specific issue, but
18 he may also see other issues down the road where he
19 finds it advantageous, so there may be a transition
20 process associated with his adoption of it and we
21 would like that to be a seamless process wherever he
22 chooses to place himself in that spectrum.

23 CHAIRMAN APOSTOLAKIS: This issue related
24 to what the Commission said some time ago that okay,
25 the risk-informed approach is an alternative,

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1 voluntary alternative, but you can't just pick and
2 choose. You can't say here, I'm going to do risk,
3 here I'm going to do something else and it seems to me
4 that's what you're arguing here or how is it
5 different?

6 MR. EMERSON: There's been a lot of
7 discussion over what cherry picking is and whether
8 this constitutes cherry picking. On whether you
9 should adopt -- you could adopt 805 on a fire area by
10 fire area basis or on an exemption by exemption basis.
11 If you didn't want to adopt 805.

12 And there's the extent -- I think there's
13 a fair amount of agreement between the staff and the
14 industry now that partial use in some fashion is
15 acceptable and by partial use the industry has
16 consistently stated that we should be able to use the
17 tools as needed within the current environment, not
18 necessarily to change one fire area to be the 805 and
19 the rest of them be Appendix R.

20 MEMBER POWERS: This continues to be a
21 source of confusion to me because I read words that I
22 find acceptable which says 805 is an integrated whole.
23 Thou shalt not adopt it piecemeal.

24 But I keep seeing these words that say
25 partial use. If you're just talking about tools, I've

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1 got no troubles about that, don't even know why it's
2 an issue, but that's between you and the staff.

3 Is it very clear that if you are 805, you
4 are 805? You're not Chapter 2 of 805 and something
5 else for everything else.

6 CHAIRMAN APOSTOLAKIS: Well, what he's
7 saying is yes. If you're in 805, you're in 805. But
8 he's also saying if you are in Appendix R, in some
9 parts of it you can be risk-informed.

10 MEMBER POWERS: And has that ever been a
11 question? I mean for the last four years has there
12 ever been a question about that?

13 CHAIRMAN APOSTOLAKIS: I don't know. Has
14 there?

15 MEMBER ROSEN: No. Absolutely not. Any
16 time you want to ask the staff for an exemption from
17 Appendix R requirements, you can. And 900 cases of it
18 are --

19 CHAIRMAN APOSTOLAKIS: Using risk
20 information?

21 MEMBER POWERS: Nine hundred cases of
22 them, no risk information was ever used. Most of them
23 are
24 -- I just can't -- it doesn't fit.

25 CHAIRMAN APOSTOLAKIS: Can you use risk

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1 information for this little fire area and for the rest
2 of the plant Appendix R?

3 MEMBER ROSEN: If you go through the
4 exemption process, I think so.

5 CHAIRMAN APOSTOLAKIS: But the exemption
6 process doesn't allow risk? Does it allow for risk?

7 MEMBER SIEBER: Sure.

8 MR. WEISS: This is Eric Weiss of the
9 staff. The staff is prepared to entertain an
10 exemption on any basis, whether it's risk or
11 performance-based or whatever. And that's not to
12 prejudice the outcome of the review. We can't say
13 simply because one puts risk at the top of the page
14 that the exemption is going to be granted, but I'm
15 sure the staff would entertain an exemption on any
16 basis and give it careful consideration.

17 MEMBER POWERS: And if the basis came in
18 on risk they have a regulatory guide to help them
19 assess that. It's one you're reasonably familiar
20 with.

21 CHAIRMAN APOSTOLAKIS: And my point is
22 that if that's the route you want to take, you're in
23 805.

24 MEMBER POWERS: No.

25 CHAIRMAN APOSTOLAKIS: Okay.

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1 MEMBER SHACK: Can you explain to us --
2 I'm sort of perplexed like Dana, it seems to me. The
3 tool is available. Sure, they're available. What is
4 the point of contention here? That's what I'm
5 missing.

6 MR. EMERSON: The point of contention was
7 when we first started talking about rulemaking to
8 adopt NFPA 805, there was some discussion as to
9 whether partial use was allowed, whether you could --
10 a licensee who chose not to adopt the standard could
11 make any use whatsoever of the tools and from the
12 beginning we've been proposing that the licensee who
13 chooses to maintain his existing licensing basis
14 should not be shut out from the use of the tools that
15 have been crafted in NFPA 805 just because he chooses
16 not to adopt it as an alternate licensing basis.

17 So what we've been working on is ways that
18 he can use those tools on a structured environment.

19 CHAIRMAN APOSTOLAKIS: I guess it's too --

20 MEMBER SHACK: The magic words, structured
21 environment, I guess is the point of contention.

22 MR. EMERSON: So if a licensee chooses not
23 to adopt 805, but he sees a use for risk tools to
24 support an exemption request, that he understands the
25 bounds on his use of the tools and the acceptable

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1 nature of his use of the tools when he submits that
2 request and that should be consistent with the way the
3 tools are used by the licensee who does choose to go
4 to 805. So that at some point if he chooses to make
5 a transition, the process, if he's used are consistent
6 from one to the other.

7 MEMBER ROSEN: Fred, we've been keeping
8 you from moving forward, but let's just see what we
9 can do in the next few minutes.

10 MR. EMERSON: Okay. Slide 8, please?

11 (Slide change.)

12 MR. EMERSON: This really isn't an issue.
13 It's been a fundamental tenet from the beginning of
14 our discussion of 805, but it's never been an issue
15 with the staff who have always agreed with this
16 contention.

17 Slide 9, please.

18 (Slide change.)

19 MR. EMERSON: The transition process is
20 obviously of great interest to any licensee who is
21 going to be contemplating changing licensing bases.
22 The transition needs to be relatively uncomplicated or
23 as uncomplicated we can make it and still maintain an
24 acceptable regulatory process.

25 The mere fact of a transition does not

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1 either make the licensee more safe or less safe. And
2 all that means is that he has a different regulatory
3 environment in which to consider changes to his plan.

4 It's critical that the process, the
5 transition process be well understood by both the
6 licensee and the staff. The licensee has a clear idea
7 of where his licensing basis is which I'll touch on in
8 a minute throughout the transition process. The
9 licensee knows what he has to submit and what he can
10 retain; when a license amendment is required and when
11 it isn't. All those sorts of things need to be
12 addressed very clearly.

13 Now uncomplicated doesn't necessarily mean
14 easy. And we would expect on the industry side that
15 a licensee would have to do a fair amount of work to
16 identify his current licensing basis and how he stacks
17 up against provisions of 805 that he would either like
18 to take advantage of or bring forward an alternate
19 approach for, but nonetheless, it will be a fair
20 amount of work for the licensee to put himself in 805
21 space. What he has to submit may not reflect the
22 amount of work he has to do, but we want him to be
23 thoroughly prepared.

24 Slide 10, please.

25 (Slide change.)

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1 CHAIRMAN APOSTOLAKIS: Even after the IEEE
2 work, there would be a lot of work?

3 MR. EMERSON: Well, as I say, the licensee
4 needs to -- he needs to have a thorough understanding
5 of his current licensing basis and he has to have a
6 thorough understanding of what alternate approaches he
7 might have to make to adopt 805. For instance, he has
8 to consider all of the fundamental elements of Chapter
9 that Eric had on his slide. He wants to know how his
10 current licensing basis stacks up against each of
11 those elements. He may choose to say okay, I can
12 agree with what Chapter 3 says so in this particular
13 -- in one particular -- for one fundamental element he
14 may say Chapter 3 is okay. For another, he may say I
15 have my own licensing basis well established that I'd
16 like to bring forward in place of this and that's also
17 allowed by the standard. Or he may have a third
18 method that he'd like to propose in which case the
19 staff has to review it, but he needs to consider all
20 of those things to see how -- what the level of effort
21 will be for him to move to a different licensing
22 basis.

23 CHAIRMAN APOSTOLAKIS: Well, but what I'm
24 saying is that the fact that the licensees have
25 already done an IPEEE would be a significant --

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1 MR. EMERSON: That's a significant help,
2 yes.

3 MEMBER POWERS: Do you really think so?
4 It seems to me that when we went through the
5 functional fire protection inspections that licensees
6 were spending on the order of a million just to get
7 their licensing bases in order, even though they had
8 done an IPEEE.

9 MR. EMERSON: All I'm saying is that --

10 CHAIRMAN APOSTOLAKIS: It works if they
11 hadn't done the IPEEE.

12 MEMBER POWERS: I don't --

13 CHAIRMAN APOSTOLAKIS: The first step is
14 always --

15 MEMBER POWERS: I don't think the IPEEEs
16 that were done were either unduly laborious or very
17 helpful.

18 CHAIRMAN APOSTOLAKIS: Either what?

19 MEMBER POWERS: Unduly laborious or very
20 helpful.

21 MEMBER ROSEN: I think that's besides the
22 point.

23 MEMBER POWERS: Yeah, it's the thorough
24 understanding of the licensing basis and that's a big
25 job.

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1 MR. EMERSON: One of the most important
2 points of the transition is that the licensing basis
3 has to be clearly understood. If you're talking about
4 partial implementation in any form, if you're just
5 talking about selected use of it, if you're talking
6 about a transition process that changes through time
7 --

8 MEMBER POWERS: You keep choosing this
9 word that I just don't understand.

10 MR. EMERSON: What's that?

11 MEMBER POWERS: This "partial
12 implementation".

13 MR. EMERSON: Let me --

14 MEMBER POWERS: I think you need to say
15 805 is or it is not.

16 It's an integrated whole. You can't use
17 half of it.

18 MR. EMERSON: You may choose to put
19 yourself under the rule with 805. You may not use it
20 in all areas of your plant immediately. You may use
21 it initially for changes in only a few areas of your
22 plant. But you have placed yourself under 805. Both
23 the licensee and the staff need to understand where
24 you've chosen to apply that throughout the process,
25 since it won't be an instantaneous transition.

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1 CHAIRMAN APOSTOLAKIS: Isn't that what
2 that big box with deterministic and probabilistic --
3 I mean that's what it does.

4 MR. EMERSON: That's the process of
5 analyzing a change once you have placed yourself in
6 this area.

7 CHAIRMAN APOSTOLAKIS: Right.

8 MR. EMERSON: So that when you implement
9 a change, you can select a technique.

10 CHAIRMAN APOSTOLAKIS: Is there a good
11 example somewhere with specifics as to what exactly
12 you mean? I will not be in 805, but I'm allowed to
13 use the tools? I don't understand that.

14 MR. EMERSON: Well, the example is if you
15 wanted an exemption request to address a fire barrier
16 so you discovered your fire barrier and you're in a
17 certain fire area was not what you thought it was --

18 CHAIRMAN APOSTOLAKIS: Right.

19 MR. EMERSON: But you thought you had good
20 grounds for leaving it the way it was instead of
21 making a repair, you could -- or making a design
22 modification, you could utilize 805 tools to support
23 an exemption request instead of making the design
24 change.

25 CHAIRMAN APOSTOLAKIS: Okay, so that

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1 exemption request now would require me to calculate a
2 delta CDF, would it not?

3 MR. EMERSON: It may well require that.

4 CHAIRMAN APOSTOLAKIS: Well, there's no
5 other way.

6 MEMBER POWERS: Yes, there is.

7 CHAIRMAN APOSTOLAKIS: Like?

8 MEMBER POWERS: Any way -- on the same
9 basis that 960 exemption --

10 CHAIRMAN APOSTOLAKIS: Then I'm not using
11 risk information.

12 MEMBER POWERS: It didn't say anything
13 about using risk information.

14 CHAIRMAN APOSTOLAKIS: That's what he
15 says, the tools are risk tools.

16 MEMBER ROSEN: Not necessarily. There's
17 fire modeling. You can model the effect of the fire.
18 It's not a risk analysis. It's an engineering
19 analysis.

20 CHAIRMAN APOSTOLAKIS: That's what you
21 mean?

22 MR. EMERSON: That's one possibility you
23 could use risk or you could use fire modeling.

24 CHAIRMAN APOSTOLAKIS: Those tools are not
25 used in Appendix R?

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1 MEMBER ROSEN: Fire modeling, no.

2 CHAIRMAN APOSTOLAKIS: Okay, now I've got
3 my example. But the moment you get into risk though,
4 it's a different ballgame.

5 If by tools you mean some code that
6 calculates thermal fluxes, okay, fine.

7 MEMBER ROSEN: That's just one of the
8 tools.

9 MEMBER SIEBER: But then it's a risk
10 analysis, another tool, right? But used outside of
11 805 for an ordinary submittal for an exception.

12 CHAIRMAN APOSTOLAKIS: I disagree.

13 MEMBER ROSEN: What's where you disagree,
14 but the risk analysis simply says yeah, there could be
15 a big fire here and it could burn everything down, but
16 it doesn't matter, here's why.

17 The stuff that burns down is not risk
18 significant. It doesn't help me get the safe
19 shutdown, either hot or cold. That's typical of a
20 risk analysis.

21 It's very complicated. Please go ahead.

22 MR. EMERSON: Again, the fundamental point
23 here is that the licensee and the NRC both need to
24 understand what the licensing basis is throughout the
25 transition process.

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1 Slide 11, please.

2 (Slide change.)

3 CHAIRMAN APOSTOLAKIS: But you've got to
4 play devil's advocate now. Are you saying that if I
5 don't want the transition, I don't have to have a
6 thorough understanding of my licensing basis?

7 MR. EMERSON: No, I didn't say that.

8 CHAIRMAN APOSTOLAKIS: You didn't say
9 that, okay.

10 MR. EMERSON: The licensee should --

11 MEMBER POWERS: But the truth of the
12 matter is that based on the sampling of four plants
13 that right now it is a struggle to coil together what
14 the current licensing basis is because in many cases
15 this is now a 21-year old assembly of information.

16 MEMBER ROSEN: But Dana, some plants have
17 invested in design basis documents and have their fire
18 protection design basis well documented.

19 MEMBER POWERS: Well, I know four of them
20 that do. And you're hinting to me there may be a
21 fifth, but I know four that definitely got theirs in
22 order. But I also know it took a substantial effort
23 to do that.

24 MEMBER ROSEN: It did.

25 MR. EMERSON: I'll try to move through the

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1 rest of the slides fairly quickly.

2 Slide 11, please.

3 (Slide change.)

4 MR. EMERSON: The current rule language as
5 the staff indicated, they have put several drafts of
6 the rule language, made them available on the web to
7 stakeholders and we've had several interactions with
8 the staff to discuss these various drafts. The
9 current draft was put out, I think last week. It's
10 the third draft that's been made available. We have
11 some positive comments about it. We have some
12 concerns about it, but these concerns, I would like to
13 downplay a bit because I think these will be addressed
14 as we move forward with the staff, them developing the
15 rule, us developing the guidance and we'll get these
16 addressed.

17 Slide 12, please.

18 (Slide change.)

19 MR. EMERSON: The implementing guidance is
20 being written as we speak. I'd only like to emphasize
21 -- I don't have a draft to share with you yet. I'd
22 just like to emphasize quickly the key elements of it.
23 The main body of the implementing guidance is how to
24 go through the process of making a transition. The
25 key elements of that are what the process is, what the

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1 options the licensee has, what guidance there may be
2 for a licensee choosing to maintain his existing
3 licensing basis with the possible use of 805 tools or
4 guidance for how to adopt a new licensing basis. And
5 then lastly, how to maintain configuration control
6 over his licensing basis once he has made the
7 transition.

8 Slide 13, please?

9 (Slide change.)

10 MR. EMERSON: The appendices in the
11 implementing guidance are basically how one looks at,
12 interprets or uses the provisions of NFPA 805 itself,
13 how you do the -- how you look at the program
14 fundamentals, how you establish performance criteria,
15 identify fire hazards in your systems structures and
16 components and how you would do an evaluation against
17 the performance criteria.

18 Overall, our schedule for completing the
19 implementing guidance is in parallel with the rule.
20 As I said, we'll have a first draft of the NRC staff
21 later this month. We'll have a second draft after the
22 Commission has issued their instructions to the staff,
23 maybe later this fall. And the third draft in the
24 spring.

25 Slide 14, please.

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1 (Slide change.)

2 MR. EMERSON: The next several slides I've
3 identified some potential barriers, hurdles. These
4 all fall into the category of things that need to be
5 considered and worked out as we move forward with
6 developing the rule language and the guidance. They
7 need to be addressed, as I said, either in the
8 language, in the statements of consideration or in the
9 implementing guidance.

10 One of the areas is where a license
11 amendment may or may not be required for a submittal,
12 for either an initial or subsequent submittal. One is
13 the definition and use of the current licensing basis,
14 if one makes the transition, to what extent can the
15 licensee bring forward elements of his current
16 licensing basis to replace elements of 805. Those are
17 several technicals issues. We've had on-going
18 discussions with the staff on exemptions -- I'm sorry,
19 exceptions to the rule that may or may not --
20 exceptions in the rule to the standard that may or may
21 not be necessary and again, we're continuing to
22 discuss these with the staff.

23 Slide 15.

24 (Slide change.)

25 MR. EMERSON: Because 805, I'm using 805,

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1 requires some new elements that are not currently part
2 of Appendix R, areas like monitoring and shutdown and
3 low power modes, we classify these as potential
4 hurdles, only because we haven't dealt with them
5 before and we will have to be able to do that
6 successfully to create a successful rule and matching
7 implementing guidance.

8 Slide 16, please.

9 (Slide change.)

10 MR. EMERSON: The benefits we see, we see
11 an allowance for the use of risk methods and resolving
12 current fire protection issues that neither plant
13 specific or generic issues that the licensee may be
14 confronting. We see it as being able to address the
15 four NRC organizational goals or pillars of
16 maintaining safety and increasing public confidence
17 and reducing regulatory burden and increasing
18 efficiency and effectiveness. We see this as being
19 able to address all of those.

20 We see it being able to focus fire
21 protection programs on things that are more
22 risk-significant. Right now, we don't have that
23 capability under Appendix R, applying resources where
24 they make the most sense. We see it as providing a
25 consistent method for supporting exemptions,

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1 deviations, 50.59 and 86-10 evaluations and we see it
2 as providing, as requiring a seamless transition
3 process from the deterministic to the risk-informed
4 regulatory framework.

5 Also, we see the use of risk methods. If
6 you integrate a consideration of fire risk into
7 overall plant risk that will help us resolve issues
8 for fire protection interests and other plant
9 operating interests are competing and it allows us to
10 evaluate both on an equal basis, on an equal risk
11 basis.

12 Slide 17, please.

13 (Slide change.)

14 MR. EMERSON: The subcommittee, when I
15 spoke on Tuesday asked me to hazard a guess as to how
16 many licensees might adopt this rule, so what I'd like
17 to do is to lay out a scenario and this is really what
18 I think the way it will unfold and how licensees will
19 consider and use this.

20 First, we -- I see that we need to
21 complete the current efforts that are on-going to
22 improve our ability to use fire risk. If the ANS fire
23 PSA standard development, I think that will be a
24 useful fundamental point to buttress the use of risk
25 information and I think the EPRI and research effort

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1 to requantify fire PRAs and improve our ability to use
2 fire risk techniques will also help there.

3 Secondly, I see a few plants and we saw an
4 example during the subcommittee meeting of one
5 utility, at least one, not the only that would be
6 considering using this rulemaking. The plants that
7 are most likely to look upon this favorably are ones
8 that are used to using risk techniques in their normal
9 plant operations. And have established PRAs that they
10 can and have relied on. Those will be the plants that
11 are most likely to adopt this first. I see them using
12 the tools and the 805 basis for successfully and in a
13 few evaluations and then continuing to expand their
14 use of it as they have successful regulatory
15 applications.

16 Slide 18, please.

17 (Slide change.)

18 MR. EMERSON: Once the rest of the
19 industry sees successful use and successful regulatory
20 interactions, using risk tools in the fire area, I
21 think more and more plants will move to adopt this and
22 they'll see the benefits. The benefits, I think, will
23 be too obvious to ignore and I think you'll see plants
24 improving their own risk tools and their ability to
25 use them in this structured environment the 805 will

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1 afford.

2 So again, I eventually expect to see most
3 plants using this to some degree and I put a big if
4 there.

5 Slide 19, please.

6 (Slide change.)

7 MR. EMERSON: I think it depends a lot on
8 what the staff and the industry can accomplish in the
9 next 15 or so months as we develop the rule language
10 and the implementing guidance. We can make this a
11 clear rule, a useful rule and a rule that's soundly
12 supported by clearly understood guidance. If we're
13 not successful, we can create a rule that's more
14 difficult to apply and is less attractive to someone
15 who is considering taking advantage of it. So that's
16 the challenge ahead of us now is to create an
17 effective set of combinations --

18 MEMBER WALLIS: Are these generic
19 statements or have you identified barriers and
20 hurdles?

21 MR. EMERSON: There are some barriers and
22 hurdles that I listed on the previous slides.

23 MEMBER WALLIS: Yes, those are the ones
24 you listed before?

25 MR. EMERSON: I'm sure there will be

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1 things that come up that we haven't foreseen.

2 MEMBER POWERS: The problem I have is when
3 I compare your lower hurdles to your list of hurdles,
4 one of those hurdles was dealing with the shutdown
5 mode of operation. Don't you mean surmount hurdles?

6 MR. EMERSON: That might be a more
7 accurate way to state it.

8 MEMBER POWERS: I don't think you want to
9 say oh, well, let's just take the shut down
10 requirements out of 805.

11 MR. EMERSON: No, that's not what I
12 intended.

13 That completes my presentation.

14 MEMBER ROSEN: Does the Committee have any
15 further comments on this subject?

16 MEMBER POWERS: Yeah, are we discuss
17 associated circuits?

18 MEMBER ROSEN: Well, we didn't intend to
19 do that.

20 Dana asked whether we were going to
21 discuss associated circuits, the NEI document, the
22 discussion the subcommittee had on that, NEI 00-01 and
23 we did not intend to go into that today. It's not as
24 fully far along, Dana, as 805. There is clearly a
25 link between the two. Ultimately, I would hope that

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1 NEI --

2 MEMBER POWERS: Well, where do we stand?

3 MEMBER ROSEN: Will, in fact, be one of
4 the methods adopted by the Regulatory Guide and that's
5 the linkage.

6 MEMBER POWERS: Where does the staff stand
7 on associated circuit analysis? We've suspended
8 inspecting on it. Are we still in suspension?

9 MR. HANNON: Yes, this is John Hannon. We
10 currently have the hiatus on the inspection in place
11 and are looking to resume inspection some time in the
12 March time frame of 2003, given we can reach a
13 consensus on the appropriate approach including the
14 risk-informed aspects with the stakeholders.

15 MEMBER ROSEN: Are there any other
16 Committee questions? If not, seeing none, I turn it
17 back to you, Mr. Chairman.

18 CHAIRMAN APOSTOLAKIS: We didn't really
19 discuss the standard itself, did we, the contents? It
20 was all process stuff.

21 MEMBER ROSEN: I think we discussed it in
22 general terms, but the --

23 CHAIRMAN APOSTOLAKIS: But what it exactly
24 does was not discussed.

25 MEMBER POWERS: Well, we've been through

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1 it.

2 CHAIRMAN APOSTOLAKIS: Two years ago when
3 we rejected it.

4 MEMBER POWERS: We didn't reject it. We
5 just said we didn't anticipate that many people would
6 work with it. Now we're told that eventually all of
7 them are going to do it.

8 CHAIRMAN APOSTOLAKIS: It was not
9 risk-informed at the time.

10 Anyway we'll break until 10:30.

11 Yes? Certainly, come in.

12 MR. GUNTER: Paul Gunter, Nuclear
13 Information Resource Service. The issue of public
14 confidence, I think, is what I'd like to speak to
15 because as an onlooker into the staff meetings on this
16 process, I think that -- as well as the ACR meeting,
17 I think that we get a sense that -- of a clear warning
18 that there's going to be a lot, even more problems in
19 context when this enters into the inspection and more
20 importantly the enforcement process. I can't help but
21 think that what we are seeing is, in fact, another
22 overlay to a very complicated labyrinth that we've
23 seen since the original introduction or even the fight
24 over the introduction of Appendix R and now we're
25 about to have another overlay on this whole

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1 complicated, but very significant contributor to core
2 damage frequency. And the public confidence is really
3 looking for areas where we can trust that there's
4 going to be enforcement. And frankly, we don't see
5 that happening right now. And more particularly, our
6 concern is that this is just going to confound the
7 whole inspection process.

8 I guess what I would like to get some
9 sense of from staff is how -- just to speak to the
10 issue of how this is going to make the inspection
11 process more efficient and more particularly how we
12 can get out of a limbo of argument and contest to
13 effective enforcement.

14 CHAIRMAN APOSTOLAKIS: Any reaction from
15 the staff?

16 MR. WEISS: Yes, this is Eric Weiss. We
17 recognize Mr. Gunter's concerns. Let me say this. We
18 know that we have a challenge in front of us, but we
19 also a vision for how this will work and we recognize
20 that training is needed. We're conducting quarterly
21 training of inspectors now. That's one of the things
22 we've instituted in our branch. We're prepared to
23 give the inspectors tools and training in this area
24 and without going into a lot of detail, let me say
25 part of the vision for how this would work is that

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1 inspectors are good at certain things. They're good
2 at determining whether approved methods have been
3 used, whether the people that use them are qualified
4 to use them, the inspectors are good at determining
5 whether the configuration that was in the design was
6 implemented properly in the plant and all of those
7 things have yielded big improvements in safety and
8 maintaining safety.

9 And we're prepared to meet that challenge.
10 We think that 805 will make the process more efficient
11 when we can construct a set of inspection criteria
12 that tied to those types of things.

13 Conversely, I can see that if we do a bad
14 job, if we ask the inspectors to go out and duplicate
15 the analysis that's being done in fire protection,
16 that would not be efficient. We recognize a challenge
17 and I think we can make it more efficient by
18 constructing the inspection process appropriately.

19 CHAIRMAN APOSTOLAKIS: Any further
20 comments? Okay, we'll recess until 10:35.

21 (Off the record.)

22 CHAIRMAN APOSTOLAKIS: Next item is
23 generic resolution of voids in the concrete
24 containment and this is under the strong leadership of
25 Dr. Bonaca.

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1 VICE CHAIRMAN BONACA: Thank you so much,
2 Mr. Chairman. In March 2002, the subcommittee on
3 License Renewal in Florida City to review the SER of
4 Turkey Point application for license renewal. During
5 that meeting, a member of the public expressed
6 concerns with voids identified in the containment
7 walls of Turkey Point during the steam generator
8 replacement in the 1980s.

9 At the meeting, we requested that during
10 the April, full ACRS meeting, the staff presented to
11 ACRS the following: (1) if and how the issue was
12 resolved at Turkey Point; and second, how the licensee
13 and the staff had addressed the generic implications
14 of Turkey Point findings including communications or
15 generic implications at the other plants.

16 At the April meeting, the staff and
17 licensee made a convincing case that the issue was
18 properly resolved at Turkey Point. However, they
19 didn't have sufficient time apparently to find how the
20 issue was communicated or addressed generically and
21 they asked for more time to provide this information.

22 Yesterday, we received a memo from Gene
23 Imbro, the Division of Engineering, who is here. You
24 have a copy of that memo, which I believe convincingly
25 provides, first of all, the tracing of the

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1 communications that took place and also addressed the
2 issue of the fact that there isn't a generic concern
3 with the void in containment. I will let you -- I'll
4 now leave the meeting to Gene Imbro. He'll give us a
5 presentation on these issues.

6 MR. IMBRO: Thank you. It's a pleasure to
7 be here to address you and hopefully resolve this
8 issue, provide you with a little bit of background.
9 I'm the Chief of the Mechanical Engineering and
10 Structural Branch in NRR. With me is Kamal Manoly,
11 he's a Section Chief in the Structural Section and we
12 wanted to talk to you, as Mario said, about assessing
13 the generic applicability of the construction defects
14 that were found at Turkey Point during the steam
15 generator replacement activities during 1982.

16 First slide.

17 (Slide change.)

18 MR. IMBRO: Just by way of background and
19 maybe a little refresher for us all, there are, of
20 course, regulatory measures in place to look at
21 construction defects and actually to control
22 construction. I mean first of all there's the
23 licensees' QA and QC program which complies with
24 Appendix B and which includes, of course, written
25 procedures and process to identify conditions adverse

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1 to quality and corrective actions.

2 In addition to that, is also a reporting
3 requirement in 50.55(e), 10 CFR 50.55(e) where the
4 holder of the construction permit is required to
5 report construction deficiencies that would create a
6 substantial safety hazard. And superimposed above all
7 of this is the NRC's construction inspection program
8 that was identified or outlined in our Inspection
9 Manual, Chapter 2512 and for the later plants, of
10 course, this included a construction resident. There
11 was direct observation of construction activities
12 probably during -- for whatever vintage plant we're
13 talking about and they looked at evaluation of the
14 licensee and contractor performance and they evaluated
15 the licensee's control over the activities and of
16 course they talked to people involved with the
17 process. So it's kind of a multi-layer control here
18 of construction activities that we just wanted to
19 point out.

20 To respond to the issue at hand in terms
21 of whether or not the defect found at Turkey Point had
22 generic applicability we started out to do --
23 basically revisited what was done by the region, at
24 least in part, back during the 1980s, early 1980s time
25 frame of the steam generator replacement. We did a

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1 search of NUDOCS dating back as it says on the slide
2 to 1968. We looked at a lot of 50.55(e)s. We
3 identified nine areas where defects were found in
4 concrete structures by the QA/QC program and were, in
5 fact, corrected. So I think this provides us with a
6 level of confidence that each QA/QC program in terms
7 of identifying issues and correcting them and the NRC
8 oversight was effective in providing some confidence
9 that these structures do not have significant voids.

10 Just as a little bit of a background,
11 also, most of the voids that were found were located
12 in congested areas of rebar and that would be
13 typically around penetrations or where the base mat
14 joins the containment shell.

15 MEMBER LEITCH: Did you say that nine
16 voids were actually reported or were these
17 deficiencies in the program that QA found?

18 MR. IMBRO: No, nine voids were actually
19 reported, nine different instances of voids were
20 reported and these were corrected.

21 VICE CHAIRMAN BONACA: Some of them during
22 construction?

23 MR. IMBRO: Yes.

24 VICE CHAIRMAN BONACA: And some of them
25 after construction, for example, Turkey Point?

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1 MR. IMBRO: Yes, exactly, exactly.

2 VICE CHAIRMAN BONACA: Was accidentally
3 found.

4 MR. IMBRO: Yes.

5 VICE CHAIRMAN BONACA: Because they
6 changed --

7 MR. IMBRO: The steam generator.

8 VICE CHAIRMAN BONACA: Hatch opening.

9 MR. IMBRO: Yes.

10 VICE CHAIRMAN BONACA: So now we see what
11 happens when they're doing that at Davis-Besse.

12 (Laughter.)

13 MR. IMBRO: Good point.

14 VICE CHAIRMAN BONACA: It's also backed
15 out containment, isn't it?

16 MEMBER SIEBER: Different kind of
17 containment at Davis-Besse.

18 MR. IMBRO: Yeah, I'm not sure who's the
19 A/E, but I'll take your word that it's Bechtel.

20 MEMBER SIEBER: Davis-Besse is a thermos
21 bottle type containment so the strength of it comes
22 from the liner which is pretty thick there.

23 MR. IMBRO: Okay. In addition to the
24 programmatic activities that I just described, there's
25 also for containment a structural integrity test

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1 performed and the structural integrity test is
2 basically to provide assurance, additional assurance
3 that the performance of the containment conforms with
4 the analysis, so what the structural integrity test
5 does is they pressurize a containment to 15 percent
6 above design pressure. The rebar is instrumented.
7 The instrumentation is concentrated primarily around
8 the areas where there are discontinuities in the
9 containment, for example, around penetrations or like
10 the equipment hatch, for example, and other areas
11 where there's a discontinuity in structure, either
12 because of an opening or a change in thickness and
13 they measure at the point where they pressurize the
14 containment to 15 percent above design pressure, they
15 measure the strain in the rebar and they compare it
16 against the A/E analysis. And if the analysis and the
17 strain measurements are reasonably close, then that's
18 an additional point of confidence.

19 For Turkey Point, I think this was --
20 Turkey Point did have a structural integrity test. It
21 passed the structural integrity test. So the rebar,
22 measured strains of the rebar were pretty much as
23 predicted and that would indicate that first of all
24 the void was relatively small and there was no issue,
25 excuse me, no issue with the containment performance

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1 or the containment being able to perform under design
2 conditions at design pressure.

3 MEMBER POWERS: Do we have a data base?
4 It says okay, we run these strength tests and it's
5 been done with voids of various sizes so that we know
6 what the effect of voids of various sizes are.

7 MR. IMBRO: I don't know that answer.

8 MR. MANOLY: This is Kamal Manoly. I
9 don't know of any data base, in particular. It's
10 something that utilities or A/Es do following the
11 design to ensure the range between the design values
12 and the measured values are very close, not so much
13 that it has to be way below, but within the
14 calculation of accuracy.

15 You don't assume these voids when you
16 design concrete.

17 MR. IMBRO: Well, I think in direct answer
18 to your question, I mean the answer is I think no.
19 I'm not 100 percent sure on that. I don't think the
20 staff has ever done an evaluation to determine the
21 effect of the size of the void on the variations and
22 strain.

23 MEMBER POWERS: Well, I guess the
24 contention is well, the voids must be small, because
25 the tests came out so well and it's not clear to me

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1 that the tests test for voids.

2 MR. MANOLY: You're testing for behavior
3 of the structure at design and you assume a
4 homogeneous structure, so if you do have major
5 discontinuities the cross section will behave
6 differently.

7 MEMBER SHACK: Yes, but it would be nice
8 if somebody put a void in the analysis, did the
9 analysis and said --

10 MR. IMBRO: Actually, in fact, please, go
11 ahead, I'm sorry.

12 MEMBER SIEBER: My way of looking at it is
13 a little bit different. I don't think the structural
14 integrity test tells you very much about voids because
15 when you pressurize the containment, basically all the
16 rebar and the concrete and everything else goes under
17 tension.

18 MR. MANOLY: Yes, but in that penetration
19 you get a lot of bending.

20 MEMBER SIEBER: Bending intention, but the
21 concrete cracks. And so -- and concrete isn't good in
22 tension. It's great in compression.

23 So if there's a void there, it's the rebar
24 that's holding the containment together because it
25 does perform well --

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1 MR. IMBRO: Absolutely.

2 MEMBER SIEBER: -- tension and bending.

3 MR. IMBRO: The other point I think I
4 wanted to make too is particularly with respect to
5 Turkey Point. Bechtel at the time that this
6 construction defect was discovered, did reanalyze with
7 the void in place and they found that even with the
8 void in place that none of the allowables were
9 exceeded and the deflections were all --

10 MEMBER SIEBER: I would expect that.

11 MR. IMBRO: I don't know if I could add
12 anything more to that.

13 Go to the next slide.

14 (Slide change.)

15 MR. IMBRO: Recognizing that this -- all
16 this occurred in 1982 or thereabouts, some 20 years
17 ago, there was -- we did search our records and we did
18 find that there was an LER written by the licensee at
19 the time of the steam generator replacement which
20 identified the voids for the containment that were
21 found both for Units 3 and 4.

22 This was evaluated by the region at that
23 time, although none of the specifics are provided in
24 the report as to what they did, but they did consider
25 whether this had generic applicability. And since

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1 there was no further generic action taken, I think
2 it's reasonable to conclude they felt there was no
3 generic applicability and I guess a conjecture, maybe
4 there are a couple of reasons. First of all, the void
5 was quite small, relatively speaking. And also, the
6 fact that the Bechtel analysis demonstrated that the
7 stresses even with the void as found didn't invalidate
8 the analysis or cause allowables to be exceeded.

9 So there was a trail that was the LER was
10 written. The region did follow up on the LER. The
11 LER was closed out and a regional inspection report
12 and the inspection report by our indication says
13 specifically that this LER was evaluated for generic
14 applicability.

15 MEMBER POWERS: When we do analyses for
16 severe accident phenomena, things like direct
17 containment heating, we construct a distribution of
18 loads on the containment and then we construct a
19 fragility curve for the containment. I think what
20 you've discussed here speaks to the issues of
21 containment performance at its design level. Would
22 any of these things, voids and what not, affect this
23 fragility curve that looks at the performance of the
24 containment well above the design level?

25 MR. IMBRO: Well, I mean, I think the

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1 answer is yes. To what degree, I can't really cite.
2 Maybe that's something that may need to be
3 investigated at some point, the fact that there is a
4 potential for voids in containment albeit at least not
5 causing an issue at a normal design condition for for
6 severe accident conditions, yes. Maybe that's
7 something that needs to be looked at.

8 MR. MANOLY: But only, I think, if you
9 have major significant voids and we just -- I don't
10 believe that there is major significant voids in
11 structures that have seen all this programmatic
12 activity because you've got several layers of
13 oversight. So we have some voids, but I don't think
14 you're going to have anything really --

15 MR. IMBRO: Well, I mean, I think Mr.
16 Powers' point, Dr. Powers' point is a valid point,
17 that yes, there are voids, even though they may be
18 some relatively small size. That still should be
19 factored in or could be factored into the severe
20 accident fragility curves.

21 MEMBER POWERS: It's pretty clear we know
22 that little voids must not affect those curves very
23 much because we do experiments on model concrete
24 containments. They undoubtedly have little voids when
25 they place the concrete. I don't think they do

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1 anything really that dramatically different from what
2 they do in reactors. So little ones, we know, are
3 already built into our experimental data base, so it
4 is a bigger void that you'd be worried about.

5 The question that comes back to me next
6 with is what's a bigger void and I don't know any
7 better than you do.

8 MR. IMBRO: This is a little bit beyond my
9 area. I'm not very knowledgeable in this part of this
10 --

11 VICE CHAIRMAN BONACA: If I remember, the
12 one at Turkey Point, there were 9 -- how many cubic
13 feet?

14 MR. IMBRO: The void was -- I think it was
15 at its widest point there was 9 feet wide. It went
16 the whole length of the -- the thickness of the wall
17 and it was -- varied in size from I guess a maximum of
18 about 17 inches to 6 inches. So there was -- I could
19 do the arithmetic, I guess.

20 VICE CHAIRMAN BONACA: That's an area
21 where the thickness --

22 MR. IMBRO: Maybe something like 20 cubic
23 feet or something --

24 VICE CHAIRMAN BONACA: Then the thickness
25 of the wall there is probably --

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1 MR. IMBRO: It's about 8 feet, 7.5 feet I
2 think is the number.

3 MEMBER SIEBER: One of the issues that
4 might or might not be important is that concrete, even
5 though its contribution to the strength is not as much
6 as the rebar, its shielding effect is pretty
7 substantial.

8 MR. IMBRO: Yes, of course.

9 MEMBER SIEBER: And I was involved, not
10 responsible for it, but involved in a project where we
11 built tanks that looked like containments to store
12 really hot resin in and you could map where the voids
13 were.

14 (Laughter.)

15 MEMBER POWERS: In fact, that's a common
16 way to look at voids of anything is just to zap it
17 with gamma rates.

18 MEMBER SIEBER: That's right. And it
19 really showed up. I mean you could draw them out, but
20 in case of an accident where the concrete is missing
21 and all you have is liner and rebar, the radiation
22 field on the outside may be substantial which could
23 impact, depending on where it is, some operations, for
24 example in say the aux. building or penetrations --
25 has anybody considered that effect.

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1 MR. IMBRO: No. We haven't. I'm not sure
2 that that was considered.

3 MEMBER SIEBER: Okay.

4 MR. IMBRO: Just as a quick wrap up, we
5 believe that there are substantial programmatic
6 controls out there that would prevent large voids from
7 forming, first of all, and then if they did, they
8 would be detected from several means. And I think
9 that our conclusion after revisiting again, well,
10 first to back track a little bit. The Region did
11 evaluate this back in 1982. There's a documentation
12 that via the LER and the Bechtel analysis and all
13 those things that were present at that time, probably
14 supported the Region's conclusion that this wasn't an
15 issue that needed to be pursued generically. We've
16 looked at it again now with new eyes, again 20 years
17 after the fact and we've reached the same conclusion
18 that we really think that this issue does not need to
19 have any generic further look.

20 MR. MANOLY: One thing I'd like to add
21 also in the SIT, structural integrity test, you do
22 mapping of the cracking. So if we have big areas of
23 voids, the pattern of cracking will change.

24 MEMBER SIEBER: Yes, it does.

25 MR. IMBRO: Any further questions?

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1 MEMBER RANSOM: What were the licensee's
2 correction action that you mentioned here?

3 MR. IMBRO: The licensee, when the voids
4 were discovered, they excavated the concrete down to
5 solid concrete at Turkey Point and they regouted it
6 again, so they replaced the concrete that they found
7 was missing. They excavated the solid concrete and
8 pumped fresh concrete in to fill in.

9 VICE CHAIRMAN BONACA: Then they exchanged
10 some in the next containment and they found voids in
11 the same location. That's why we asked those
12 questions about genetic implications.

13 MR. IMBRO: That's right. Okay, if there
14 are no further questions, thank you.

15 VICE CHAIRMAN BONACA: Any additional
16 questions? I think we've received answers as far as
17 tracing the fact that there was an LER issue and there
18 was a review performed by the region and I think that
19 we got the information we needed.

20 Any additional questions from Members?

21 MEMBER SIEBER: I just would comment that
22 it was a pretty comprehensive report. I was glad to
23 see that.

24 MR. IMBRO: Thank you.

25 VICE CHAIRMAN BONACA: Yeah, it's a nice

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1 summary.

2 Thank you very much for the presentation,
3 well informed and thank you for the search and Mr.
4 Chairman, I'll turn the meeting back to you.

5 CHAIRMAN APOSTOLAKIS: Thank you very
6 much.

7 VICE CHAIRMAN BONACA: You have an
8 additional 45 minutes.

9 CHAIRMAN APOSTOLAKIS: Yes, we very much
10 appreciate that. I think we're ahead of schedule now
11 almost.

12 Okay, the next business is ACRS activities
13 and so on, so I don't think we're going to need a
14 transcript any more.

15 (Whereupon, at 10:58 a.m., the proceedings
16 were concluded.)

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CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: 493rd Meeting of Advisory
Committee on Reactor
Safeguards

Docket Number: N/A

Location: Rockville, Maryland

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

151 Debra Wilensky
Debra Wilensky
Official Reporter
Neal R. Gross & Co., Inc.

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PRESENTATION TO ACRS
ON
POTENTIAL UNDETECTED VOIDS IN CONCRETE STRUCTURES
OF NUCLEAR POWER PLANTS

NRR/DE/EMEB

Gene Imbro
Kamal Manoly

I REGULATORY MEASURES TO MINIMIZE CONSTRUCTION DEFECTS

- Licensee Implementation of NRC Approved 10 CFR 50, Appendix B, “Quality Assurance Criteria For Nuclear Power Plants”**

- Compliance with 10 CFR 50.55(e)**

- NRC Inspection Manual Chapter 2512, “LIGHT WATER REACTOR INSPECTION PROGRAM”**

II DETECTION OF SIGNIFICANT VOIDS IN CONCRETE STRUCTURES

- Search of Available NUDOCS Records on Concrete Voids Dating Back to 1968**
- Identified Nine 10CFR 50. 55(e) Correspondence From Licensees on Cases Involving Containment and Other Concrete Structures**
- Records Show That QA & QC Typically Identifies Significant Voids in Concrete Structures**
- Most Voids Are Located in Congested Reinforcing Steel Areas (i.e., around penetrations)**
- Most Voids Are Created Due to Improper Concrete Placement and Inadequate Concrete Vibration**

III STRUCTURAL INTEGRITY TEST (SIT)

- ❑ After Completion of Construction and Prior to Operation, Every Containment Structure is Subjected to an SIT, at a Test Pressure at Least 1.15 Times Containment Design Pressure**

- ❑ Instrumentation of Containment Rebar at Several Critical Joints (Near Mat and Around Largest Penetration), Provides Assurance That Containment Behavior During SIT in Close Agreement With Predicted Results From Analysis**

- ❑ Performance of SIT Provides Assurance That Potential Undetected Voids in Concrete Would Not Significantly Affect The Load Carrying Capacity of Containment**

VI VOIDS IN TURKEY POINT UNITS 3 & 4 CONCRETE CONTAINMENTS

- Voids Identified in Licensee's LERs for both Units During Steam Generator Replacement**

- Size of Voids Found on Turkey Point Units 3 & 4 Containments Were Generally Small and Did Not significantly Affect Containment Load Carrying Capacity**

- NRC Reviewed Licensee's LERs as Part of The Normal LER Follow-up Process, Verified The Adequacy of Licensee's Corrective Action and Determined That The Finding Had No Generic Applicability**

V CONCLUSION

- Staff Revisited The Issue of Whether The Voids Found in The Concrete Containment at Turkey Point Units 3&4 Had Generic Applicability.**

- NRC Inspection Manual Chapter 2512 Program Verifies That Licensee's QA & QC Program Adequately Implemented**

- Based on NRC and Licensees Programmatic Activities, There is Reasonable Assurance That Significant Voids in Concrete Structures Are Detected and Corrective Actions Are Implemented**

CONCLUSION (Cont.)

- While Minor Construction Deficiencies, Including Voids in Concrete Structures, May Be Present, Their Presence is Not Expected to Affect The Load Carrying Capacity of These Structures**

- Structural Integrity Test Provides Additional Assurance That Voids That Could Affect The Load Carrying Capacity of Containment Are Detected**

- Treatment of This Concern as a Generic Issue is Not Warranted**

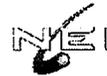
Risk-Informed, Performance- Based Fire Protection Implementing Guidance

Fred Emerson, NEI

Advisory Committee on Reactor Safeguards

June 7, 2002

1



Topics

- Background
- Industry positions
- Current rule language
- Implementing guidance
- Moving forward

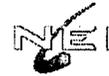
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Background

- Development of NFPA 805
 - Technical Committee on Nuclear Facilities
 - NRC and industry represented
 - Several year effort
 - Final product approved by NFPA in November 2000
 - Industry and NRC concerns over final product to be addressed in rulemaking

3



Background

- Industry agreed to support rulemaking when NRC addressed industry concerns:
 - Allow use of performance-based methods to address Chapter 3 fundamental elements
 - Allow “docketed licensing bases” (in lieu of “previously approved alternatives”) to supersede Chapter 3 elements
 - NRC review licensee proposed P/B methods instead of NFPA Technical Committee

4



Background

- Industry agreed to develop implementing guidance for rulemaking
 - Vehicle for resolving some of the open issues
 - Others to be resolved in the rule language (exceptions to the standard)
- NRC will utilize in Regulatory Guide
- Multi-discipline contractor team developing
 - NEI Rulemaking ITF oversight
 - Frequent interaction with NRC
- Rule language an issue
 - Developing guidance in parallel with rule language



Industry Positions

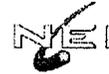
- Increased use of risk information in fire protection regulation
 - Licensees should be able to use tools whether or not they transition to NFPA 805
- Rulemaking optional
- Uncomplicated transition
- Thorough understanding of licensing basis during transition



Use of Risk Information

- Vehicle for risk-informing fire protection regulation
- Tools must be available for use by all licensees
- Evolutionary process – seamless transition from partial to full use

7



Rulemaking Optional

- Optional implementation not an issue with NRC
- Rationale: Optional nature essential to promote use of risk information in fire protection

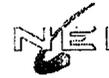
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Uncomplicated Transition

- “Safe today = safe tomorrow”
- Clear guidance and well-understood process necessary
- Areas to be addressed
 - Document submittal requirements vs. retained documentation
 - License amendment submittal vs “50.59” supporting evaluation
 - Use of docketed licensing basis material to address Chapter 3 elements

9



Licensing Basis

- Thorough understanding of licensing basis throughout transition is essential
- Areas to be addressed in rule or guidance
 - Analysis/definition of licensing basis
 - Use of currently docketed licensing basis
 - Approval of RI/PB methods
 - Inspection and enforcement during transition

10



Current Rule Language

- Positive comments
 - Transition process clearer
- Concerns to be discussed with staff in moving forward
 - No allowance for P/B methods in Chapter 3
 - Some industry exceptions not yet addressed
 - License amendment for analytical methods

11



Implementing Guidance

- Main body of implementing guidance is process information. Key elements are:
 - Transition process and options
 - Guidance for adoption of a new licensing basis
 - Guidance for use within existing licensing basis
 - Configuration control

12



Implementing Guidance

- Appendices provide one or more methods for interpreting/using information in NFPA 805, such as
 - Establishing fire protection program fundamentals
 - Identification of performance criteria, fire hazards, and applicable SSCs
 - Evaluation against performance criteria
- Completion in parallel with issuing rule in late 2003
 - Partial first draft to be provided to NRC later this month

13



Potential Barriers

- Convergence of rule language, implementing guidance, and inspection guidance and training
- License amendment for use of analytical methods (SER preferred)
- Definition/use of current licensing basis
- Technical issues
 - Seismic 1E fire pumps
 - Seismic standpipes

14



Potential Hurdles

- Monitoring
- Shutdown and low power modes

15



Potential Benefits

- Resolution of current fire protection issues
- Address NRC 4 organizational goals
- Focus fire protection program on risk significant issues
- Consistent method for analysis
 - Exemptions, deviations, “50.59” and GL 86-10 evaluations
 - Seamless transition process from deterministic to risk-informed regulatory framework
- Resolve competing issues involving fire protection in a risk-informed manner

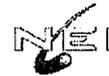
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Moving Forward

- One scenario for utility use
 - First, better methods for fire PSAs
 - ANS fire PSA standard development
 - EPRI/RES fire PSA requantification project completion
 - Second, a few plants willing to utilize the NFPA 805 rulemaking
 - Plants with established PRAs and successful use of risk information in the past
 - Successful use of 805 tools in a few evaluations, then more widespread

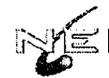
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Moving Forward

- One scenario
 - Third, with successful plant experience, more plants willing to use it
 - Improve plant fire PSA tools
 - Integrate fire risk with overall plant risk metric
 - Willing to apply risk information generally and for fire protection
- Eventually expect to see most plants using this to some degree, **IF**....

18



Moving Forward

- Industry and NRC, in the current rulemaking process
 - Remove barriers...
 - Lower hurdles...
 - Simplify process...
 - Optimize benefits...

in a manner consistent with sound regulatory practices



The following is the current draft proposed rule language which updates the draft proposed rule wording published in the *Federal Register* on April 2, 2002. This language is preliminary and may be incomplete in one or more aspects. NRC may post additional updates periodically on the rulemaking website.

Questions regarding this language can be directed to Leon Whitney, NFPA 805 Task Manager, (301) 415-3081, lew1@nrc.gov.

§ 50.48. Fire protection.

* * * * *

(c) *National Fire Protection Standard NFPA 805.*

(1) *Approval of incorporation by reference.* National Fire Protection Association (NFPA) Standard 805, "Performance-Based for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition" (NFPA 805), which is referenced in this section, was approved for incorporation by reference by the Director of the Federal Register. A notice of any changes made to the material incorporated by reference will be published in the Federal Register. Copies of NFPA 805 may be purchased from the NFPA Customer Service Department, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101 and in PDF format through the NFPA Online Catalog (www.nfpa.org) or by calling 1-800-344-3555 or 617-770-3000. Copies are also available for inspection at the NRC Library, Two White Flint North, 11545 Rockville Pike, Rockville, Maryland 20852-2738, and at the NRC Public Document Room, Building One White Flint North, Room O1-F15, 11555 Rockville Pike, Rockville, Maryland 20852-2738. Copies are also available at the Office of the Federal Register, 800 N. Capitol Street, Suite 700, Washington, DC.

(2) *Exceptions, modifications, and supplementation of NFPA 805.* As used in this section, references to NFPA 805 are to the 2001 Edition, with the following exceptions, modifications, and supplementations:

(i) *Life Safety Goal.* The Life Safety Goal of Section 1.3.3 is not endorsed.

(ii) *Plant Damage/Business Interruption Objectives.* The Plant Damage/Business Interruption Objectives of Section 1.3.4 of NFPA 805 are not endorsed.

(iii) *Use of Feed-and-Bleed.* In demonstrating compliance with the performance criteria of Sections 1.5.1(b) and (c) of NFPA 805, a high pressure charging/injection pump coupled with the pressurizer power-operated relief valves (PORVs) as the sole fire-protected safe shutdown path for maintaining reactor coolant inventory, pressure control, and decay heat removal capability (i.e., feed-and-bleed) for pressurized-water reactors (PWRs) is not permitted.

(iv) *Uncertainty Analysis.* An uncertainty analysis performed in accordance with Section 2.7.3.5 is not required to support deterministic approach calculations.

(v) *Existing Cables.* In lieu of installing cables meeting flame propagation tests as required by Section 3.3.5.3 of the standard, a flame retardant coating may be applied to the electric cables, or an automatic fixed fire suppression system may be installed to provide an equivalent level of protection." In addition, the italicized exception to Section 3.3.5.3 is not endorsed.

(vi) *Water Supply and Distribution.* The italicized exception to Section 3.6.4 is not endorsed.

(3) *Compliance with NFPA 805.*

(i) A licensee may maintain a fire protection program that complies with NFPA 805 as an alternative to complying with paragraph (b) of this section for plants licensed to operate

before January 1, 1979; the fire protection license conditions for plants licensed to operate after January 1, 1979; or paragraph (f) of this section for plants for which licensees have submitted the certifications required under 10 CFR 50.82(a)(1). The licensee shall submit a request to comply with NFPA 805 in the form of an application for license amendment under § 50.90. The application must identify any orders and license conditions that must be revised or superseded, and contain any necessary revisions to the plant's technical specifications and the bases therefore. The Director of the NRC's Office of Nuclear Reactor Regulation, or a designee of the Director, may approve the application if the Director or designee determines that the licensee has identified orders, license conditions, and the technical specifications that must be revised or superseded, and that any necessary revisions are adequate. The Director or designee of the Director shall issue a license amendment approving the use of NFPA 805 and any necessary revisions to the technical specifications.

(ii) The licensee shall complete its implementation of the methodology in Chapter 2 of NFPA 805 (including all required evaluations and analyses) and, upon completion, modify the fire protection plan required by paragraph (a) of this section to reflect the licensee's decision to comply with NFPA 805, before changing its fire protection program or nuclear power plant as permitted by NFPA 805.

(4) *Alternative Methods and Analytical Approaches.* A licensee may submit a request to use alternative methods and analytical approaches in lieu of those specified in NFPA 805. The request must be in the form of an application for license amendment under § 50.90. The Director of the NRC's Office of Nuclear Reactor Regulation, or designee of the Director, may approve the application if the Director or designee determines that the alternative methods and analytical approaches meet the following criteria:

(i) Satisfy the goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release.

(ii) Maintain safety margins.

(iii) Maintain fire protection defense-in-depth (fire prevention, fire suppression, and post-fire safe shutdown capability).



NFPA 805 RULEMAKING

Briefing for the ACRS

Eric Weiss, Chief
Fire Protection Section, NRR
415-3264

June 7, 2002

1

NFPA 805 - Performance-Based Standard for Fire Protection for LWRs

- Background
- Advantages of Endorsing NFPA 805
- NFPA 805 Structure
- Rule Structure
- Major Issues
- Status of Rulemaking
- What this means

June 7, 2002

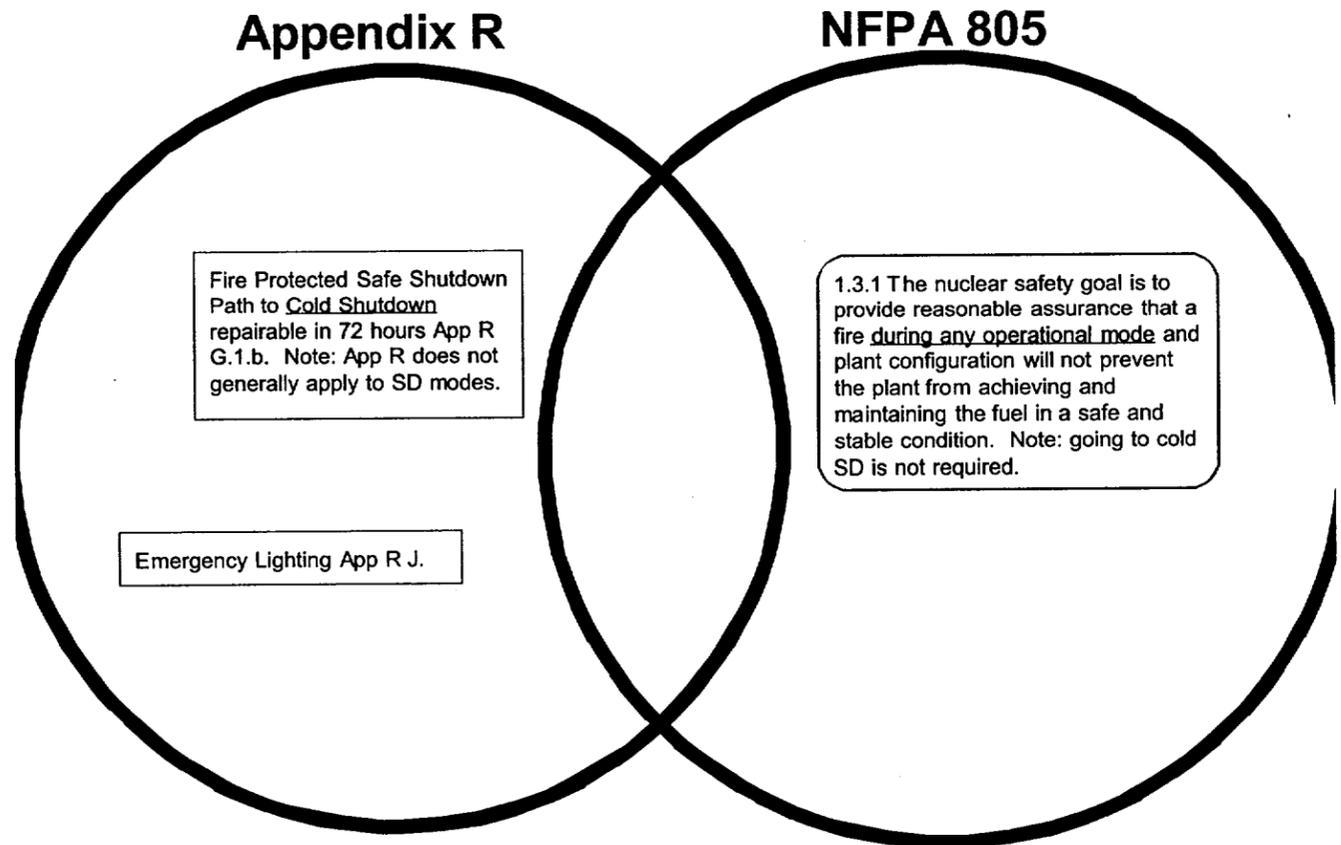
NFPA 805 - Background

- 10CFR 50 Appendix R – deterministic regulation
- ACRS Letter Feb 18, 1999
- Comprehensive Reg Guide 1.189 recently issued
- RI/PB National Consensus Standard Published Feb 2001
- Approved by the ANSI

NFPA 805 – Background (Continued)

- Rule to endorse consistent with National Technology Transfer and Advancement Act (PL 104-113) and OMB Circular A119
- Takes advantages of advances in PRA and Fire Science since Appendix R was issued over 20 years ago
- Some Methods of Achieving Fire Safety are different than Appendix R

NFPA 805 – Background (Continued)



June 7, 2002

Advantages

- Allows licensees to maintain safety through more flexible, efficient, and rational processes
- Reduces exemptions, submittals, and reviews
- Allows use of risk insights and fire modeling, science, and engineering
- Consistent with NRC's Outcome Goals
- Allows Licensees to focus FP program on most safety significant issues

NFPA 805 Structure

- Allows transition of existing Appendix R licensing basis including existing exemptions and GL86-10 equivalencies
- Allows future changes to plant and licensing basis to be either Deterministic or RI/PB
- Incorporates a change control process to monitor risk
- New RI/PB methods to be approved by the NRR

NFPA 805 Structure (Continued)

- NFPA 805 allows either a deterministic or a RI/PB approach (see NFPA 805 figure 2.2 “Methodology”)
- Deterministic Requirements similar to Appendix R (see NFPA 805 figure 4.2.2)
 - ◆ 3-hour encapsulation of one success path
 - ◆ 1-hour encapsulation of one success path with suppression and detection
 - ◆ 20ft of separation without intervening combustibles and suppression and detection throughout the area

NFPA 805 Structure (Continued)

- NFPA 805 Chapter 3 “Fundamental Fire Protection Elements”
 - ◆ Fire Protection Plan
 - ◆ Prevention (e.g. control of combustibles)
 - ◆ Fire Brigade
 - ◆ Water Supply
 - ◆ Standpipes and Hose Stations
 - ◆ Fire Extinguishers
 - ◆ Fire Alarm and Detection Systems
 - ◆ Automatic and Manual Water-based Fire Suppression Systems
 - ◆ Gaseous Fire Suppression Systems
 - ◆ Passive Fire Suppression (e.g. Building separation, Fire Barriers, Penetrations)

Rule Structure

- Amendment of 50.48 to allow use of NFPA 805
- Adoption is voluntary
- Existing Licensing Basis, Configuration and Procedures convey to new RI/PB environment
- Licensees document and retain records on site
- ROP monitors future changes
- Allows NRC to approve new RI/PB methods in the future
- Licensees may use NFPA 805 appendices

Major Points

- One of the NRC's first RI/PB rules
- NEI endorsed rulemaking in September 2001
- Key to successful implementation is appropriate regulatory guidance
- NEI agreed to develop guidance document by 2003 (first draft June 2002)
- NFPA 805 addresses existing LWRs
- NFPA 804 addresses Advanced LWRs
- Future NFPA std to address Advanced LWR and Gas Reactors in RI/PB manner

Schedule

- Proposed Rule to ACRS and CRGR
June 2002
- Proposed Rule to Commission July 2002
- Proposed Rule Published in FR for
Comment one month after SRM
- Final Rule to Commission 15 months
after close of public comments on
Proposed Rule
- Final Rule Published in FR one month
after SRM

June 7, 2002

12

What This Means

- This moves Fire Protection into Risk-Informed Performance Based Arena
- This represents an opportunity to improve the efficiency and effectiveness of NRC's regulatory environment