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NUCLEAR REGULATORY COMMISSION

Title: **BRIEFING ON FIRE PROTECTION**
PUBLIC MEETING

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1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

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4 BRIEFING ON FIRE PROTECTION

5 ***

6 PUBLIC MEETING

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8
9 Nuclear Regulatory Commission
10 Commission Hearing Room
11 11555 Rockville Pike
12 Rockville, Maryland
13

14 Thursday, March 31, 1998
15

16 The Commission met in open session, pursuant to
17 notice, at 10:06 a.m., the Honorable SHIRLEY A. JACKSON,
18 Chairman of the Commission, presiding.
19

20 COMMISSIONERS PRESENT:

21 SHIRLEY A. JACKSON, Chairman of the Commission
22 GRETA J. DICUS, Member of the Commission
23 NILS J. DIAZ, Member of the Commission
24 EDWARD McGAFFIGAN, JR., Member of the Commission
25

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1 STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

2 BRYAN SHERON, NRR

3 GARY HOLAHAN, NRR

4 STEVE WEST, FPES

5 ED CONNELL, FPES

6 MARK CUNNINGHAM, PSA

7 JOSEPH CALLAN, NRR

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P R O C E E D I N G S

[10:06 a.m.]

CHAIRMAN JACKSON: Good morning, ladies and gentlemen. The purpose of today's Commission meeting is to be briefed by the NRC Staff on its efforts to date in developing a risk-informed performance-based regulation for fire protection at nuclear power plants.

In October 1996, the Commission directed the Staff to revise 10 CFR 50.48 and modify or remove Appendix R. The Staff was tasked with developing a plan for transitioning fire protection regulations to a more risk-informed and performance-based structure.

The Commission received a Staff update in mid-1997 and again directed the Staff to expedite the resolution of issues necessary to formulate a rule which takes a more risk-informed and performance-based approach.

The Staff was directed to shift the rulemaking effort to NRR, the Office of Nuclear Reactor Regulation, to finalize the current research, and to obtain the Office of General Counsel feedback on backfit implications; and finally, to obtain industry feedback on interest in the rule.

This Commission meeting was scheduled to discuss these various issues. The Commission is particularly interested in as much as the results are in, the Staff

1 discussion of fire protection functional inspection results,
2 the IPEEE review results, the status of research review
3 results on the 12 technical issues presented in the previous
4 Commission paper, and the Staff's pros and cons and industry
5 comments on the options presented in the recent Commission
6 paper, and any differing professional views held by the
7 Staff.

8 Copies of the presentation are available at the
9 entrances to the meeting, so unless my colleagues have any
10 opening comments, Mr. Callan, please proceed.

11 MR. CALLAN: Thank you, Chairman, and good
12 morning, Chairman and Commissioners.

13 With me at the table are Bryan Sheron, who is the
14 associate director for Technical Review in NRR, to my right;
15 and to my left, Gary Holahan, the director of the Division
16 of Systems Safety in NRR; to his left is Steve West, who is
17 the chief of the Fire Protection Engineering Section; and to
18 Bryan Sheron's right is Ed Connell, who is going to be the
19 chief presenter. He is the senior fire protection engineer.
20 And then finally, to Ed's right is Mark Cunningham, who is
21 our sole representative from Research, and Mark is the chief
22 of Probabilistic Safety Assessment Branch in Research. And
23 as I said, Ed Connell is our chief presenter, and Mark will
24 also assist Ed in the presentation.

25 With that, Ed.

1 MR. CONNELL: Good morning.

2 CHAIRMAN JACKSON: Good morning.

3 MR. CONNELL: Lisa, could I have the first slide,
4 please.

5 I would like to briefly go over the agenda for the
6 meeting. First we are going to discuss briefly the
7 background, how we got to where we are today. The history
8 of revising the existing fire protection regulations is
9 rather long, so we will briefly cover that.

10 We will talk a little bit about the external
11 feedback that we have gotten from industry, from the
12 National Fire Protection Association, also from some public
13 interest groups that have expressed interest in this area.

14 We will discuss about the Staff feedback that we
15 have gotten from OGC regarding the backfit implications, the
16 fire protection functional inspection program, and the IPEEE
17 program. Also we will finish up with the considerations
18 that the Staff used making the options for the Commission's
19 consideration, and then we will go into detail in the
20 options and recommendations.

21 Next slide, Lisa.

22 This is an abbreviated background. There's
23 actually more than what I have here, but in the interest of
24 time and brevity, we will shorten it.

25 SECY 92-63, the Staff plans for elimination of

1 requirements marginal to safety, identified Appendix R as a
2 candidate to reduce regulatory burden without adversely
3 impacting safety. The opportunity was to make the
4 regulation less prescriptive, more performance-oriented, and
5 use PRA as appropriate and consider the Commission's safety
6 goals in revising the regulation.

7 The follow-on SRM approved the Staff's
8 recommendations.

9 SECY 93-142, report on the reassessment of the NRC
10 fire protection program. This primarily dealt with the fire
11 protection issues following the thermo-lag issue. The Staff
12 went back and reevaluated the entire fire protection program
13 on the issues with thermo-lag and the Staff recommended that
14 50.48 and Appendix R -- 50.48 be revised and Appendix R
15 either be modified or eliminated, make the new regulation
16 more reactor safety-oriented, add flexibility to the
17 regulation, eliminate some of the confusion that exists,
18 address shutdown conditions, and address compensatory
19 measures such as fire watches which are currently not within
20 the scope of the existing regulation.

21 Yes?

22 CHAIRMAN JACKSON: You know, if I look at this
23 history, you know, there were the four years leading up to
24 SECY 96-134 and five, 97-127. It sounded like the original
25 Staff plans in 92-263 were not unlike what were submitted

1 and addressed by the Commission in 96-134 and, to some
2 extent, in 97-127. What happened?

3 MR. CONNELL: A lot hasn't changed from --
4 actually in 1986, in a NUREG the Staff considered making
5 PRAs part of the fire protection and it really didn't use
6 the term risk-informed, but it did use performance-oriented.

7 CHAIRMAN JACKSON: And PRA?

8 MR. CONNELL: Right. And did use PRA, did use
9 performance-oriented term, and that was in 1986, so this is
10 a very old issue. I'd say a lot has changed since the
11 September SRM and now with industry changing its position,
12 with the input from the National Fire Protection
13 Association, as well as the fire protection functional
14 inspections and we have some preliminary insights from the
15 IPEEE results. So I'd say a lot didn't happen that's
16 changed our opinion up until September. Since September, we
17 have changed our opinion based on all the input we have
18 gotten from external sources and the results of some of the
19 internal reviews.

20 CHAIRMAN JACKSON: Well, I guess the question I
21 really had was that back in 92-263, you didn't initiate a
22 rulemaking.

23 MR. CONNELL: No.

24 MR. HOLAHAN: I think what was happening in that
25 time period was that the industry expressed interest in

1 developing a rule option of their own, and rather than the
2 Staff moving ahead and developing a rule to implement some
3 of these thoughts, the industry had indicated that they were
4 developing a rulemaking proposal and, in fact, eventually
5 did submit what's been called the proposed Appendix S as a
6 rulemaking to deal with those issues, and ultimately the
7 Staff recommended and the Commission decided against that
8 option, and I think that's what filled in a lot of that time
9 period, where there was a hope that the industry initiative
10 would deal with these issues in a risk-informed sort of way,
11 but that didn't work out.

12 CHAIRMAN JACKSON: Yes?

13 COMMISSIONER McGAFFIGAN: What was the basis of
14 the Staff recommendation then in August or so of 1996 that
15 it could come up with something better than Appendix S?
16 Because the recommendation was don't do Appendix S, reject
17 the petition for rulemaking, but we will come up with
18 something risk-informed performance-based, I think it was by
19 December of '96, and submit it to you, Commission.

20 Why was there that hope at that time? What was
21 the basis for that hope at that time that you could do that?

22 MR. HOLAHAN: Well, I'm not sure I can speak
23 exactly to what was said in 1996. My recollection is that
24 it was a rulemaking plan that was going to be developed by
25 the end of that period of time, and I think conceptually I

1 think we still do believe that you can develop such a
2 risk-informed rule and, in effect, that's what option 1
3 would be, for the Staff to go and on its own develop such a
4 rule. And I think there was -- it's not easy, but it was
5 possible all throughout these years for the Staff to do such
6 a thing. It was possible in '96 and it's possible now.

7 COMMISSIONER McGAFFIGAN: Which changes what was
8 said earlier, the difference from industry, but also is
9 there a matter of resources involved, that you don't have to
10 do that?

11 MR. HOLAHAN: I don't think it's so much a
12 resource issue. I think there is a technology issue of
13 understanding that methodologies exist to implement a
14 risk-informed approach, and I think it takes some time and
15 effort to work, you know, a risk-informed approach into the
16 regulatory framework for fire protection. But I don't think
17 that resources is what held us back in earlier years. It
18 was the question of which option to take, you know, whether
19 to wait for an industry initiative, or whether to pursue a
20 Staff direct writing of the rule, or what we have now, a
21 proposal to work with industry fire protection group as an
22 alternative.

23 CHAIRMAN JACKSON: Okay, then, why don't you go
24 on.

25 MR. CONNELL: Okay. Well, I won't cover the other

1 ones except just to note that in SECY 96-134, the Staff did
2 state that if any alternatives became apparent, we would
3 bring them to the Commission, so I think we are consistent
4 with what we said in 96-134. We have some alternatives we
5 weren't aware of then and we are bringing them forward for
6 your consideration.

7 Lisa, could I have the next slide, please.

8 I will briefly cover the September SRM. These are
9 the things the Commission directed the Staff to do to
10 finalize the current research and study, and we are going to
11 discuss about the research -- Mark is going to discuss the
12 research a little bit; obtain OGC feedback on backfit, we
13 have done that; obtain industry feedback on the interest in
14 the new rule, we have done that, we had some meetings with
15 NEI, attended the NEI fire protection informational forums;
16 we have gotten some feedback from the fire protection staff
17 of the licensees, as well as they have made some
18 presentations to the ACRS that we have been at as well;
19 provide the Commission with an expedited schedule for
20 rulemaking, that's in 98-058 SECY paper; expedite resolution
21 of issues for rulemaking elimination and exemptions, that's
22 dependent upon which option the Commission directs us to
23 pursue; transfer the responsibility for the rulemaking,
24 that's been completed; coordinate additional research with
25 industry as necessary, and Mark is going to discuss the

1 research activities; and assessing the current regulatory
2 requirements for transition, and that is dependent upon
3 which option we pursue.

4 CHAIRMAN JACKSON: Let me just ask you a question
5 about two of these that were in the SRM last September. You
6 know, the Commission directed that you finalize the current
7 research and study. Now in the paper that led up to that
8 SRM in the June 1997 Commission paper, there were 12
9 potential fire issues. Things like hot shorts, compensatory
10 measures, et cetera. And I don't see a slide on these
11 issues in terms of where we are, you know, in the packet
12 that we got. Are you going to be summarizing the status of
13 these issues?

14 MR. CONNELL: Well, some -- there's only one of
15 those 12 issues that's outside of the existing regulatory
16 framework, and that's the fires during non-power operations,
17 and that had been included in the shutdown rule, and since
18 we are not going to pursue the shutdown rule, we are going
19 to have to incorporate that into whatever else that we do.

20 If we chose the option or allow an industry
21 standard, that will be incorporated into the industry
22 standard. The rest of them are within the scope of the
23 existing framework, compensatory measures, hot shorts, fire
24 barriers, fire detection, all those items are within the
25 scope of the existing regulatory framework.

1 We don't see any of those issues right now that we
2 cannot address through the research effort.

3 CHAIRMAN JACKSON: And then you have coordinated
4 additional research with industry, if possible. So a
5 question I have is whether the National Fire Protection
6 Association is doing much research that is applicable to
7 nuclear plant applications.

8 MR. CONNELL: No, that's not -- the National Fire
9 Protection Association is primarily a standards development
10 organization. It's a -- there are sixty some thousand
11 members on all aspects of the fire protection area from code
12 officials to manufacturers to building owners, so they don't
13 fund that kind of research. They don't have that kind of
14 money.

15 CHAIRMAN JACKSON: But I know that later on you
16 talk about, you know, waiting on or making use of the
17 National Fire Protection Association standard, and the
18 question is, what informs their standard relative to the
19 utility of it in a nuclear power plant operation context?

20 MR. CONNELL: We don't think that their standard
21 will require additional research at this point. Now we are
22 early in the development stages of the standard, and we do
23 participate in the standards committee, but we don't think
24 there's any additional research needed to support that
25 industry standard.

1 CHAIRMAN JACKSON: Okay. Thank you. But
2 nonetheless you think it's applicable, it will have a --

3 MR. CONNELL: Oh, I think there's benefit.

4 CHAIRMAN JACKSON: Okay.

5 MR. CONNELL: Next slide, Lisa.

6 The next part of that SRM is why we are here
7 today. We are going to brief the Commission on all
8 findings, observations and conclusions related to PRA and
9 fire modeling results, that's primarily the IPEEE
10 activities, the fire protection functional inspection, the
11 backfit determination, as I mentioned before, industry
12 interaction, and other relevant information.

13 CHAIRMAN JACKSON: In speaking about other
14 relevant interaction, you met with ACRS recently; is that
15 correct?

16 MR. CONNELL: We had three meetings with the ACRS
17 from November till this month on this topic.

18 CHAIRMAN JACKSON: And what's come out of those
19 meetings?

20 MR. CONNELL: Well, we -- they heard from us, they
21 also heard from the National Fire Protection Association,
22 they heard from Nuclear Energy Institute, and they also
23 heard from the Nuclear Information Resource Service, and the
24 Union of Concerned Scientists made some presentations, and
25 we don't have any formal feedback from the ACRS, but the

1 feedback that we did get during the meetings was they had
2 supported the Staff's recommendation to pursue option 2,
3 which was defer the rulemaking and allow the industry to
4 develop a standard that we could adopt in the future.

5 MR. HOLAHAN: Can I add something to that? I
6 think early on, at least for our first meeting with the
7 ACRS, there was a concern that option 1 was the
8 risk-informed option and option 2 wasn't, and I think when
9 that perception was on the table, the ACRS was -- I think
10 would favor option 1. I think we clarified that situation.
11 We in fact went back and talked to NFPA about assuring that
12 NFPA process would address risk and would be a risk-informed
13 process, and I think that alleviated some of the committee's
14 concerns.

15 CHAIRMAN JACKSON: Now I also note that in terms
16 of industry interaction and comments that, you know, the
17 industry -- and let me just issue a caveat, Commissioner
18 Dicus sitting here -- you know, we always talk about the
19 industry. As far as I know, NRC regulates more than one
20 industry; is that correct? So we are talking about the
21 nuclear power industry; is that correct?

22 MR. CONNELL: Yes.

23 CHAIRMAN JACKSON: Okay. I just wanted to clarify
24 that. And

25 MR. CONNELL: I'm assuming in the SRM that you

1 --that's the industry you wanted us to get feedback on.

2 [Laughter.]

3 CHAIRMAN JACKSON: I'm not saying that we're not
4 equally guilty.

5 [Laughter.]

6 CHAIRMAN JACKSON: So you make a good point. But
7 I noted that the industry does not want a new rule these
8 days.

9 MR. CONNELL: That's correct.

10 CHAIRMAN JACKSON: But yet the latest Commission
11 paper states that they do desire more allowance for risk
12 significance within the current rule. And I guess the
13 question I have is how much room does the current rule allow
14 in terms of latitude vis-a-vis risk significance? And I am
15 going to ask you that, Mr. Connell, but I am also going to
16 ask, if Karen is willing to be put on the spot, ask her
17 that.

18 MR. CONNELL: Well, I'll answer it and then she
19 can correct me if I'm wrong.

20 The existing rule doesn't address risk at all.
21 And the existing fire protection staff guidance doesn't
22 address risk at all. So you can infer that to mean there's
23 a lot of latitude or there is zero latitude since it doesn't
24 address it at all.

25 CHAIRMAN JACKSON: It's not there?

1 MR. CONNELL: It's not there. That's correct.

2 CHAIRMAN JACKSON: Okay.

3 MS. CYR: 50.48, which is the underlying
4 regulation, is quite I mean broadly written. I mean you
5 could say it's sort of a performance-based standard. But to
6 the extent that Appendix R is applied or the license
7 condition has specific terms, those tend to be very
8 prescriptive, and they do not account for risk. They just
9 say you are supposed to do certain things in certain ways.

10 So I mean yes and no. It depends on how you --
11 but I think to the extent that Appendix R provisions apply
12 in particular circumstances, those are, I would agree with
13 him, that those are --

14 CHAIRMAN JACKSON: But the rule itself, you're
15 saying, is --

16 MS. CYR: 50.48 itself is a very broadly written
17 kind of prescriptive -- I mean performance-based regulation.

18 MR. HOLAHAN: The only thing I would have said a
19 little differently from what Mr. Connell said was I think
20 the fire protection rules do address safety. I mean the
21 words safety and risk assessment are not in the rule, but
22 they certainly provide a level of safety.

23 CHAIRMAN JACKSON: I know Commissioner Diaz is
24 going to look up these.

25 MR. HOLAHAN: And, you know, looking backwards

1 from a risk perspective, there have been some studies to
2 suggest that in fact a risk reduction of something like a
3 factor of 10 may have occurred because of the rule, even
4 though it doesn't have, you know, risk assessment as part of
5 the regulation itself.

6 CHAIRMAN JACKSON: We'll come back to that.

7 Okay, Mr. Connell, why don't you proceed.

8 MR. CONNELL: Could I have the next slide, Lisa.

9 The external feedback, the feedback we got from
10 industry, the nuclear power industry, NEI conducted a survey
11 of all the chief nuclear operating officers, and they got
12 100 percent response, almost, and it was pretty consistent
13 for all the CNOs, and they provided us a letter formally
14 --they discussed this with us several times what the results
15 of their survey were. Basically the chief nuclear officers
16 feel that a new rule is not desired or necessary to ensure
17 improved safety. Further development of risk and
18 performance-bases should support changes in guidance to
19 existing regulations.

20 Changes to regulations or supporting guidance must
21 allow adequate time for completion of support elements --

22 CHAIRMAN JACKSON: What do you mean by support
23 elements?

24 MR. CONNELL: IPEEE, fire protection functional
25 inspections, that is what they're referring to.

1 MR. HOLAHAN: More guidance documents.

2 CHAIRMAN JACKSON: Okay.

3 MR. CONNELL: And industry will participate
4 actively in any changes to rule or supporting guidance.

5 We have also had a lot of interaction with the
6 practicing fire protection staff at the plants, and they
7 also agree that a new rule is not necessary at this time.

8 CHAIRMAN JACKSON: Do they give you any input
9 that's any different in terms of what should happen?

10 MR. CONNELL: They believe that the guidance could
11 be improved because the guidance is scattered in many
12 documents, the interpretations of guidance, and they believe
13 that a lot of clarification would be beneficial, clean up
14 the generic letters and the standard review plans and the
15 branch technical positions, and said we could put that all
16 in one place and any places where we have conflicts or
17 holes, we could fill those. So they support that.

18 CHAIRMAN JACKSON: Okay. Please go on.

19 MR. CONNELL: Next --

20 COMMISSIONER MCGAFFIGAN: No, on that same point,
21 how realistic are they in light of the conversation you just
22 had about making through guidance documents the existing
23 regulations more risk-informed? Further development of risk
24 and performance bases presumably means that they're asking
25 within the current framework through this guidance process

1 which is part of option 2 that you're going to consolidate
2 and get the guidance. But is the industry expectation
3 realistic here?

4 MR. CONNELL: Well, you know, we could potentially
5 -- we haven't had much experience with it in the past, but
6 we could use risk information as a supporting basis for
7 supporting exemptions or deviations. That's not prohibited
8 by the rule.

9 COMMISSIONER McGAFFIGAN: Right. You're going to
10 get to it this week, you know, since NRC has folks talking
11 about the fact that the inspections that we are doing at the
12 moment are driving up, they project, over \$1 million per
13 plant will have to be spent to deal with issues that they
14 don't think are very important, but could be construed as
15 compliance matters under the current rule. Is this issue,
16 which may have also -- I don't know whether it came up in
17 your meetings, but is the reaction of industry to the
18 current inspections -- is there anything that can be done in
19 guidance documents that will split that, or is this
20 potentially going to overtake this feedback and say if you
21 are going to interpret the current rules the way you are
22 interpreting them in the current inspections, maybe we do
23 need a new rule?

24 MR. CONNELL: Well, I think a lot of the problems
25 with some of the existing exemptions, the existing

1 inspections, is that some of the interpretation of the
2 requirements by industry has been incorrect and
3 inconsistent. I think that is the crux of the problem. I
4 think if you look at the River Bend inspection report, I
5 think that you will find that that is the case.

6 CHAIRMAN JACKSON: Has there been sufficient
7 guidance for the industry to work off of that that incorrect
8 or inconsistent interpretation shouldn't be there? Given
9 the existing regulations.

10 MR. CONNELL: Well, it depends. For some areas,
11 it has. Of course, sometimes NEI issues their own guidance
12 that doesn't necessarily concur with the Staff's guidance,
13 and we have had that in several cases related to thermo-lag,
14 related to the motor-operated valve issue. So that causes a
15 problem.

16 CHAIRMAN JACKSON: Okay. I guess I am really
17 asking a question of whether you feel that we have had
18 adequate guidance out there.

19 MR. CONNELL: I think we can improve our guidance.

20 CHAIRMAN JACKSON: Okay.

21 MR. HOLAHAN: I think, in fact, in the area of
22 circuit analysis or the so-called hot shorts, we have
23 acknowledged that the existing guidance has left some
24 confusion in the industry, and that's the reason that we
25 have proposed to put out additional guidance and some

1 enforcement discretion associated with that issue, because,
2 you know --

3 CHAIRMAN JACKSON: It also sounds like you're
4 saying that there needs to be some consolidation of the
5 guidance.

6 MR. HOLAHAN: Absolutely, yes.

7 MR. WEST: Could I add one thing about the
8 guidance, please?

9 CHAIRMAN JACKSON: Sure.

10 MR. WEST: In the area of hot shorts, the kind of
11 jargon we call hot shorts, we actually call it circuit
12 analysis these days. But we have completed two of the fire
13 protection functional inspections and at one plant we had
14 problems with their circuit analysis, and at the second
15 plant we had no problems, and both plants used the same
16 requirements and guidance to get to where they were.

17 So I'm not -- we shouldn't -- I don't think we
18 should suggest here today that all plants have all these
19 problems, because that is not the case. Some plants have
20 done a better job than others in using the guidance that is
21 available.

22 CHAIRMAN JACKSON: I see. Okay. Yes?

23 COMMISSIONER McGAFFIGAN: I think I have heard the
24 Chairman said a few times since I have been here that we
25 enforce rules, not guidance. Guidance is one means of

1 achieving compliance with a rule, and there are other means.
2 Are these -- so you get down to this issue of do it our way
3 or no way, or is that what we're enforcing in these
4 inspections, that you didn't follow, you know, perhaps
5 ambiguous guidance exactly the right way? Or what is going
6 on? What is the industry complaint about?

7 MR. CONNELL: Well, we don't enforce the guidance,
8 okay. The guidance is an acceptable method of meeting the
9 regulation. If a licensee wants to have an alternative
10 method for meeting the regulation, provided it does meet the
11 regulation, that is perfectly acceptable.

12 The concern becomes, I guess, when they may
13 interpret their alternative method as meeting the regulation
14 and we may not agree.

15 CHAIRMAN JACKSON: Okay. Why don't you go on.

16 MR. CONNELL: Okay. Can I have the next slide,
17 Lisa.

18 The National Fire Protection Association is
19 interested in this. As I mentioned before, the NFPA, I
20 think 70,000 members is approximately correct, they
21 published 314 fire protection standards, four of which are
22 related to nuclear facilities. They have a standard for
23 non-production -- non-electric generating nuclear facilities
24 that the DOE, Department of Energy, uses a lot for their
25 production facilities and their materials facilities. And

1 they also have a standard for lightwater reactors that does
2 not address safe shutdown criteria, it is more of a property
3 protection standard. They also have a standard for advanced
4 lightwater reactors that does address safe shutdown and, of
5 course, they are working on the performance-based,
6 risk-informed standard for the existing reactors.

7 CHAIRMAN JACKSON: What's the fire protection
8 association's track record in developing standards?

9 MR. CONNELL: Well, they issued their first
10 standard in the early 1800s on sprinkler systems, and they
11 have had a lot of experience in this area.

12 CHAIRMAN JACKSON: No, no, I'm really alluding to
13 specifically performance-based standards.

14 MR. CONNELL: Okay, that's new to them. Matter of
15 fact, this standard is going to be one of the first
16 standards. They did some initial work with the life safety
17 code, I guess it's been probably almost 10 years, where they
18 looked at it, instead of being performance-based, they
19 looked at tradeoffs from the prescriptive requirements. If
20 you put in sprinkler systems, maybe you could extend the
21 travel distance out of the facility, stuff like that. That
22 was their first cut at it. But they're working on it.

23 There's some international effort going on and
24 Australia and New Zealand have performance-based
25 alternatives to their building codes. So the building codes

1 are a little more ahead -- the international building codes
2 are a little more ahead of the -- than the fire codes.

3 CHAIRMAN JACKSON: And their schedule here is not
4 contingent upon any confirmatory research?

5 MR. CONNELL: No, it is no.

6 CHAIRMAN JACKSON: Okay.

7 MR. CONNELL: Just briefly to cover the NFPA, as I
8 said, the schedule for them is May 2000. We do participate
9 on the technical committee. We have a meeting the end of
10 April, and the NFPA's position, they recommend that we adopt
11 the consensus standard in lieu of pursuing our own
12 rulemaking in accordance with this OMB circular and a public
13 law.

14 CHAIRMAN JACKSON: And so you see that the
15 schedule is realistic?

16 MR. CONNELL: I think the schedule is realistic.
17 Of course, they are -- we don't have control over that.

18 CHAIRMAN JACKSON: Right.

19 MR. CONNELL: The committee that is working on the
20 standard expects to have a draft out in September that will
21 be publicly available for public comment. Then you go
22 through the process resolving all the public comments and
23 presenting it to the NFP standards council who is actually
24 responsible for it, and then the NFPA membership gets to
25 vote on it. And the way that their cycle works, the

1 earliest that will happen is May 2000. So it won't be
2 before then. It may be even a little after that.

3 CHAIRMAN JACKSON: Yes?

4 COMMISSIONER McGAFFIGAN: Have we endorsed any of
5 their previous standards? You said that the --

6 MR. CONNELL: Yes, we have, like for sprinkler
7 systems and detection systems, we have endorsed those
8 standards.

9 COMMISSIONER McGAFFIGAN: But the one for
10 lightwater reactors, existing lightwater reactors?

11 MR. CONNELL: No. It came out after most of the
12 submittals were in from General Electric and Combustion
13 Engineering and Westinghouse. So it was not adopted for the
14 reviews of the advanced lightwater reactors.

15 COMMISSIONER McGAFFIGAN: For existing lightwater
16 reactors, the --

17 MR. CONNELL: Oh, the existing? It was not
18 adopted. The existing -- for existing reactors, that
19 standard does not address safe shutdown. It deferred that
20 to the authorities having jurisdiction, which is us, in this
21 country. So we didn't adopt that. It is primarily a
22 property protection program continuity ensuring they have
23 generation capability standard. It's not a safe shutdown
24 standard.

25 CHAIRMAN JACKSON: Okay.

1 MR. CONNELL: The one for the advanced reactors
2 is, though.

3 Next slide, Lisa.

4 Now continuing with the external feedback, the
5 Nuclear Information Resource Service made some presentations
6 with the Union of Concerned Scientists at the ACRS. Their
7 positions are that the existing regulations' licensing basis
8 are complex and it makes compliance and enforcement
9 difficult. The plant risk assessments, primarily the
10 IPEEEs, nonconservatively estimate risk and fire, and the
11 NRC Staff has not adequately determined the technical basis
12 for existing regulations. And I think this focuses
13 primarily on the issue concerning the penetration seals and
14 the noncombustibility requirement in the existing rule.

15 CHAIRMAN JACKSON: Does the Staff agree with these
16 bullets?

17 MR. CONNELL: Not entirely. I agree that the
18 licensing basis may be complex. I do not agree that it
19 makes compliance or enforcement difficult. I think people
20 that are working in this area understand the regulations,
21 both the licensees and us, and I think that we have been
22 very successful in compliance and enforcement.

23 CHAIRMAN JACKSON: Didn't the Staff have a
24 difficult time in assessing and communicating the licensing
25 basis vis-a-vis Appendix R for the Salem plant? Could you

1 elaborate?

2 MR. CONNELL: I believe so, but --

3 MR. WEST: I was involved in that. We had some
4 letters to write to, I think, UCS and some senators, and I
5 don't believe there was any particular difficulty. As Ed
6 was explaining, it is sometimes difficult to explain to
7 someone that is not involved in this, so we had difficulty
8 putting the licensing basis into language that would be
9 readily understood by the people we are writing to. But we
10 didn't have any problem establishing the licensing basis.

11 CHAIRMAN JACKSON: Okay.

12 COMMISSIONER McGAFFIGAN: Could I follow on that?
13 It may be hard to understand by Commissioners, too, but the
14 -- my recollection in Salem is the two units have two
15 different bases, right? One is Appendix R and one isn't?

16 MR. WEST: That's right.

17 COMMISSIONER McGAFFIGAN: And they're -- I've been
18 there. They're cold -- you know, they're right next to each
19 other, they share stuff.

20 MR. WEST: Right.

21 COMMISSIONER McGAFFIGAN: How difficult --
22 everybody knows where one set of regulations, you walk five
23 meters that way, you go into a different space? Or how does
24 that work in fact?

25 MR. WEST: I wouldn't say everyone knows, but --

1 COMMISSIONER McGAFFIGAN: But the fire people at
2 the plant know?

3 MR. WEST: Yes.

4 CHAIRMAN JACKSON: This is because of this 1979
5 bifurcation point?

6 MR. WEST: That's right.

7 CHAIRMAN JACKSON: One of those plants was
8 licensed in '77 and the other in '81?

9 MR. WEST: That's right, so one became an Appendix
10 R plant and one is a post-Appendix R plant. But the
11 licensing basis for most plants are specified in the USAR
12 and other reference documents, so if someone were determined
13 to establish a licensing basis, for example, an inspector,
14 the information is readily available.

15 COMMISSIONER McGAFFIGAN: Is it all summarized in
16 the NUREG? I mean do you have --

17 MR. WEST: No.

18 COMMISSIONER McGAFFIGAN: Here are the 104
19 enduring plants, and --

20 CHAIRMAN JACKSON: No, because it came up with the
21 license at Watts Bar. It wasn't even clear.

22 MR. WEST: It's easy to establish which are
23 Appendix R plants and which are not, based on the date of
24 operation. But there are other components of the licensing
25 basis, for example, which branch technical position they

1 established their program against, and it does add some
2 complexity.

3 COMMISSIONER MCGAFFIGAN: And which exemptions
4 they all have. There were massive exemptions granted.

5 MR. WEST: We do have a database of exemptions, so
6 we have that information readily available. It's not a
7 NUREG, but we do have it. But it is complex to the public,
8 there's no doubt, it would be complex.

9 CHAIRMAN JACKSON: Well, my perception is that it
10 is sometimes complex to the Staff and the different
11 documents and guidance that even our own Staff operates on,
12 it's scattered hither and yon, and it's in branch technical
13 positions, and discussions about whether a plant is a pre-
14 or a post-1979 plant and so forth.

15 MR. CALLAN: Chairman, I would agree with that.
16 It's -- from my regional experience, it's complex for the
17 residents and the regional management, the enforcement
18 staff, et cetera. Each region has a handful of fire
19 protection specialists that work very closely with Steve
20 West and his section, but it is -- it is not complex for
21 them, but it is for the rest of the Staff, and that's how I
22 would summarize it.

23 CHAIRMAN JACKSON: And this year the Staff has
24 become enmeshed in reviewing and reassessing the licensing
25 basis for the fire protection at Quad Cities. Could you

1 discuss what some of those issues and difficulties are?

2 MR. CONNELL: Well, I don't think -- Quad Cities
3 is an Appendix R plant, both units, so it's very simple.

4 CHAIRMAN JACKSON: Well, Mr. West was at the
5 chairman's briefing. Maybe you should speak to the
6 situation vis-a-vis complexities.

7 MR. WEST: I guess in my view, being involved in,
8 as you say, immersed in the review of the Quad Cities issues
9 today, we have had to go back and take a look at the
10 licensing basis and look at exemptions. And again, I think
11 the information that we found that we reviewed haven't
12 presented any particular problems to the Staff in
13 understanding the licensing basis.

14 We do have, as we discussed with you, some
15 technical questions with respect to implementation of
16 exemptions or the staff approval of exemptions, and what
17 that means to plant safety and risk. But for the licensing
18 basis itself, just understanding, you know, that they are an
19 Appendix R plant, that they have exemptions, finding what
20 the exemptions were, we were readily able to do that.

21 CHAIRMAN JACKSON: Well, I think in the end what
22 we are trying to do is to tie the regulatory framework back
23 to where the risk is, okay, and so the question becomes --
24 and this is what seemed to come out of the briefing that I
25 had, was that vis-a-vis the status of exemptions at Quad

1 Cities, there is a question, at least in one or more
2 instances, as to whether the exemptions increased or
3 decreased vulnerabilities vis-a-vis safe shutdown. Is that
4 correct?

5 MR. WEST: Those are definitely questions.

6 CHAIRMAN JACKSON: And that's in terms of, you
7 know, full disclosure, you know, I think that's -- I think
8 it is important for you to talk about that to the Commission
9 relative to what the issue is there.

10 MR. HOLAHAN: I think Quad Cities is an
11 interesting example because even if in a legal sense it's --
12 you can go back and construct whether it's an Appendix R
13 plant or not and what are the exemptions, the safety
14 implications of the Quad Cities fire protection program, I
15 think, were not understood, and it is a complex matter. And
16 it's only recently through the IPEEE program and
17 headquarters and regional work on Quad Cities that the full
18 safety implications of their fire protection programs are
19 being understood. And I think -- I think I said it before,
20 if we knew then what we know now, we wouldn't have granted
21 some of the exemptions on Quad Cities. And in the fullest
22 sense, if that's part of the complexity of the regulation,
23 it can lead to those situations.

24 CHAIRMAN JACKSON: Do you have today a methodology
25 or means, either for yourselves or for licensees, to, as you

1 would say, understand the implications of any given plant's
2 fire protection program?

3 MR. HOLAHAN: I think clearly the best tool
4 available to address the fire protection safety is
5 probabilistic risk assessment or alternative versions of
6 that used in the IPEEE program.

7 Those methodologies are not as fully developed as
8 PRA for power operation and other initiating events. But I
9 think in a sense the IPEEE program has been very successful
10 in shedding quite a lot of light on fire protection safety
11 in these plants, you know, in some very real sense you
12 should consider Quad Cities a success. The IPEEE program
13 found things in Quad cities that we didn't fully, and the
14 licensee didn't fully understand for a long time.

15 CHAIRMAN JACKSON: Yes?

16 COMMISSIONER McGAFFIGAN: Could I follow up and
17 ask in light of the statement Mr. Holahan made, can we -- if
18 there are exemptions that we have misgivings about, legally
19 can we pull them back or just reimpose a license condition
20 on the plant? This maybe is a question for Karen, but
21 having once granted an exemption and later getting
22 additional information that undermines the basis on which
23 that exemption may have been granted or -- can we pull it
24 back?

25 MR. HOLAHAN: I am prepared to be overridden by

1 general counsel as well, but my understanding is, because
2 this is the current, the licensing basis of the plant,
3 probably would constitute a backfit for the Staff to change
4 an exemption. But I think, you know, all of the options
5 within the backfit rule, cost-justified or compliance, would
6 seem to be available to Staff to deal with those issues.

7 CHAIRMAN JACKSON: Even if the exemption increased
8 the vulnerabilities or the risk?

9 MR. HOLAHAN: Yes, absolutely.

10 CHAIRMAN JACKSON: Karen?

11 MS. CYR: It's clear we can go back, I mean, and
12 address the issue. We are granting an exemption by saying
13 you can meet the equivalent of whatever the requirement is
14 by alternative means. If the underlying basis for that is
15 not accurate, you can go back and address that, even if it's
16 a backfit. In that circumstance, it would be a compliance
17 backfit because you're bringing the plant into a situation
18 which is an equivalent level of compliance or safety with
19 respect to the whatever underlying requirement is.

20 CHAIRMAN JACKSON: Okay.

21 MR. WEST: There was at least one case at Quad
22 Cities where the Staff went in after the IPEEE results were
23 submitted and we found an area where there was an exemption
24 that appeared to contribute to the vulnerabilities and in
25 that case, when it was discussed with the licensee, they

1 agreed and immediately -- I say immediately, they very
2 quickly made a plant modification to fix that vulnerability.

3 CHAIRMAN JACKSON: Why don't you go on.

4 MR. CONNELL: Okay. Mark is going to cover the
5 IPEE.

6 Can we have the next slide, please.

7 MR. CUNNINGHAM: In January of this year, the
8 Staff submitted a document called Preliminary Perspectives
9 Gained From the Initial IPEEE Submittal Reviews to the
10 Commission. That document provided perspectives on the
11 IPEEE results from the seismic fire and other external event
12 initiators. It's a document based on a preliminary review
13 of the first one-third to one-half of the IPEEE submittals.
14 This slide provides some of the key points in terms of the
15 fire IPEEE results. A general result we have seen, based on
16 this review of the first third to a half of the IPEEEs is
17 that we have seen general success in meeting the goals of
18 Generic Letter 88-20, the supplement of Generic Letter
19 88-20.

20 We have, however, seen some ones where -- the
21 quality of the submittals has varied somewhat and we have
22 seen some where we have a number of concerns about the
23 quality of the submittal.

24 In terms of core damage frequencies, we see a wide
25 range of results. Most plants are in the range of one times

1 10 to the minus 6 to one times 10 to the minus 4 per year.
2 We have some odd ones on either end. We have one that's
3 much below a 10 to the minus 9 per year, and we have a
4 number of questions on that submittal, it's fair to say.

5 We also have the one that we have talked about
6 before of Quad Cities that came in at 5 times 10 to the
7 minus 3 per year.

8 The variability that you see there comes from a
9 number of considerations. Some of it is plant-to-plant
10 variability in design and operation. In the case of the
11 fire IPEEEs, though, you also see a fair amount of
12 variability coming from the method of analysis that's used.
13 This includes both the basic methods, be it PRA or some of
14 the other methods used, comes from modeling assumptions
15 within the analysis, and the level of detail that the
16 analysis goes into.

17 However, given this, you can see that the core
18 damage frequency contribution from fires can be equivalent
19 to or be near or in some -- I guess in the case of Quad
20 Cities, exceed that from the core damage frequency from
21 traditional internal events. So this is consistent with a
22 pattern that we have seen in fire PRAs from probably over
23 the last 15 years, that fire contribution to core damage
24 frequency from fire initiators can be a significant
25 contribution.

1 In the IPPEEs in the area of fire, about half of
2 the licensees of the third or the half that we have looked
3 at have implemented or proposed plan improvements, be it
4 procedural modifications or hardware changes, that sort of
5 thing.

6 And in the cases of -- we have a caveat here that
7 as the case with the IPPEEs, the review that we performed
8 was focused -- was limited and focused on whether or not the
9 licensee met the intent of the generic letter. If we want
10 to use -- if the licensee wants to use their fire risk
11 analysis or their fire results in other risk-informed,
12 performance-based arenas, then the Staff would have to -- it
13 would necessarily have more review to do.

14 CHAIRMAN JACKSON: How large a universe of plants
15 have a situation where the core damage frequency
16 contribution from fire events approaches or exceeds that
17 from internal events? You know, based on the reviews that
18 you have done so far.

19 MR. CUNNINGHAM: From what we have documented in
20 the January report, there is one where I think it clearly
21 succeeds -- exceeds, and that's Quad Cities. There was
22 another four or five on looking at it that the core damage
23 frequencies are in the range of 10 to the minus 4 or above.
24 I suspect that those four or five then, that the -- that is
25 comparable to or perhaps larger than the internal events.

1 So you have got four or five out of the 24 that are
2 documented in here.

3 CHAIRMAN JACKSON: And when you say approximately
4 50 percent of the licensees have implemented or proposed
5 plan improvements, is it 50 percent of the five, or is it 50
6 percent of all?

7 MR. CUNNINGHAM: 50 percent of all.

8 CHAIRMAN JACKSON: And were they related to safe
9 shutdown requirements or they were broader based than that?

10 MR. CUNNINGHAM: They were probably more broadly
11 based than that.

12 CHAIRMAN JACKSON: Okay.

13 MR. CONNELL: Just some additional information.
14 As part of the assessment, some licensees did identify
15 compliance issues and addressed them in their corrective
16 action plan.

17 MR. CUNNINGHAM: Ed will go to the next slide
18 then.

19 MR. CONNELL: Can I have the next one, Lisa.

20 I will briefly cover the fire protection
21 functional inspection program. I'll just jump down to the
22 fourth bullet very quickly here. This is a risk-informed
23 inspection. We do use the IPEEE submittals, and if we have
24 an existing PRA for the plant, fire PRA for the plant, we do
25 use that for the inspection.

1 Four plants are part of the pilot. River Bend
2 inspection has been issued, that one is complete.

3 CHAIRMAN JACKSON: What are some of the
4 preliminary results?

5 MR. CONNELL: I'll cover that on the next slide.

6 CHAIRMAN JACKSON: Okay, I'll wait.

7 MR. CONNELL: Susquehanna, the inspection is
8 complete. The Staff is completing the report.

9 St. Lucie, the Staff is right now down at the
10 plant on their second week of their on-site inspection.

11 We have a fourth plant, right now that's Prairie
12 Island, that may change.

13 Following the completion of the pilot program, we
14 are going to have a public workshop in the fall. The Staff
15 is going to reassess the program after the workshop and the
16 final inspection, and we owe the Commission a report on the
17 results.

18 CHAIRMAN JACKSON: Let me ask you a question. I
19 mean given all the years that the Staff has been working
20 with Appendix R and Appendix R issues, what is it that you
21 do not know today?

22 MR. CONNELL: What is it that we do not know?

23 CHAIRMAN JACKSON: I mean what are these fire
24 protection functional inspections going to tell you? I mean
25 are they to tell you the status of the licensee's fire

1 protection programs, their compliance with 50.48? I mean
2 what is it that you do not know today?

3 MR. CONNELL: Well, it will tell us all those
4 things.

5 CHAIRMAN JACKSON: But I'm saying, you know, this
6 has this long and sordid history, and the question is, I'm
7 asking what are they focused on? I mean what is it that you
8 don't know that these pilots are focused on?

9 MR. CONNELL: Well, we're looking -- the risk
10 information we didn't know before when the plants were
11 originally assessed against Appendix R, so that's new
12 information that we are using as part of the inspection.

13 The thermo-lag, a lot of plants changed
14 dramatically their safe shutdown methods as part of their
15 thermo-lag resolution. They did not submit those to the
16 Staff. The Staff originally approved or reviewed the
17 initial safe shutdown methodology. All the thermo-lag
18 plants had changed their safe shutdown method. The Staff
19 doesn't know what that is, so the inspections are going to
20 look at that. So that's one of the things, how they
21 resolved their thermo-lag issue detail.

22 We had generic answers to questions where they
23 said, well, we're going to upgrade some barriers, we are
24 going to change our safe shutdown method in some areas, we
25 are going to replace barriers, we are going to reroute

1 circuits, but they didn't say necessarily in this room we
2 are going to do this to address charging pumps or something
3 like that, we don't have that level of detail in their
4 responses to the REIs we sent out. So the FPFIs will go
5 into more detail.

6 CHAIRMAN JACKSON: Well, now, you know, I think we
7 have issued one confirmatory order to one licensee because
8 of the thermo-lag.

9 MR. CONNELL: That's right.

10 CHAIRMAN JACKSON: Is this then to play into the
11 thermo-lag resolution and what other plants might have
12 confirmatory orders? Or I mean what --

13 MR. CONNELL: No, there's no direct tie between
14 the FPGI and the thermo-lag corrective action plans. The
15 confirmatory orders were primarily schedule-driven to ensure
16 that the licensees -- we have had some slippages with the
17 schedules. Licensees have sent a completion date of such
18 and such a time and it ends up slipping. So the
19 confirmatory, you always kind of like to tighten that up a
20 little bit to eliminate some of the slippage.

21 CHAIRMAN JACKSON: Okay. Maybe we could go to the
22 next slide because I think that gets to my question about
23 what is it that we do not know? You know, you have these
24 observed weaknesses.

25 MR. CONNELL: Right.

1 CHAIRMAN JACKSON: And except for the IPEEE
2 process, can't all of these be viewed as Appendix R
3 implementation issues?

4 MR. CONNELL: Well, actually only two of them are
5 specific to Appendix R. That's the safe shutdown capability
6 and emergency lighting. The other items are part of the
7 licensee's fire protection program that is required by 50.48
8 to meet General Design Criterion 3. So they are not
9 specifically Appendix R. But it is part of their overall
10 fire protection program and at one time the Staff reviewed
11 and approved those. Licensees that have the standard
12 license condition can make changes to those programs without
13 Staff approval. So these things have changed over time.
14 The way they deal with compensatory measures has changed,
15 and for a lot of plants their QA audits have changed.
16 Compliance with industry codes and standards has changed.
17 Codes and standards have changed from when the plants were
18 licensed.

19 So a lot of these things the licensees have
20 modified from what the Staff originally looked at 10 or 15
21 years ago, maybe.

22 CHAIRMAN JACKSON: If an observed strength was the
23 technical competency of the fire protection staff, why are
24 all these issues still here as weaknesses?

25 MR. CONNELL: Well, I think it's a resource issue.

1 I think the Staff knows what the requirements are. I think
2 the resources that have been applied for fire protection has
3 kind of waned at some licensees' facilities, and that's not
4 a criticism of the technical staff, it's working on it, but
5 they're not getting the appropriate management support to
6 implement their fire protection program. We don't hold them
7 responsible for that.

8 CHAIRMAN JACKSON: Okay. So again, it's the issue
9 that if we're not looking --

10 MR. CONNELL: If we're not looking, they're not
11 looking.

12 CHAIRMAN JACKSON: Okay.

13 MR. CALLAN: Well, of course, the nuclear insurers
14 also look at this and, in fact, in many fire protection
15 areas are a bigger prime mover than the NRC is. Isn't that
16 right? So I guess it's more of a question to Ed.

17 MR. CONNELL: It depends. Of course, from a
18 property protection standpoint, that's true, but the nuclear
19 insurers do not address safe shutdown.

20 MR. CALLAN: No, they don't, no. But we are
21 talking about fire protection broadly, and we need to be
22 careful because the nuclear insurers hold licensees' feet to
23 the fire collectively almost more than we do in many areas.

24 MR. CONNELL: But the way the insurers do it is if
25 a licensee elects not to make a modification, they will

1 increase their rates.

2 MR. CALLAN: So they just say okay, if you don't
3 like this change, we are going to increase your insurance
4 premiums.

5 CHAIRMAN JACKSON: So then it's a tradeoff between
6 what it costs to change versus the --

7 MR. CONNELL: That's right. Whereas, of course,
8 our perspective is very different.

9 CHAIRMAN JACKSON: Okay.

10 MR. CONNELL: The next slide is on Research, and
11 Mark is going to address that.

12 COMMISSIONER McGAFFIGAN: Can I just ask a
13 question?

14 CHAIRMAN JACKSON: Please.

15 COMMISSIONER McGAFFIGAN: What do insurers look
16 at? I mean if they don't look at safe shutdown, yet they
17 are smart enough to say if you don't make this change, we
18 are going to increase your rates?

19 MR. CONNELL: Property protection. They look at
20 property protection, continuity of operations. They are
21 covering themselves for how much they are going to be liable
22 for. If you had a turbine building fire, it may not impact
23 safe shutdown capability, but it certainly is going to
24 represent a loss to the insurance company.

25 COMMISSIONER McGAFFIGAN: And so they have a

1 prescriptive set of --

2 MR. CONNELL: Yes, very prescriptive.

3 COMMISSIONER McGAFFIGAN: -- requirements that
4 they will put on the balance of plant?

5 MR. CONNELL: Right. It's a schedule that they
6 look at. They look at the suppression and detection. If
7 licensees have suppression and detection for these
8 particular hazards, they give them a certain rate. If they
9 don't have the protection, the rate goes up.

10 COMMISSIONER McGAFFIGAN: And if the insurers
11 maintain a prescriptive set of requirements and we some day
12 get to a performance-based rule, how will those two things
13 mesh? I mean --

14 MR. CONNELL: The licensee is going to have to
15 address that, the licensees are going to have to address
16 that.

17 I just would note that the --

18 CHAIRMAN JACKSON: Well, but let me just make sure
19 that you are saying that even though the insurers look at
20 many things, particularly in the balance of plant, that some
21 of the things that are the most sensitive to us from a
22 safety significance perspective, they don't necessarily look
23 at?

24 MR. CONNELL: They do not address.

25 CHAIRMAN JACKSON: Okay.

1 MR. WEST: I think they are relying on the NRC to
2 take care of that, so it works both ways.

3 MR. CONNELL: And I just would note that the
4 chairman of the technical committee that is working on the
5 standard does do the fire protection inspections for the
6 insurance industry. So they are involved in the development
7 of the performance-based standard.

8 May we have the next slide, please.

9 MR. CUNNINGHAM: There are two elements to the
10 work that's been underway in the Office of Research with
11 respect to fire. The first is activities in Research that
12 have been directly supporting the rulemaking when the
13 rulemaking was in Research. Basically that work is pretty
14 much wrapped up now, and I'm not going to talk much about
15 that.

16 What is happening now, though, is more in the
17 traditional sense of Research, which is we are trying to
18 extend our state of knowledge, if you will, on fire risk
19 analysis and try to improve the underlying technical basis
20 for our fire risk analysis.

21 In general we think that this is needed to support
22 the increased use of fire PRA throughout the regulatory
23 process, not just focused on fire protection rulemaking or
24 anything, but it could be in the context of a proposed Reg
25 Guide 1.174 as well where fire risk has to be considered in

1 licensing basis changes.

2 Basically we are at the point now where we have
3 been going through and trying to identify potential --

4 CHAIRMAN JACKSON: I don't mind if whoever that is
5 turns off their alarm. It's disturbing to the Commission.

6 MR. CUNNINGHAM: We are at the point now where we
7 are trying to review previous work in Research and in other
8 areas, looking at the IPEEE reviews to identify -- and other
9 areas to identify potential Research issues. We have a list
10 that's a very broad list of 42 items. It includes, I think,
11 the 12 that we had talked about earlier. And much broader
12 than that. I'm just trying to say let's find out all the
13 issues we can possibly identify and then try and screen down
14 to say which do we think are the most significant, which are
15 the ones that are the most amenable to Research, which are
16 the ones that are the most cost-effective, that sort of
17 thing.

18 And we have some examples here of issues that are
19 in that list of 42. We have talked about hot shorts, the
20 fire-induced circuit failures before. Treatment of operator
21 performance during fires. Reliability of fire protection
22 systems, that sort of thing. So we have a long list. We
23 are going to be working over the next month or two to talk
24 to -- to try to settle down and come up with an initial list
25 to begin working on this fiscal year.

1 I should note that the Electric Power Research
2 Institute is also beginning or has a fire research program.
3 The Staff is meeting with them next month to sort out what
4 they are up to and give them an idea what we are doing.

5 CHAIRMAN JACKSON: Commissioner Diaz.

6 COMMISSIONER DIAZ: Now, of course, you have been
7 working for many years studying fires and establishing bases
8 to deal with them. Is there a comprehensive document that
9 summarizes the efforts that Research has made in this area
10 that could be used as a starting point, a launch to your new
11 efforts? Because I think it is important that efforts be
12 closed, and if there are new efforts needed, they should be
13 supported by state of the art, and I wonder if such a
14 document exists?

15 MR. CUNNINGHAM: The document that we are putting
16 together -- we have a document we are preparing that will
17 describe these 42 issues, and the technical basis for them,
18 and the technical issues and that sort of thing. And I am
19 trying to recall if it --

20 COMMISSIONER DIAZ: This is what you want to do.
21 I want to say can you summarize, or has it been summarized
22 at a point that we can say yes, you need to look at these 42
23 because you never looked at them before? You close so many
24 each -- what is, you know, all the years you have been
25 working on it, what is the comprehensive report that you can

1 present and say this is the state of the art from Research's
2 perspective?

3 MR. CUNNINGHAM: What I was getting to is I can't
4 quite recall if the document we are preparing now has that
5 sort of summary or not.

6 CHAIRMAN JACKSON: No, I think he's asking a
7 separate question. The issue is, clearly there's been
8 thinking and analysis and/or research on fire protection
9 issues over a number of years. Question: Does there exist
10 a compendium of what's come out of that research so that we
11 know what the state of the art is or was as of a certain
12 point? And then can we look at and have you look at these
13 42 potential additional issues relative to what we already
14 know? I mean that's kind of the similar question that's
15 behind, you know -- but it's different, I understand now,
16 the fire protection functional inspections. But it's a
17 similar kind of thing. What is it that you don't know and
18 how does that play off of what you do know? And is there a
19 place where what you do know has been brought together and
20 summarized and the significance of it?

21 MR. CONNELL: Let me get a crack at it. There is
22 a NUREG that combines all of the research. Most of this
23 fire research post-Browns Ferry was done by Sandia. And
24 Sandia, I think it's four or five years old, published a
25 NUREG that -- all the research they had done over 10 or 12

1 years in one place. So we have all of that in one place.

2 We also have the NUREG 50.88, the fire risk
3 scoping study issues that address a lot of the things, the
4 hot shorts, that kind of stuff. But they said there is
5 needed more information to really address the smoke. They
6 are starting to do some more work on smoke; don't have a lot
7 of information on smoke right now. So there's -- we have a
8 lot of that that is done, but we have identified in 50.88
9 and some other documents stuff that we don't know from a
10 research perspective.

11 COMMISSIONER DIAZ: My point is that when you are
12 going to launch a new initiative, you should precisely know
13 and document where you are starting from. I think that is a
14 basic fundamental question.

15 CHAIRMAN JACKSON: Go ahead, Commissioner.

16 COMMISSIONER McGAFFIGAN: I would be interested in
17 what's in Draft NUREG 1521 because Mr. Dey, in his differing
18 professional opinion or view, says that he believes Draft
19 NUREG 1521 reports on a technical review of risk-informed
20 performance-based methods for fire protection analyses that
21 have become available since NRC issued its fire protection
22 regs and goes on to say that this draft NUREG concludes the
23 currently available risk-informed performance-based methods
24 can be applied now, and then he says the reason this NUREG
25 hasn't gotten out is violent disagreement with NRR, I guess,

1 on the need to change the current regulatory structure and
2 the conclusions of the study, et cetera, et cetera.

3 So is this document a document that would purport
4 to be what Commissioner Diaz was working for, the basis
5 where we are at the moment?

6 MR. CONNELL: No, I don't -- on the major obstacle
7 that's listed in there is the persons having a lot of
8 comments on it.

9 COMMISSIONER MCGAFFIGAN: But that document does
10 not summarize the state of research as it is today?

11 MR. CONNELL: No, it does not.

12 COMMISSIONER MCGAFFIGAN: Okay. So it makes an
13 argument for why we should go ahead with essentially option
14 1 now, an argument that you all disagree with?

15 MR. CONNELL: For -- not just based on what is in
16 the NUREG. Option 2 includes a lot of things outside of the
17 research area.

18 COMMISSIONER MCGAFFIGAN: Right.

19 MR. CONNELL: I mean having a -- we could develop
20 option 1. If nobody adopted it, if we made it voluntary and
21 nobody adopted it, what have we accomplished? Nothing. If
22 we made it mandatory and it doesn't pass the backfit test,
23 what have we accomplished? Nothing.

24 This option 2, I think, is our best shot at
25 getting something that can be done, you don't have to worry

1 about the backfit, and in some plants they are never going
2 to adopt it. They don't care. Some plants may. So if we
3 look at reality, option 1 to us, it looks cleaner.

4 CHAIRMAN JACKSON: You know, we talk about
5 backfits and compliance backfits, and I'm going to make a
6 comment at the end about some of that, but I guess I'm
7 confused. I'm just going to leave you with kind of a
8 general question, which is that if you really have a
9 risk-informed and/or performance-based approach, why can
10 such an approach not be developed and implemented in a way
11 where, by definition, it meets a backfit test? Because
12 that, to me, is the intent of a true risk-informed approach.
13 Because we get into these discussions all the time about
14 whether something meets the backfit smell test, and we have
15 it, and it's a good regulation to have. But it seems to me
16 that there has to be a marriage between that and what you
17 would call a risk-informed approach.

18 But why don't we finish the discussion here.

19 MR. CONNELL: Okay. Could I have the next slide,
20 please.

21 Okay, we have pretty much covered all of these in
22 our discussion, so I'm really not going to go into a whole
23 lot of detail. I just wanted to note that there is a lot of
24 flexibility today with the current regulations and guidance.

25 CHAIRMAN JACKSON: I guess I want to get back to

1 just asking a question because this -- if you look at the
2 five plants that you talked about that either have fire as
3 an initiator that exceeds or approaches that for others,
4 just those five, what do we know or what are we doing about
5 our understanding of their understanding of the safety
6 implications of their fire protection programs, particularly
7 vis-a-vis any exemptions that may exist, but more generally?

8 MR. CONNELL: Well, the IPEEE was supposed to
9 assess the as-built plant, so in theory the exemption should
10 be addressed in the IPEEE. Now a lot of licensees did not
11 specifically address exemptions in their submittal, and we
12 have asked the questions about that, especially when we have
13 looked at -- we have all the exemptions and we look at some
14 that are pretty easy to dismiss without any detailed
15 evaluation. Things that we have had questions about
16 specific exemptions, we have asked them how did you assess
17 this particular exemption in your submittal. Those are the
18 kinds of questions that we asked to try to resolve those.

19 CHAIRMAN JACKSON: But there was no systematic
20 folding in of that into the IPEEE evaluation?

21 MR. CONNELL: Well, except that they are supposed
22 to assess their plant as it exists, so that includes
23 whatever exemptions they may have. It's not really to
24 assess the plant's compliance with Appendix R.

25 CHAIRMAN JACKSON: It's not trying to assess it,

1 but the issue is if you do an IPEEE assessment, which is
2 meant to get at the risk, and you find out that for a small
3 limited universe of plants, that risk is higher than what
4 you might have anticipated, and any IPEEE is going to be
5 done relative to the plant as it exists, and the exemptions
6 in that case relate to them how they have implemented a fire
7 protection program.

8 MR. CONNELL: Okay.

9 CHAIRMAN JACKSON: And the issue is what are the
10 implications of that relative to the risk profile of that
11 plant? It's not a compliance issue.

12 MR. CONNELL: Right.

13 It's where the two things come together because
14 what you're interested in is the risk significance.

15 So is your question have they specifically
16 assessed the delta in risk relating to a particular
17 exemption?

18 CHAIRMAN JACKSON: The safety implications of
19 their fire protection program.

20 MR. CONNELL: The only plant that has done that is
21 Quad Cities. Most plants do not specifically address we
22 have this particular exemption that results in this delta.

23 CHAIRMAN JACKSON: I understand, but you mentioned
24 five plants.

25 MR. CONNELL: Right.

1 CHAIRMAN JACKSON: Where the IPEEEs show that
2 their core damage frequency from fire approaches or exceeds
3 that from any other initiating event. What are you doing
4 relative to those plants? That's all I'm asking.

5 MR. CONNELL: And we're following up with those
6 plants.

7 MR. CUNNINGHAM: The first piece is within the
8 context of Generic Letter 88-20, one of the objectives is
9 for them to consider improvements to the plant, and as we
10 have said, in half of the cases or so, they voluntarily go
11 back and make changes to their plant. Whether they relate
12 to exemptions or something else.

13 CHAIRMAN JACKSON: I'm only asking about the five
14 plants. I'm trying to focus on those where --

15 MR. CONNELL: When they report a high number, that
16 increases our attention, and those plants --

17 CHAIRMAN JACKSON: What is the attention? What do
18 you mean specifically?

19 MR. CONNELL: Well, what we do is we ask them --
20 if we get a -- if we see something in the submittal that
21 doesn't look right, in other words, an assumption that
22 doesn't look valid or they have done something that's
23 different from everybody else, we are saying why is this
24 plant getting a different number?

25 A good example would be Limerick and Susquehanna.

1 Limerick reported a 10 to the minus 6 number; Susquehanna
2 reported a 10 to the minus 9 number. They are basically the
3 same plant, same NSSS, built about the same time, in the
4 same state, they just happen to be operated by two separate
5 utilities. Why is there three orders of magnitude
6 difference? It's the method of the analysis that was used.

7 So you've got to take the numbers with a grain of
8 salt. The plants basically are the same, they have similar
9 safe shutdown methodologies. If the methods were sound,
10 they would give you relatively similar results. Three
11 orders of magnitude difference shows you that the methods
12 are not as -- for getting a core damage frequency are not as
13 sound as we would like.

14 MR. CALLAN: Now, Chairman, I think the question
15 you are asking is have we shifted gears, so to speak, like
16 we did with Quad Cities for the other handful of plants that
17 rose to that level and done any kind of systematic
18 assessment of their exemptions? And I think the answer is
19 no, we haven't.

20 MR. CONNELL: No, we have not.

21 MR. CALLAN: Yes.

22 CHAIRMAN JACKSON: Thank you.

23 MR. CONNELL: Okay, next slide, please.

24 These are basically stuff we've done. So next
25 slide.

1 Some additional considerations. We'll skip over
2 that, except for one, the International Fire Protection
3 Performance-Based Effort. I just wanted to note that the --
4 there has been a lot of ideas floated that we ought to do
5 this. The fact is where this has been done in other
6 countries, it's primarily limited to new construction. That
7 is not our situation. It's only been adopted in about five
8 or 10 percent of the new construction in the other
9 countries. It's primarily based on occupant egress, which
10 is not really relevant to our interest. Most of them are
11 just an alternative to a prescriptive building code, so even
12 in countries that have this, 90 or 95 percent of the
13 building owners that supposedly benefit from this elect to
14 use the prescriptive code, and I would expect if we adopted
15 a voluntary performance-based, risk-informed code, 99 to 100
16 percent of our plants would elect to do what they have.

17 COMMISSIONER DIAZ: Following now that I got
18 started with research in the same vein, is there something
19 that the Staff has or where they summarize all of these fire
20 protection issues, including the IPEEE, the fire protection
21 action plans, fire protection functional inspections? Is
22 there something -- and I'm not a glutton for paper.

23 CHAIRMAN JACKSON: Yes, he is.

24 [Laughter.]

25 COMMISSIONER DIAZ: But is there a summary of

1 these issues that the Commission could look at and become
2 better informed about what is -- because you talk about
3 resolution of issues, and I haven't seen evidence this has
4 been resolved in this matter. And I certainly hope that all
5 the --

6 MR. CONNELL: The research issues -- I should let
7 Mark address this. Of course, it's still being worked. Are
8 there other issues that you were interested in?

9 COMMISSIONER DIAZ: No, at the very top of your
10 previous page 13 it says resolutions of outstanding fire
11 protection issues.

12 MR. CONNELL: Those were the 12 issues that were
13 in 97-127.

14 COMMISSIONER DIAZ: Right. But now I am looking
15 at that from a complete perspective. There's a summary of
16 all of these issues, both from the IPED, the fire
17 protection technical -- you know, the inspections, something
18 that summarizes it in a few pages, what are the key issues,
19 the ones that we will have to deal with. You can keep the
20 ones that are --

21 MR. CONNELL: I don't think we have anything like
22 that right now, I don't think so.

23 COMMISSIONER DIAZ: Well, it might be a good idea,
24 because I am getting confused.

25 CHAIRMAN JACKSON: Right, I'm confused, too. And,

1 for instance, you know, there is this issue of having some
2 voluntary standard. You know, to inform my thinking I want
3 to know if you have done IPEEE, you do the fire protection
4 functional inspections. Do we have any fallout between
5 those plants that are pre-Appendix R and those that are
6 post-Appendix R?

7 MR. CONNELL: The IPEEE results don't show a
8 correlation between core damage frequency and vintage.

9 CHAIRMAN JACKSON: But all I'm really trying to
10 say, it relates to the Commissioner's point, that in terms
11 of informed decision-making, it is helpful if relative to
12 what you're asking us to act on, consider, that there is
13 some compendium of what's come out of all these various
14 initiatives to date; fire protection functional inspections,
15 IPEEE relative to the issues you are asking us to address.
16 Because that's necessary for informed decision-making.

17 Yes, Commissioner?

18 COMMISSIONER DIAZ: I would just say that that's
19 perfect, and if I might jump back to research, the Chairman
20 used the words up to date. I understand you have something
21 that is four or five years old. The point is somebody that
22 is an expert should look at all of the information and bring
23 it up to date and bring it to the Commission for
24 consideration.

25 MR. CONNELL: Okay.

1 CHAIRMAN JACKSON: Okay.

2 MR. CONNELL: Okay. Now we get to the options.
3 Next slide, Lisa.

4 CHAIRMAN JACKSON: You see, the reason I ask about
5 the issue of the post versus the pre-Appendix R plants is
6 that some of what we have been talking about revolves around
7 Appendix R, you know, that you have a prescriptive appendix
8 versus things, whether they are voluntary or not, that are
9 more performance-based or more risk-informed, and so we need
10 to know, and that's regulatory effectiveness is, is the
11 regulation or this part of it accomplishing what we expect,
12 et cetera, et cetera. I mean particularly if you are
13 talking about moving away from it or offering an additional
14 menu of choices relative to whatever exists.

15 COMMISSIONER DIAZ: If I may. I'm sorry, but
16 there was something in here that caught my attention. It's
17 the bottom of page 13, it says application for
18 performance-based/risk-informed method. I've seen in the
19 last three weeks that we are changing, and probably it might
20 be a healthy change, the way we bring together or separate
21 in a risk-informed performance-based. I think the Staff
22 should be very, very, very aware that when you put them
23 together, risk-informed/performance-based, you mean
24 something different than when you say risk-informed and
25 performance-based, or risk-informed or performance-based or

1 risk-informed and/or performance-based. And that separation
2 is not trivial. It actually defines the fact that there are
3 many cases in which risks are not available, nor will they
4 be performance-based would be applicable.

5 CHAIRMAN JACKSON: Or vice versa.

6 COMMISSIONER DIAZ: Or vice versa.

7 CHAIRMAN JACKSON: Or both.

8 COMMISSIONER DIAZ: And so I would like to
9 sensitive, Mr. Callan, please, to make sure when these
10 things are written that people separate them so that the
11 Commission has the benefits of the Staff thinking ahead of
12 them.

13 CHAIRMAN JACKSON: Right. And if you are bringing
14 forward options, the options should make clear whether you
15 are talking ones that are risk-informed options but not
16 performance-based, performance-based but not risk-informed,
17 or if you somehow believe they are both.

18 COMMISSIONER DIAZ: Does the entire Commission --

19 CHAIRMAN JACKSON: I think everybody agrees with that. We
20 just took a vote.

21 No, we didn't vote.

22 [Laughter.]

23 CHAIRMAN JACKSON: It's consensus.

24 COMMISSIONER DIAZ: Well, I like consensus.

25 MS. CYR: You were just confirming your

1 understanding.

2 COMMISSIONER DIAZ: That's what I was looking at,
3 the heads nodding.

4 MR. CONNELL: Okay, I'd like to briefly go over
5 the three options in the Staff paper.

6 Option 1 is continue the performance-based and/or
7 risk-informed effort to replace the existing fire protection
8 requirements. The Staff would develop a comprehensive reg
9 guide that provides for a prescriptive and a
10 performance-based and/or risk-informed alternatives in
11 compliance with the new rule. This would be one rule that
12 would apply to everybody. The backfit Appendix R would be
13 eliminated. The existing exemptions from Appendix R would
14 be eliminated. Everybody would have to re-baseline their
15 fire protection program, the Staff would have to review --
16 re-review their fire protection program.

17 Option 2 is defer the performance-based,
18 risk-informed rulemaking. We would be working with industry
19 to develop the consensus standard. In parallel to that, the
20 Staff would like to develop a comprehensive regulatory guide
21 that captures all the existing fire protection guidance and
22 adds to guidance wherever we think it is necessary.

23 CHAIRMAN JACKSON: So this would be concurrent?

24 MR. CONNELL: Concurrently, yes, ma'am.

25 Option 3 is basically maintain the status quo, and

1 the note on the bottom there addresses the combustible
2 penetration seal issue.

3 CHAIRMAN JACKSON: How soon in fact on the
4 combustible penetration seal will the Commission see this
5 rule change?

6 MR. CONNELL: Well, it depends which option is
7 selected. If Option 1 is selected, there is no need to
8 change the penetration seal issue since we are eliminating
9 Appendix R.

10 CHAIRMAN JACKSON: Okay. But if one of the
11 others?

12 MR. CONNELL: It would be quick. We could give
13 you a schedule. It would be short term.

14 CHAIRMAN JACKSON: Commissioner Dicus?

15 COMMISSIONER DICUS: Given this vulnerability that
16 you have noticed, if we were to defer rulemaking, are there
17 other vulnerabilities that have to be addressed, or are we
18 --

19 MR. CONNELL: We are not aware of any other
20 vulnerabilities with the existing rule that need to be
21 changed, with the exception of this one.

22 Okay, for each option I have pros and cons, and
23 then I will say there is not consensus between everybody
24 about what's a pro and what's a con. This is the Staff's
25 categorization of the issues. Industry may not agree, and I

1 think some of the public interest groups may not agree with
2 some of -- the way I have categorized these, just to let you
3 know.

4 Option 1, of course, would eliminate the 850
5 exemptions. It would eliminate the need for most future
6 exemptions. However, 50.12 would still be there, so
7 licensees could still request an exemption, although they
8 may not need to quite as often. It would provide a single
9 uniform consistent licensing basis for all the plants, and
10 the schedule is an 18-month schedule, and that's in the
11 Commission paper.

12 The cons, the fire risk assessment method
13 limitations and uncertainties. We don't have really good
14 prior models, we don't have good data for those fire models.
15 There's a lot of uncertainties with the risk assessment
16 methods, as I explained with the different results we are
17 getting from IPEEEs for different plants, all that kind of
18 stuff.

19 Inspectability and enforceability. If we have new
20 requirements, we are going to have to bring both the
21 licensees and the Staff up to speed on inspection and
22 enforcing these new requirements.

23 CHAIRMAN JACKSON: So one would have to do a
24 re-baseline inspection of all plants?

25 MR. CONNELL: Yes. There would be a learning

1 curve, both for industry and ourselves in implementing these
2 new requirements. There would be a significant resource
3 commitment. Industry does not support this option. It does
4 preempt the NFPA effort, and based on the feedback we got
5 from OGC, it would be a backfit.

6 Option 2, the pros of this. The Staff considers
7 this to be consistent with DSI-13. We do have fairly broad
8 support for this, and we could -- we have been assured of
9 much involvement. The comprehensive reg guide would be
10 developed in parallel. We think this would be useful.

11 CHAIRMAN JACKSON: How long would it take?

12 MR. CONNELL: Twelve months, ma'am, once the
13 Commission directs us to pursue this, 12 months.

14 It is less resource-intensive, and since the
15 industry standard would be an alternative that licensees
16 could choose, it would not be a backfit.

17 Option 2 does maintain the existing exemptions and
18 the existing exemption process. It does provide a third
19 licensing basis. We could have the pre-Appendix -- the
20 post-Appendix R plants, the Appendix R plants, and now the
21 NFPA standard plants, and that might cause some people some
22 uncomfot. Of course, we are not controlling this schedule.
23 It is the NFPA's document, so they may or may not meet that
24 date. Of course, with new requirements, we would have the
25 same inspectability and enforceability and learning curve.

1 CHAIRMAN JACKSON: How does this option -- I mean
2 how do you fix inspectability and enforceability?

3 MR. CONNELL: Time.

4 MR. CALLAN: Chairman, if I -- I think Edward is
5 right here. The Staff isn't monolithic on how these are
6 pros and cons. I would almost list inspectability and
7 enforceability as a pro under Option 1 for the very reason
8 that option -- the pros indicate that you have a single
9 uniform consistent licensing basis, essentially no
10 exemptions, so you have that simplicity there. So it would
11 enhance its inspectability and enforceability.

12 Option 2, you sort of maintain the status quo in
13 terms of complexity.

14 MR. CONNELL: The problem I have with that is I
15 think it would be difficult for our inspectors to start
16 looking at fire models and the input data into fire models.
17 They haven't had to do that before. They are not trained to
18 do that. So that's going to be a problem.

19 Looking at risk deltas, all the inputs that go
20 into those things, that's all going to be -- if we went that
21 way, that would all be input into the rule, and our people
22 have not had a lot of experience with that and neither have
23 the licensees. So that's why I think inspectability and
24 enforceability is going to be a problem area. It can be
25 done, but it's a concern.

1 CHAIRMAN JACKSON: And doesn't that get you back
2 to Commissioner McGaffigan's comment on what he says about
3 inspecting against guidance versus -- I mean enforcing
4 against guidance as opposed to enforcing against a rule?

5 MR. CONNELL: Well, if we wrote a rule that had
6 some sort of core damage frequency as the requirement, how
7 do you inspect against that? It's everything that the
8 licensee does to get to that number, and all the input that
9 goes into that. What kind of cable are they having, what's
10 the fragility data on that particular cable. That's not
11 stuff we have had to look at before. Inspectors had to look
12 at does the area have a --

13 CHAIRMAN JACKSON: I'm on the enforceability, not
14 the inspectability.

15 MR. CONNELL: Okay. It's the same-- but one leads
16 to the other.

17 CHAIRMAN JACKSON: Okay.

18 MR. CONNELL: Option 3. Next slide, Lisa.

19 This basically maintains the status quo. The NFPA
20 standard could be used, and actually industry would prefer
21 that that first bullet be incorporated into Option 2. They
22 would rather we didn't adopt the NFPA standard as an
23 alternative to the rule. They would prefer that it be used
24 as say a basis for 50.59 evaluations, Generic Letter 86-10
25 evaluations or as a basis for exemptions and deviations.

1 And we'll go to the last slide.

2 Okay, as we discussed today, the Staff recommends
3 development of a performance-based risk-informed rule be
4 deferred, and that the proposal described in Option 2 be
5 approved and we discussed the reasons for the Staff
6 recommendation.

7 CHAIRMAN JACKSON: Well, my only comment or
8 question -- I mean again, you talk about the adequacy of the
9 current regulatory framework, and the low number of new
10 exemption requests, but sticking with the first bullet, you
11 know, I think if you go back to the issues that Commissioner
12 Diaz and I raised, the issue is -- you are talking about
13 having a new research program with 42 -- you know, potential
14 issues, no compendium of where things are today, a
15 systematic assessment of Appendix R versus non-Appendix R
16 plants, a systematic follow-up even for the five in terms of
17 the safety significance of the existing fire protection
18 program. And so in the absence of that information, the
19 issue is what are we to work off of and kind of have a basis
20 for any of the options?

21 I mean I'm not looking at one versus the other
22 versus the other, because the Commission will decide, but I
23 just challenge you particularly vis-a-vis your first bullet
24 that we don't have a sense of what the adequacy is, given
25 that there is no systematic statement about exactly where

1 things are today, both in terms of state of the art from a
2 research and a technical issue point of view, you know, a
3 systematic statement in terms of how the IPEEE programs,
4 what they say about the adequacy of existing programs, what
5 have come out of the fire protection functional inspections,
6 et cetera, et cetera, et cetera.

7 So -- and I'm not sure about the bases of the --
8 go ahead.

9 COMMISSIONER DIAZ: And I think that it might be
10 very well that you are convinced of the adequacy. We just
11 want to have the appropriate documentation that supports
12 that statement, and so I do think we are saying that you
13 don't know, as we don't know.

14 MR. CONNELL: I understand. I understand. And
15 it's not in one place. I mean I could go over licensee
16 event reports, I could go over our enforcement history, I
17 can go over industry's position, I can cover the IPEEE
18 results, but it's not in one place.

19 COMMISSIONER DIAZ: I understand.

20 CHAIRMAN JACKSON: Yes, Commissioner?

21 COMMISSIONER McGAFFIGAN: I have a couple
22 questions. In passing, you said industry's view on Option 3
23 is that it's really a variation on Option 2, that rather
24 than adopt ultimately in the year 2001 by rule this standard
25 that may come out of the standards-setting body, that they

1 would suggest we simply use it as a device for 50.59 and
2 Generic Letter 86-10 evaluations.

3 Does the Staff have an opinion on that? That's
4 not what you are proposing.

5 MR. CONNELL: Well, obviously our opinion is that
6 that's not what we would prefer. We would prefer that
7 industry standard, if we find it acceptable, be adopted as
8 an alternative. We would prefer that plants fall in one of
9 the bins. If they want to adopt the industry standard, they
10 adopt it in total, not in piece. I think industry would
11 prefer that while we'd like to use our existing licensing
12 basis for this area, we'd like to take this chapter or
13 paragraph out of the NFPA standard and use it for this
14 issue, and the Staff is very uncomfortable with doing that.

15 COMMISSIONER McGAFFIGAN: Okay. So you do not
16 recommend that option?

17 MR. CONNELL: No. No, that is not an option -- we
18 recommend Option 2.

19 COMMISSIONER McGAFFIGAN: Now let me just try
20 Option 1 for a second. As I understand the differing
21 professional opinion, his is a variation as well, somewhere
22 between Option 1 and Option 2, in that he would avoid the
23 backfit issue. He lays out the history of Appendix J,
24 Option 2, the performance-based option, which has a long
25 history, and believes that something of that order can

1 happen. That was a voluntary option, you know, but it was
2 such a good option, I'm not sure whether we have very many
3 people left still pursuing the Option A in Appendix J. But
4 it's the judgment of Mr. Dey that -- if I'm pronouncing the
5 name right -- that we are -- that there is a similar
6 opportunity available at this point in time and, as I say,
7 he would avoid -- just make such a good deal, people would
8 voluntarily transition to the new deal as they did in
9 Appendix J Option --

10 MR. CONNELL: Well, I think fire protection is a
11 lot broader than Appendix J, and I don't believe that -- my
12 feedback from the practicing fire protection professionals
13 is they would not adopt a performance-based rule, even if it
14 would grant them some relief in some areas.

15 COMMISSIONER McGAFFIGAN: But in saying that, are
16 you also saying -- back to the first part of my question,
17 that if we don't give them the chance to pick and choose,
18 the industry version of Option 2, and we say by rulemaking
19 in the year 2001 you can take this new third option, but you
20 have to take it in toto, we're not going to let you pick and
21 choose, that there won't be many takers for that?

22 MR. CONNELL: I don't expect the majority are
23 going to adopt it. That's reality. I mean we are going to
24 give them the alternative, but I don't think a majority are
25 going to adopt it.

1 COMMISSIONER McGAFFIGAN: So that gets back to --I
2 mean what I detect through all this is the Staff and the
3 industry have sort of peered into the abyss of
4 risk-informed/performance-based regulation in fire
5 protection and are jointly stepping back from it.

6 MR. CONNELL: That's correct.

7 COMMISSIONER McGAFFIGAN: Okay.

8 CHAIRMAN JACKSON: Commissioner Dicus?

9 Commissioner Diaz?

10 COMMISSIONER DIAZ: The only point is that again
11 does risk-informed/performance-based. I can generally see
12 the risk insights are definitely a pro, and I am encouraged
13 that the industry agrees with that.

14 CHAIRMAN JACKSON: Well, I would like to thank the
15 NRC Staff for briefing the Commission on the subject of the
16 development of a risk-informed and/or performance-based
17 regulation for fire protection, and as you can tell from the
18 questions, actually, the Commission realizes that this is a
19 complicated task, and we have a lot of history, for better
20 or for worse, that we are operating off of, and the
21 Commission has also realized, however, that the current
22 regulation or implementation of it is confusing, and
23 requires a high degree of maintenance, whether we are
24 talking with respect to interpretations, inspections,
25 exemptions. It's a high maintenance process, and -- but the

1 discussion this morning has been good, and so I do want to
2 compliment you on that, and I think it's been a robust
3 discussion. And the deliberations will help the Commission
4 in its decision-making, and the Commission has before it the
5 Staff's paper recommending one of the three options
6 presented, and we obviously then will further study the
7 issue, and we will vote on your recommendation.

8 But let me just say that the Staff should expedite
9 its handling of any differing views among the Staff, and if
10 you can provide an assessment in a timely manner to help
11 inform the Commission's decision-making, I think that would
12 be very useful.

13 In addition, I think you need to look carefully at
14 this issue of having documents summarizing where we are from
15 the point of view particularly of the decision you are
16 asking the Commission to make, although we will probably end
17 up acting on the recommendation in a time frame that's more
18 expedited than that.

19 Nonetheless, you owe it to the Commission to bring
20 this forward because the place to have the data and the
21 convincing arguments is not at the table, but to have the
22 Commission have the opportunity to evaluate these things
23 before we get here, and then we can have informed questions.

24 I would like to ask OGC to look at this issue of
25 compliance backfits versus backfits vis-a-vis the backfit

1 rule, because there seems to be some element of confusion
2 that keeps coming up in our discussions.

3 And then my last comment is that consolidation and
4 reconciliation of guidance should just be an operational
5 principle. It should not be something that requires a
6 Commission vote, it doesn't make sense to have guidance
7 documents all over the place and have things that have
8 apparent conflicts with each other or only the well-schooled
9 and well-practiced can understand them.

10 And so if we don't have any further discussion, we
11 are adjourned.

12 [Whereupon, at 11:43 a.m., the public meeting was
13 concluded.]

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CERTIFICATE

This is to certify that the attached description of a meeting of the U.S. Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING ON FIRE PROTECTION
PUBLIC MEETING

PLACE OF MEETING: Rockville, Maryland

DATE OF MEETING: Thursday, March 31, 1998

was held as herein appears, is a true and accurate record of the meeting, and that this is the original transcript thereof taken stenographically by me, thereafter reduced to typewriting by me or under the direction of the court reporting company

Transcriber: May Compul

Reporter: Mark Mahoney

PERFORMANCE-BASED/RISK-INFORMED FIRE PROTECTION

March 31, 1998

Edward Connell
Plant Systems Branch
Office of Nuclear Reactor Regulation

Mark Cunningham
Probabilistic and Risk Analysis Branch
Office of Nuclear Regulatory Research

AGENDA

- ◆ Background
- ◆ External Feedback
- ◆ Staff Feedback
- ◆ Considerations for Options
- ◆ Options/Recommendations

BACKGROUND

- ◆ SECY-92-263 - Staff Plans for the Elimination of Requirements Marginal to Safety
- ◆ SECY-93-142 - Report on the Reassessment of the NRC Fire Protection Program
- ◆ SECY-96-134 - Options for Pursuing Regulatory Improvement in Fire Protection Regulations for Nuclear Power Plants
- ◆ SECY-97-127 - Development of a Risk-Informed, Performance-Based Regulation for Fire Protection at Nuclear Power Plants

BACKGROUND (cont.)

- ◆ Staff Requirements Memorandum of September 11, 1997
 - Finalize Current Research & Study
 - Obtain OGC Feedback on Backfit Implications
 - Obtain Industry Feedback on Interest in a New Rule
 - Provide the Commission an Expedited Schedule for PB/RI Rulemaking
 - Expedite Resolution of Issues for Rulemaking & Elimination of Exemptions
 - Transfer Responsibility for Rulemaking from RES to NRR
 - Coordinate Additional Research (w/industry if possible) as Necessary
 - Assess Current Regulatory Requirements for Transition

BACKGROUND (cont.)

- Brief Commission on All Findings, Observations & Conclusions

PRA & Fire Modeling Results

Fire Protection Functional Inspection Results

Backfit Determinations

Industry Interaction & Comments

Other Relevant Information

EXTERNAL FEEDBACK

- ◆ Nuclear Energy Institute - Results of Survey of CNOs
 - A new rule is not desired, nor necessary to assure or improve safety
 - Further development of risk and performance bases should support changes in guidance to existing regulations
 - Changes to regulation or supporting guidance must allow adequate time for completion of support elements
 - Industry will participate actively in any changes to rule or supporting guidance.

EXTERNAL FEEDBACK (cont.)

- ◆ National Fire Protection Association (NFPA)
 - NFPA Developing Performance-Based Standard to be Completed May 2000
 - NRC Fire Protection Staff Participates on Technical Committee Developing Standard
 - Recommends NRC Adopt New Std. in Lieu of New Rule IAW OMB A-119 & PL 104-113

EXTERNAL FEEDBACK (cont.)

- ◆ Nuclear Information and Resource Service/Union Concerned Scientists
 - Complex Licensing Basis Makes Compliance/Enforcement Difficult
 - Plant Risk Assessments Non-conservatively Estimate Risk From Fire
 - NRC Staff Has Not Adequately Determined Technical Bases for Existing Regulations

FIRE IPEEE INSIGHTS

- ◆ IPEEE program generally successful in meeting intent of GL 88-20 S4 - However the degree of success achieved by licensees varies.
- ◆ Wide range of results of estimated core damage frequencies (CDFs) - $1\text{E-}09$ to $5\text{E-}03$ - Most Plants $1\text{E-}06$ to $1\text{E-}04$
 - Comparison of CDF between plants is not straightforward - Variability:
 - Methods used for analysis
 - Input & modeling assumptions by analysts
 - Level of detail
- ◆ CDF contribution from fire events can, in some cases, approach or exceed that from internal events.
- ◆ Approximately 50% of Licensees have implemented/proposed plant improvements
- ◆ More specific & detailed reviews needed to apply IPEEEs to support RI/PB fire protection regulation.

FIRE PROTECTION FUNCTIONAL INSPECTION PROGRAM

- ◆ SECY 96-267 Provided the Staff's Proposed Implementation Plans
- ◆ NRC Headquarters Lead Team Inspections
- ◆ FPFIs Address All Aspects of Fire Protection
- ◆ Risk-Informed Inspection - IPEEEs and PRAs Utilized
- ◆ 4 Pilot Plants - River Bend, Susquehanna, St Lucie, Prairie Island
- ◆ Pilot Results Public Workshop - Fall 1998
- ◆ Staff Assessment of Reactor Inspection Program after 4th Pilot & Workshop
- ◆ Report to Commission on Pilot Results/Analysis/Recommendations

FPFIs (cont.)

PRELIMINARY OBSERVATIONS

◆ Observed Weaknesses

- Control of Combustibles
- Manual Fire Fighting Capability (Fire Brigade)
- Fire IPEEE Process
- Compensatory Measures
- Safe Shutdown Capability
- Compliance w/ Industry Fire Protection Codes & Standards
- QA Audits - Scope & Depth
- Emergency Lighting

◆ Observed Strengths

- Resolution of Thermo-Lag Fire Barrier Issue
- Resolution of Motor Operated Valve Spurious Actuation Concern
- Technical Competency of Fire Protection Staff

FIRE RESEARCH PROGRAM

Two Elements:

- ◆ Research activities directly supporting rulemaking (short-term)
- ◆ Research to improve underlying technical understanding (longer-term)
 - ◆ Needed to support increased use of fire probabilistic risk assessments
 - ◆ Systematic review identified 42 potential research issues
 - Estimation of the likelihood of fires
 - Analysis of fire-induced circuit failures
 - Treatment of operator performance
 - Assessment of reliability of fire protection systems
 - Limitations and uncertainties in fire growth models
 - Damageability of components
- ◆ Program to be initiated in FY 98, continue through FY 00

CONSIDERATIONS FOR OPTIONS

- ◆ Resolution of Outstanding Fire Protection Issues
- ◆ Fire Protection Issues Outside Current Regulatory Framework
- ◆ Flexibility w/ Std FP License Condition & Deviation/Exemption Process
- ◆ Few New Exemptions are Being Submitted by Licensees - Most related to Thermo-Lag
- ◆ Applications for Performance-Based/Risk-Informed Methods

CONSIDERATIONS FOR OPTIONS

- ◆ Adequacy of Fire IPEEEs for PB/RI Regulation
- ◆ Applicability of Intl. Fire Protection PB/RI Efforts to U.S. Nuclear Plants
- ◆ Need for Additional Fire Research
- ◆ Public & Industry Feedback and Efforts (NFPA, NEI, NIRS/UCS)
- ◆ Backfit Considerations

OPTIONS OVERVIEW

- ◆ Option 1 - Continue PB/RI effort to replace existing fire protection requirements. Develop comprehensive Reg Guide that provides for prescriptive & PB/RI alternatives for compliance w/ new rule.
- ◆ Option 2 - Defer PB/RI rulemaking. Work w/NFPA & industry to develop PB/RI consensus standard. Develop comprehensive Reg Guide that consolidates existing staff positions. Can adopt NFPA standard in future rule.
- ◆ Option 3 - Maintain existing regulations and guidance. Continue staff participation in NFPA effort.

Note: Minor short term rulemaking with Options 2 & 3 to address combustible penetration seal issue (Section III.M of Appendix R)

OPTION 1

PROS

- ◆ Eliminate existing 850 exemptions
- ◆ Eliminate need for most future exemptions
- ◆ Provides a single, uniform, consistent licensing basis for all plants
- ◆ 18 month schedule for final rule & implementing guidance to Commission

OPTION 1 (cont)

CONS

- ◆ Fire risk assessment method limitations & uncertainties
- ◆ Inspectability & enforceability
- ◆ Learning curve for the implementation of new requirements
- ◆ Significant resource commitment - Staff & Industry
- ◆ Industry does not support (NEI Survey)
- ◆ Preempts NFPA effort
- ◆ Backfit as defined in 10 CFR 50.109

OPTION 2

PROS

- ◆ Consistent w/ Staff Recommended Policy - DSI-13 - Role of Industry
- ◆ Supported by NFPA & industry
- ◆ Ensures Full Industry Involvement
- ◆ Comprehensive Reg Guide for existing rule useful to industry & staff
- ◆ Less resource intensive than Option 1
- ◆ Not a backfit

OPTION 2 (cont)

CONS

- ◆ Maintains existing exemptions & process
- ◆ If adopted by rule - Provides for an additional licensing basis
- ◆ Schedule not under NRC control (NFPA schedule May 2000 - Staff approval May 2001)
- ◆ Inspectability and enforceability
- ◆ Learning curve

OPTION 3

PROS

- ◆ Proposed NFPA standard potential technical basis for 10 CFR 50.59 and GL 86-10 engineering evaluations, deviations/exemptions
- ◆ Least resource intensive of three options
- ◆ Not a backfit

CONS

- ◆ Maintains existing exemptions & process
- ◆ Fire protection guidance remains in numerous documents

RECOMMENDATION

The staff recommends that the development of a performance-based, risk-informed rule be deferred and the proposal described in Option 2 be approved based on the following:

- ◆ Adequacy of the current regulatory framework to address emerging fire protection issues
- ◆ Low number of new exemption requests being submitted
- ◆ Flexibility available to licensees' to make changes to their fire protection programs
- ◆ Limitations with the current technology for fire hazard assessment
- ◆ Benefits derived from an industry supported effort to produce a PB/RI Std.
- ◆ Benefits derived from a single comprehensive regulatory guide for fire protection



RULEMAKING ISSUE

(Notation Vote)

March 26, 1998

SECY-98-058

FOR: The Commissioners

FROM: L. Joseph Callan
Executive Director for Operations

SUBJECT: DEVELOPMENT OF A RISK-INFORMED, PERFORMANCE-BASED
REGULATION FOR FIRE PROTECTION AT NUCLEAR POWER PLANTS
(WITS 9200197)

PURPOSE:

To respond to the staff requirements memorandum (SRM) dated September 11, 1997, related to SECY-97-127, "Development of a Risk-Informed, Performance-Based Regulation for Fire Protection at Nuclear Power Plants."

BACKGROUND:

On June 19, 1997, the staff submitted SECY-97-127, which described the actions it would pursue to develop a rulemaking for transitioning to a more risk-informed, performance-based structure for fire protection regulation of nuclear power plants. The benefits for this approach could be to evaluate the safety-impact of proposed plant changes in an integrated manner to reduce regulatory burden, and to identify areas where requirements should be increased. SECY-97-127 also stated that a research plan would be developed to coordinate additional research to advance the state of the art in fire modeling and fire risk assessment methods.

In the associated SRM dated September 11, 1997, the Commission directed the staff to prepare an expedited schedule for rulemaking and transfer the responsibility for the rulemaking effort from the Office of Nuclear Regulatory Research (RES) to the Office of Nuclear Reactor Regulation (NRR). The Commission also directed the staff to complete the current research

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NOTE: TO BE MADE PUBLICLY AVAILABLE
AT COMMISSION MEETING ON 3/31/98

and study by the end of calendar year 1997 and to expedite the resolution of issues necessary to formulate a rule that will eliminate the need for most exemptions granted under Appendix R to 10 CFR Part 50. Finally, the Commission directed the staff to brief the Commission on the feedback from the Office of the General Counsel on backfit implications; industry feedback on the interest in a new rule; and all findings, observations, and conclusions related to fire modeling, probabilistic risk assessment (PRA), fire protection functional inspections (FPFI), individual plant examination of external events (IPEEE) results, and other relevant information.

DISCUSSION:

In accordance with the SRM of September 11, 1997, the responsibility for the rulemaking effort has been transferred from RES to NRR. The staff is assessing the need for future additional research activities to complete any longer term items, or improvements to regulatory guidance in support of further risk-informed efforts. Additional research will be performed cooperatively with industry, when possible. An expedited schedule for rulemaking has been developed that would result in a draft rule and a draft regulatory guide being published for public comment 12 months after Commission approval to proceed, with a final rule and regulatory guide being submitted to the Commission in 18 months. The schedule with milestones is attached.

In accordance with the Commission's direction the staff has solicited industry feedback on their interest in a new rule. As part of this effort, the staff met with representatives of the Nuclear Energy Institute (NEI) at a public meeting on November 5, 1997. At this meeting, NEI presented the preliminary results of its survey of all Chief Nuclear Officers of operating reactors concerning the proposed rulemaking. The survey indicates that the industry positions are: (1) a new rule is neither desired nor necessary to assure safety; (2) industry will participate if rulemaking proceeds; (3) the rulemaking schedule must allow adequate time for completion of support elements, such as the FPFI and IPEEE programs, and (4) the use of risk/performance techniques has promise. If rulemaking proceeds, industry would prefer the option of continued compliance with the existing regulations, such as Appendix R to 10 CFR Part 50, including the existing approved exemptions, and the exemption approval process specified in 10 CFR 50.12. The survey results also provided industry's proposed alternatives to rulemaking. These are: (1) better communication with NRC to avoid differing interpretations; (2) more guidance on the preparation of engineering evaluations, such as those performed under 10 CFR 50.59 and Generic Letter (GL) 86-10, "Implementation of Fire Protection Requirements," (3) comprehensive clarification of the existing rule, staff positions, and various guidance documents, and (4) more allowance for risk significance evaluation within the current rule.

Representatives of NEI also presented these preliminary results at a meeting of the Advisory Committee on Reactor Safeguards (ACRS) on November 7, 1997, and formally provided the results to the staff in a letter dated December 11, 1997, to the Executive Director for Operations. Representatives of NEI provided additional detail on the results of the survey and their proposed interactions with the staff at a meeting of the ACRS fire protection subcommittee on January 22, 1998.

In a letter to Chairman Jackson dated November 7, 1997, George D. Miller, President of the National Fire Protection Association (NFPA), advised the Commission that NFPA is developing a performance-based standard for the fire protection of light-water reactors. The NFPA's position is that the NRC should adopt the standard, scheduled to be completed in May 2000, consistent with the direction provided in U.S. Government Circular Office of Management and Budget A-119 and Public Law 104-113 that encourages the adoption of national consensus standards by Government agencies to carry out their policy objectives or activities. Fire protection engineers from NRR participate on the technical committee that is writing the NFPA standard. The goal of the proposed standard, specific to reactor safety, is to minimize the probability and effects of fires and explosions such that the facility can be safely operated without undue risk to the health and safety of the public and the environment. Representatives of NFPA presented their plan for the development of a performance-based fire protection standard for nuclear power plants at a meeting of the ACRS fire protection subcommittee on January 22, 1998.

At the ACRS meeting on November 7, 1997, the Union of Concerned Scientists (UCS) and the Nuclear Information and Resource Service (NIRS) presented their positions concerning the proposed fire protection rulemaking effort. These positions are: (1) the NRC should pursue rulemaking aimed at implementing fire protection regulations that apply equally to all its licensees; (2) risk-informed fire protection regulations should not be adopted if they rely on deficient risk assessments; (3) the NRC staff must fully document the technical basis for existing fire protection regulations as part of the rulemaking process, and (4) until the final fire protection rule is implemented, the existing fire protection regulations must be rigorously enforced.

OPTIONS:

On the basis of the feedback received from NEI, NFPA, NIRS, and UCS, the staff has developed three options related to the fire protection rulemaking effort for consideration by the Commission. As part of the evaluation, the staff has included the feedback from the Office of General Counsel on backfit implications of each option.

Option 1

On an expedited schedule, develop a performance-based, risk-informed fire protection regulation to replace the existing regulation. As part of this effort, the staff would develop a comprehensive regulatory guide that would provide for prescriptive and performance-based, risk-informed alternatives for compliance with the new rule.

Option 2

Defer rulemaking at this time. Rather, under this option, the staff would work with the NFPA and the industry to develop a performance-based, risk-informed consensus standard for fire protection for nuclear power plants. The staff could endorse the consensus standard in a rulemaking to serve as an alternative method of meeting NRC fire protection requirements. If the NFPA standard was determined not to be acceptable, the staff could pursue other

performance-based, risk-informed rulemaking options. In parallel with the NFPA effort, the staff would develop a comprehensive regulatory guide that consolidates the existing staff positions, interpretations, and guidance related to fire protection, and would allow for the use of performance-based, risk-informed methods.

Option 3

Maintain the existing fire protection regulations and guidance.

EVALUATION:

Option 1

Under Option 1, the staff would develop a new fire protection rule based on experience to date as outlined in the attachment. If the Commission approves this option, the staff would solicit additional public and industry feedback during public meetings, and through Federal Register notices, as appropriate. (Based on planned interactions with the public and the industry, the staff would not conduct the public workshop described in SECY-96-134. On the basis of its past experience with fire protection issues, the staff believes that the elimination of the workshop at this point in the rulemaking process would not restrict participation by all interested parties.) It is expected that because these requirements would be performance-based and risk-informed, they could result in an improvement to our current regulatory approach to fire protection in that they will offer licensee's flexibility in meeting the safety objectives associated with fire protection, while also assessing fire risk from a broader basis that extends beyond the current design bases. Option 1 would provide a single set of licensing requirements for all operating reactors. It would also eliminate all of the existing exemptions from Appendix R to 10 CFR Part 50 and would eliminate the need for most future fire protection exemptions.

It is important to note that the Commission, when it promulgated Appendix R (February 19, 1981), recognized that there would be unique plant conditions under which the fire protection features identified by Appendix R would not significantly enhance the level of fire safety already provided by the licensee. Therefore, in those cases in which a fire hazard analysis could adequately demonstrate that the alternative fire protection features provided an equivalent level of fire safety to that required by Appendix R, the licensee could apply for an exemption under the provisions of 10 CFR 50.48(c)(6). Thus, the exemption process provided an alternative means of allowing flexibility to meet the performance objectives of Appendix R. Currently, the staff reviews approximately 10 exemption requests per year, the majority of which relate to the resolution of the Thermo-Lag issue. Licensees are permitted to make changes to their fire protection program without prior NRC approval, provided the change does not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire or did not require an exemption, if the licensee has adopted the standard fire protection license condition described in GL 86-10. As noted above, industry has indicated it opposes any rulemaking. If rulemaking proceeds, industry prefers an approach that retains the option of continued compliance with the existing regulations, such as Appendix R to 10 CFR Part 50,

including the existing approved exemptions, and the exemption approval process specified in 10 CFR 50.12. However, they have indicated their support for the NFPA proposal to develop a performance-based, risk-informed standard that will be endorsed by the NRC as an acceptable (although not mandatory) alternative to 10 CFR 50.48 and Appendix R.

One approach would be for the staff to develop a risk-informed, performance-based rule that would be imposed as an acceptable alternative to the current regulation. Because it would not be mandatory, it would not constitute a backfit under 10 CFR 50.109. However, if a risk-informed, performance-based rule was made mandatory, the rule would constitute a backfit as defined in 10 CFR 50.109. It may be difficult to demonstrate that the rule falls within either the compliance exception or the adequate protection exceptions of Section 50.109(a)(4)(I)-(iii). Accordingly, a backfit analysis would have to be prepared demonstrating that the rule constitutes a cost-justified, substantial increase in safety. It is unclear at this time if the staff would be able to acceptably demonstrate that these criteria could be met.

Option 2

Option 2 could also achieve the benefits associated with adopting a performance-based, risk-informed approach to fire protection. If the Commission determines that the NFPA standard currently under development provides adequate protection of public health and safety, and represents an acceptable alternative to the current fire protection regulations, it could be adopted in a future rule as an alternative to the existing prescriptive requirements, consistent with the Commission's policy specified in Direction Setting Issue (DSI) 13, "The Role of Industry." The existing staff guidance related to fire protection is currently contained in numerous branch technical positions, generic communications, internal memorandums, and NUREG reports. Under this option, this guidance, and new or revised guidance on areas that the public, the staff, and the industry determine would benefit from additional clarification, would be provided in a single comprehensive regulatory guide. The proposed guide would allow the use of performance-based, risk-informed methods, as they mature, consistent with the guidance provided in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Basis," to satisfy the existing fire protection requirements. The experience gained from the FPFIs and IPEEEs would be considered in the development of the proposed guide and NFPA standard.

Under Option 2, any rulemaking would provide licensees an alternative to the current fire protection requirements set forth in 10 CFR 50.48 and 10 CFR Part 50, Appendix R (a comparable example would be 10 CFR Part 50, Appendix J, which includes two options either of which can be chosen for meeting the requirements for primary reactor containment leakage testing for water cooled power reactors). Accordingly, under that rulemaking there would be no backfitting concerns associated with this option.

A potential drawback, however, for any consensus standard approach is the potential for the standard not to meet the Commission's expectations or needs, as well as the potential for schedule slippage. If the Commission approves this option, the staff would keep the Commission informed and would consider alternatives if it became necessary.

At the ACRS Fire Protection Subcommittee meeting on January 22, 1998, and the ACRS full committee meeting on March 2, 1998, representatives of NEI and NFPA indicated their support for pursuing Option 2. The representative from NEI indicated at the March 2, 1998, ACRS meeting that industry opposes any rulemaking. If any rulemaking activity proceeds, industry prefers an approach that retains the option of continued compliance with the existing regulations, such as 10 CFR 50.48 and Appendix R to 10 CFR Part 50, including the existing approved exemptions, and the exemption approval process specified in 10 CFR 50.12.

Option 3

Option 3 would maintain the existing regulatory requirements and guidance without change.

If the Commission approves Option 3, the staff would cancel the performance-based, risk-informed fire protection rulemaking. In addition, the staff would not prepare the fire protection regulatory guides described under Options 1 and 2. The staff would continue to participate in the development of the NFPA standard described under Option 2; however, it would not endorse the NFPA standard through rulemaking or a regulatory guide. Nevertheless, the NFPA standard, when completed, may specify performance-based and risk-informed tools and methods that the licensees could use in the future to support (1) requests for exemptions from the existing requirements and (2) fire protection program changes that currently do not require prior NRC review and approval as discussed under Option 1. Since Option 3 preserves the existing regulatory requirements, there would be no backfitting concerns.

With Options 2 and 3, a minor rulemaking to revise Section III.M of Appendix R to 10 CFR Part 50 would be pursued to resolve the combustible penetration seal issue as proposed in SECY-96-146, "Technical Assessment of Fire Barrier Penetration Seals in Nuclear Power Plants." This rulemaking, which would likely be considered a relaxation, would not constitute a backfit.

RESOURCES:

The Office of Nuclear Reactor Regulation (NRR) resources for completing the activities described in Option 1 are estimated to require a total of 2 FTE over 2 years (FY 1998 and FY 1999 at 1 FTE per year) and \$500K (FY 1998). The resources for completing the activities described in Option 2 are estimated to require a total of 1 FTE and \$270K (FY 1998). No additional resources are required for Option 3. The NRR resources (FTE and dollars) for either Option 1 or Option 2 are not budgeted and would have to be reprogrammed. NRR will revise its Operating Plan to reflect necessary resource changes, completion of new activities,

and the shift in priorities. This redirection would attempt to minimize the impact on other high priority tasks but may still have an affect on NRR fire protection activities such as NRR participation in the review of the remaining IPEEE submittals. Additionally, potential impacts may result from the need to assign key NRR fire protection expertise to the rulemaking and / or the development of the regulatory guide. The dollars would have to be reprogrammed from lower priority agency work.

The Office of Nuclear Regulatory Research (RES) has budgeted \$500K in FY 1998 and \$400K in FY 1999 for improving both fire models and risk assessment techniques. The staff is assessing the need for future additional research activities to complete any longer term items, or improvements to regulatory guidance in support of further risk-informed efforts. Additional resources, if necessary, will be addressed in the upcoming FY 2000 budget review.


Resource requirements for other NRC offices that may potentially support NRR activities in this area (e.g., OGC) are also dependent upon the option chosen, are expected to be minimal, and thus have not been quantified.

COORDINATION:

The Office of the General Counsel has no legal objections to this paper, and the Chief Financial Officer has reviewed this paper for resource implications and has no objections. The staff has provided a copy of this paper to the ACRS for information.

RECOMMENDATION:

Based primarily on the potential benefits that could be derived from a broad-based industry effort to product a comprehensive performance-based and risk-informed standard, the staff recommends that the Commission approve Option 2. This approach has the potential for leveraging considerable fire protection expertise toward this effort.


L. Joseph Callan
Executive Director
for Operations

Attachment: Detailed Schedule with Milestones for Option 1.

Commissioners' completed vote sheets/comments should be provided directly to the Office of the Secretary by COB Friday, April 10, 1998.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT April 3, 1998, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

DISTRIBUTION:

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Fire Protection Rulemaking Expedited Schedule (Option 1)

Milestones

1. Three Months after Commission Approval to Proceed
 - (a) - Information briefing for ACRS - Fire Protection Subcommittee.
 - (b) - Meetings with public and industry.
2. Three Months After Completion of Milestone 1
 - (a) - Complete regulatory framework document
(rule straw man and performance-based, risk-informed regulatory guide outline).
 - (b) - Brief the ACRS Fire Protection Subcommittee
 - (c) - Brief CRGR
 - (d) - Provide interested parties (e.g., Nuclear Energy Institute and the public) with the proposed regulatory framework (consistent with DSI-13).
3. Three Months After Completion of Milestone 2
 - (a) - Complete the draft rule and performance-based, risk-informed regulatory guide based on feedback obtained during Milestone 2.
 - (b) - Brief the ACRS Fire Protection Subcommittee.
 - (c) - Brief CRGR
 - (d) - Brief ACRS Full committee.
4. Two Months After Completion of Milestone 3
 - (a) - Submit a draft rulemaking package to the Commission for approval to issue for public comment.
 - (b) - Brief the Commission on the draft rulemaking package (if requested).
5. One Month After Completion of Milestone 4
 - (a) - Publish rulemaking package for public comment.

6. Three Months After Completion of Milestone 5
 - (a) - Public comment period closes.
7. Two Months After Completion of Milestone 6
 - (a) - Complete resolution of public comments.
 - (b) - Prepare proposed final rule and regulatory guide
8. One month After Completion of Milestone 7
 - (a) - Brief ACRS Fire Protection Subcommittee
 - (b) - Brief CRGR
 - (c) - Brief ACRS Full Committee
9. One month After Completion of Milestone 8
 - (a) - Submit proposed final rule and regulatory guide for Commission approval.
 - (b) - Brief Commission (if requested).