UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
***
BRIEFING ON FIRE PROTECTION ISSUES
***
PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Building 1, Room 1F-16
11555 Rockville Pike
Rockville, Maryland

Tuesday, February 9, 1999

The Commission met in open session, pursuant to notice, at 9:10 a.m., Shirley A. Jackson, Chairman, presiding.

COMMISSIONERS PRESENT:
SHIRLEY A. JACKSON, Chairman of the Commission
NILS J. DIAZ, Member of the Commission
EDWARD McGAFFIGAN, JR., Member of the Commission
GRETA J. DICUS, Member of the Commission
JEFFREY S. MERRIFIELD, Member of the Commission

STAFF PRESENT:
JOHN C. HOYLE, Secretary
KAREN D. CYR, General Counsel
ANNETTE L. VIETTI-COOK, Assistant Secretary

PRESENTERS:
WILLIAM TRAVERS, Executive Director for Operations
LEDYARD B. (TAD) MARSH, NRR
BRIAN SHERON, NRR
STEVEN WEST, NRR
STEVE REYNOLDS, NRC Region III
ED CONNELL, NRR
ALAN RUBIN, RES
RALPH BEEDLE, NEI
ANTHONY O'NEILL, NFPA
DAVID MODEEN, NEI
PAUL GUNTER, Reactor Watchdog Project, Nuclear Information and Resource Service
DAVID LOCHBAUM, Union of Concerned Scientists

P R O C E E D I N G S
[9:10 a.m.]

CHAIRMAN JACKSON: Good morning, ladies and gentlemen. I am pleased to welcome you today for a briefing on fire protection issues for nuclear power plants. The Commission will be briefed by the NRC Staff, who are at the table, the Nuclear Energy Institute, the National Fire Protection Association, the Union of Concerned Scientists

and the Nuclear Information and Resource Service.

In October, 1996 the Commission directed the Staff to revise 10 CFR 50.48 and to modify or remove Appendix R. The last Commission briefing on these efforts was in March of 1998, which focused on the Staff's proposal, as discussed in SECY 98-058, for development of a risk-informed performance-based regulation for fire protection at nuclear power plants. In the Staff Requirements Memorandum dated June 30th, 1998 the Commission approved the Staff recommendation to defer development of a risk-informed, performance-based fire protection rule and instead pursue with the National Fire Protection Association and the nuclear industry the development of a risk-informed and ultimately performance-based consensus standard for fire protection at nuclear power plants.

The Commission could then endorse the standard if successfully developed in a future rulemaking which would

serve as an alternative method to meet NRC fire protection requirements.

Since that March, 1998 Commission meeting the Staff has forwarded several information papers to the Commission on fire protection issues such as status reports on the Fire Protection Functional Inspection Program and progress made in the development of fire protection consensus standard, and insights from Research on fire protection.

Today's briefing will cover this information and in particular revisions to Appendix R and 10 CFR 50.48, development of the Fire Protection Regulatory Guide, the National Fire Protection Agency Standard 805, and Fire Protection Functional Inspection Program, Individual Plant Examinations of External Events -- the IPEEE Program, the Fire Risk Assessment Research Program, and the Quad Cities IPEEE fire results.

As we progress through today's briefing I ask in particular that each presenter focus on any significant issues that have developed or been identified since the March, 1998 Commission meeting. Now I understand that copies of the briefing materials are available at the entrances to the room, so unless my colleagues have opening or additional comments, Dr. Travers, please proceed.

MR. TRAVERS: Good morning, Chairman and

Commissioners. Chairman, as you mentioned, we are here to brief you on the status of a number of high priority reactor fire protection activities and rather than list them again I will mention that at the table, joining me, is Dr. Brian Sheron, who is the Associate Director for Project Licensing and Technical Assessment in NRR; Tad Marsh, who is the Chief of Events Assessment, Generic Communications and Non-Power Reactors Branch in NRR; Ed Connell is a Senior Fire Protection Engineer in NRR; Alan Rubin, down here, who is a Section Chief in the Office of Nuclear Regulatory Research; Steve Reynolds, who is the Deputy Director of the Division of Reactor Safety in Region III; and also Steve West, who is a Section Chief in NRR.

We would like to begin with Dr. Sheron, who is going to provide you a brief summary of the subjects, Chairman, that you mentioned at the outset of this meeting. Following that, we intend to have the principal Staff representatives give you a short but more detailed

presentation on each of those issues.

CHAIRMAN JACKSON: Thank you.

MR. SHERON: Good morning. Could I have the first slide, please.

As Bill said, I will walk through very quickly the major topics that we plan to present. I understand we have about 30 minutes of presentation time, so I was only going

to take about five minutes, hit the high points and then turn it over to the Staff and let them walk you through some of the details.

With regard to SECY 98-058, which you mentioned, Chairman, we are in the process right now of revising Appendix R and 50.48 to remove the requirement for non-combustible penetration seals. We are also implementing the removal of the Schedule 1 footnote to the guidance document which has been superseded, and we are right now on schedule to complete that in April of 2000.

The comprehensive Fire Protection Regulatory Guide, if you remember, we said that most of our guidance is kind of scattered in various documents and guidance, generic letters and information notices. Our intent was to try to pull that all together into one comprehensive document and to consolidate it. That is on schedule and we are planning on issuing a draft for public comment in September of this year.

For the National Fire Projection Association Standard 805, again that was supposed to provide a comprehensive, as you said a risk-informed, performance-based method for addressing fire protection requirements that would be an alternative to the current rules and regulations. We are participating on that committee in the development of that standard and right now

that is on schedule for completion in May of 2000.

On the Fire Protection Functional Inspection Program, as you know, that was to assess licensee implementation of the fire protection rules and regulations. We completed four pilot inspections. We are currently assessing the results. We have had workshops with the industry on this. We also have received a proposal from NEI with regard to future inspections in which they propose that basically the industry do self-assessments and the Staff basically oversee the self-assessment process.

We are in the process of evaluating that proposal as well, and our plan is to provide a Commission paper with our recommendations for how we proceed in the future in April of this year, so that's about two months.

CHAIRMAN JACKSON: Let me ask you, how does the National Fire Protection Standard 805 play off against the development of the Comprehensive Fire Protection Regulatory Guide and will that comprehensive guide have to be revised or will any type of regulatory guidance be necessary for that fire protection standard?

MR. SHERON: My initial reaction is that hopefully they will be complementary but the NFPA Guide is supposed to be risk-informed, whereas the Reg Guide is pulling together guidance for the existing rules and regulations, which again will be an alternative, so I am not sure that the Reg Guide

will be in any sort of a conflict with the NFPA Guide because the Reg Guide is basically for implementing the current Appendix R and 50.48 and the NFPA Standard would be an alternative.

Is that right, Ed?

MR. CONNELL: Right.

MR. SHERON: Okay.

CHAIRMAN JACKSON: Okay.

MR. SHERON: On the IPEEE Program, as you know, that's the external events assessment, the purpose is to examine potential severe accident vulnerabilities and to resolve some generic safety issues. I understand there are about 12 right now that are related to fire concerns.

The preliminary review of the submittals has been completed by our Office of Research, and we are using these results right now as insights to support the Fire Protection Functional Exams and our interaction and work on the NFPA 805 Standard and also to feed into further fire research efforts.

We also have the ongoing Fire Risk Assessment Program in the Office of Research, and the purpose there is to improve our understanding of fire risk, to support our fire protection activities including our participation on the NFPA Standard as well as our inspections, and to improve analytical methods and tools, and the major results from

that program are expected in September of the year two, 2000.

COMMISSIONER MERRIFIELD: Madam Chairman?

CHAIRMAN JACKSON: Please.

COMMISSIONER MERRIFIELD: I have a question regarding that last point. You expect that results from that assessment to be in September of 2000, but right now we are working with NFPA and we have already got a draft standard out, which will go final in May of 2000 and I am wondering are we out of synch?

Here we have a research program, the results of which you are not going to have until September of 2000, and yet we have action we are taking which will be effectuated in May of 2000.

MR. RUBIN: Let me comment on that. Although most of the results will be expected by 2000 or certainly the significant results, there will be interim products along the way. In fact, we have some results already from the Fire Risk Assessment Research Program that are being used by the agency in terms of the IPEEE reviews.

The NFPA Standard itself will have an appendix on risk assessment analyses and the insights from the IPEEE program and the Fire Research Program will be fed into that. That appendix has not yet been written but there are products that are being developed that will feed directly

into that activity.

CHAIRMAN JACKSON: Why don't you go ahead.

MR. SHERON: The last item is Quad Cities. As you know, on February '97 they submitted their IPEEE results, which showed a fire CDF of five times 10 to the minus 3. The licensee took the initiative to shut the plant down due to deficient safe shutdown analysis. They did a revised analysis and concluded that the fire CDF was 6.6 times 10 to the minus 5th. This analysis will be submitted in about two months in April.

Basically the reason that the number went down so much is they went more to looking at the plant-specific design. They made, as I understand it, a number of conservative assumptions in their risk assessment, for example that they would lose all of the 125 volt DC.

When they went back and they looked at the actual cable routing they realized they would not lose all of that and so when they took into account the details of the design, it is my understanding that you would not lose all of that, for example, the way they assumed, and therefore the risk went down.

CHAIRMAN JACKSON: So we haven't -- I mean the analysis hasn't come to NRC formally yet, is that correct?

MR. SHERON: That is my understanding.

CHAIRMAN JACKSON: And so we haven't accepted that

analysis as such -- what you are reporting is what they reported to you, is that correct?

MR. SHERON: Yes, that is correct.

CHAIRMAN JACKSON: And as far as you know, that there were no specific plant changes to have brought the core damage frequency down by two orders of magnitude? All pencil sharpening?

MR. REYNOLDS: Most of it has been. They did a few modifications that may have got them 10 percent, 15 percent better, but the bulk of the risk reduction was understanding the plant better and doing some analysis better.

CHAIRMAN JACKSON: What does that say then about the other IPEEE submittals if, you know, if understanding their plant better gave a two order of magnitude change in the core damage risk from fires? I don't know who is responsible for reviewing those but --

MR. RUBIN: I will get into this a little bit in my presentation but the Staff's reviews of the IPEEEs are not intended to assess or evaluate all the assumptions that go into the licensee's assessment, IPEEE's. We just don't have the resources to do that.

Here is a case where the licensee made some very conservative assumptions, as Brian Sheron has said. That is one thing we would not necessarily review. The licensee has

chosen to do that. This is obviously a significant difference that can result if the input assumptions vary.

I don't know -- we haven't looked in detail at every other licensee, IPEEE, whether to see if that is the case or not, but we don't think it is.

This is, I think, a unique situation with Quad Cities, certain in terms of such a high core damage frequency. We hadn't seen that at any other plant.

CHAIRMAN JACKSON: Is this going to -- I mean the real issue has to do with the basis for Commission decision-making and all that will go into that basis. I mean it somewhat relates to Commissioner Merrifield's question of having Research Program results that -- I understand the point about modular products along the way -- but in the absence of those, you know, you are talking about getting results but the Commission is supposed to make a decision on the National Fire Protection Association standard before then, and so the issue is what are we supposed to make of the IPEEE program results via-vis fire

vulnerabilities, be they on the positive or the negative side, relative to a comfort in stepping through a decision-making process.

MR. RUBIN: Well, the IPEEE reviews are focused on looking at each individual licensee's analysis, looking at plant vulnerabilities, see whether the licensee's done an

adequate job. In regards to the completeness of their reviews, have they overlooked significant parts of their analysis. It's --

CHAIRMAN JACKSON: That review didn't look at then something that could make a two-order-of-magnitude change in the core damage.

MR. RUBIN: Well, if we saw things missing -- in fact, for example, results of IPEEE and Quad Cities where turbine building fires were a significant risk contributor, we took that into account in looking at reviews of other licensee submittals, and if there was not sufficient information in the turbine building, we've asked questions and --

CHAIRMAN JACKSON: So as long as it's overly conservative, we don't look anymore. Is that the point?

MR. RUBIN: I'd say --

CHAIRMAN JACKSON: But how do you know it's overly conservative if you don't look?

MR. RUBIN: Unless we do, you know, followup audits or onsite inspections, we probably would not.

CHAIRMAN JACKSON: Okay.

MR. SHERON: I'll turn it over now to Ed Connell.

MR. CONNELL: Good morning. Thanks, Brian.

I'm just going to briefly touch on things that NRR was assigned out of 98-058, and that was the revision of

Appendix R, deleting the noncombustible requirement from section III.M, developing the comprehensive reg guide and working with NFPA and industry to develop NFPA 805. And I just want to point out that industry supports the current path concerning the reg guide and the NFPA 805 process. And then we provided an update to the Commission this past October on the status of the NFPA activities and the resolution of the issues, the 12 issues that were in 97-127.

CHAIRMAN JACKSON: Let me take you up on something.

MR. CONNELL: Sure.

CHAIRMAN JACKSON: This has to do with the SECY-98-058. You know, if I look ahead to Mr. Lochbaum's presentation, I note that he disputes the staff's conclusion that there is no technical basis for the noncombustibility requirement. Can you elaborate on this issue?

MR. CONNELL: I think so. The purpose of a penetration seal was to prevent fire propagation from one side of the barrier to the other side of the barrier. What that material -- how that material does that we've left flexibility to the designers and the plants to choose whatever material best suits their purpose.

The fact that a material is combustible as silicon foam is does not prevent it from performing its function. The doors to this room are made of wood. Wood's a

combustible material. They are also rated fire doors. So you can have a combustible material that serves its function

as a fire-barrier material. What it does is it delays propagation of the fire from one side of the barrier to the other. In fact, wood is actually more combustible than the silicon foam that's used in the penetration seal in the plant.

CHAIRMAN JACKSON: So in laying out or in proposing to delete the requirement for noncombustible penetration seals, you then are going to replace it with what the performance requirements have to be?

MR. CONNELL: Yes.

CHAIRMAN JACKSON: For such seals?

MR. CONNELL: Yes. We've established those in previous -- in the rule, the requirements are there, and also in previous generic communications we've established those requirements.

CHAIRMAN JACKSON: And when you've done the fire protection functional inspections, you've verified that the penetration seals satisfy --

MR. CONNELL: Part of -- of course, they don't --

CHAIRMAN JACKSON: Or you --

MR. CONNELL: There are thousands of penetration seals.

CHAIRMAN JACKSON: Of course.

MR. CONNELL: They look at, you know, a sample and they look at the licensee's program to how they design, install, and maintain the penetration seals that are in their plant.

CHAIRMAN JACKSON: How do you get to the performance issue of combustible seals in terms of whether they can perform their intended functions via-vis the requirements?

MR. CONNELL: Right. Well, a qualification test is performed to qualify the seals as a 1, 2, or 3-hour-rated barrier. There's a standardized test that's performed --

CHAIRMAN JACKSON: By the vendor.

MR. CONNELL: No. No, by an independent testing laboratory such as Underwriters Laboratories or Factory Mutual, some other independent testing laboratory. And you'll -- Underwriters Laboratories, for example, publishes a directory of rated assemblies annually published -- a directory of rated assemblies that can be used, basic designs that could be used by licensees to use it. And it's used not just in nuclear plants, it's used throughout the construction industry.

CHAIRMAN JACKSON: And the licensees have good documentary records that such tests have been performed and you've verified that the seals they have in the plants in fact conform?

MR. CONNELL: Well, that's one of the things that we look at. Of course I wouldn't say that all -- well, I couldn't make the statement that all plants have great documentation. The documentation varies. But you do look at that, and if there are gaps, we ask the licensees to address those.

CHAIRMAN JACKSON: Okay.

MR. CONNELL: Okay?

Next slide, please, Tanya.

And regarding the penetration seal issue, I just wanted to note that the ACRS has also addressed this issue,

and they concur with the staff's position and the Commission direction regarding the noncombustible requirement.

And then last October we sent the Commission a memo updating the status of the rulemaking. We guesstimate about one-and-a-half pages will come out of 50.48 altogether, deleting the schedule or stuff, and the material related to the obsolete guidance documents. You get a little reduction.

I'll move on to the next one now, talk a little bit about the comprehensive reg guide.

As you're aware, the guidance is contained in numerous documents spanning a period of about 25 years. We'd like to clean that up a little bit. There's some conflicts in the guidance, as would be expected over such a

long period of time. We'd like to replace that with the comprehensive guide, have it all in one place. I think right now the guidance takes about five volumes on my desk, so we'd like to if we can shrink that down a little bit.

The guidance will allow, although not prescribe, performance-based methods as they are developed, consistent with the research program and some efforts from NFPA 805. The reg guide is, the way we view it, is to be applicable to plants that elect to maintain their existing fire protection license condition, such as Appendix R. It is a parallel effort with the 805 effort. It will include some additional areas for guidance that we have not addressed in the past such as compensatory measures. We think we could do a little better job on the guidance there is out there on compensatory measures.

CHAIRMAN JACKSON: Speaking of that, you know, what does the guidance entail regarding the use, extent, and duration of fire watches?

MR. CONNELL: We don't have guidance that expressly addresses that. That's why we think the reg guide is necessary -- one of the reasons why we think the reg guide is going to sort of fill that hole.

CHAIRMAN JACKSON: So you're going to explicitly address that?

MR. CONNELL: Yes.

CHAIRMAN JACKSON: In the new reg guide.

MR. CONNELL: Um-hum. Um-hum.

And just to note we have a meeting later on this month to address the feedback for the draft outline that we issued December of last year.

COMMISSIONER DICUS: Madam Chairman?

CHAIRMAN JACKSON: Let me ask one more question.

You mentioned the circuit analysis, you know, you said this is an area where additional or revised guidance is needed. Now what's the staff's position relative to the need to protect circuits versus performing detailed circuit analysis to resolve issues?

MR. CONNELL: Well, I don't think it's going to one or the other. I think what's going to come out is going to be a combination. Some circuits are going to require protection. Some circuits maybe we can address analytically so they do not require protection. But I don't think it's going to be an either/or --

CHAIRMAN JACKSON: Well, have you worked out the kind of an approach or criteria for when you go down one path or --

MR. CONNELL: Well, that's still under development. I think you're aware that NEI and the BWR Owners Group are working on a circuit analysis resolution plan. NEI has an issue task force working on that. And

we're involved with their efforts.

CHAIRMAN JACKSON: What does our involvement entail?

MR. CONNELL: Well, we have meetings. They have some proposed positions that we've looked at, we've provided some feedback on, and we're continuing that discussion.

CHAIRMAN JACKSON: But the NRC staff does not have any position on the issues. We're reviewing their positions. Is that what you're saying?

MR. CONNELL: We are not developing right now an independent path for the resolution of this at this time.

CHAIRMAN JACKSON: No, I don't mean that. I mean we haven't laid out any, you know, specific basic requirements that whatever is developed must satisfy --

MR. WEST: I'll try to address your question. Steven West.

The staff does have existing positions on protection of circuits and circuit analysis, and the positions at the highest level are built into the regulation and Appendix R, and we've issued a number of guidance documents over the year to try to clarify or interpret those requirements. Generic Letter 86-10 is one that's frequently mentioned. But based on interactions with industry and issues that have come up during inspections and that have been reported through LERs have convinced us that we need to

relook at that guidance, principally because there appears to have been in some cases differing interpretations still of what it meant and how it was implemented.

And we've had findings that licensees have disputed based on interpretation of regulation or guidance, and the effort that we're undertaking now is to come up with a clarification of guidance or maybe the final word on guidance, what the circuit analysis should be. And the staff originally was undertaking that effort internally, and the BWR Owners Group and NEI expressed an interest in cooperating with us to give us their insights and feedback, and we've agreed to do that. But we are working directly with them. It's expected that sometime this year the owners group will submit a topical report for staff review that would contain -- would specify a method for doing circuit analysis and identifying the circuits that should be protected and those that maybe could be addressed analytically.

In parallel, NEI is working on a method that would take the next step and apply risk information to the analysis. So there would be -- first you would go through the deterministic analysis identified by the owners group method, and then you may apply the NEI method to get a finer cut. But as Ed said, we still expect -- and I'm sure industry does also -- that there still will be circuits,

cables that will require protection. It's not a question of analyzing away all circuits. That's --

CHAIRMAN JACKSON: Well, that's not the nature of

the question. The real question is how much of a position or thought in terms of what is fundamental from the regulatory point of view via-vis safety in terms of how much you go down one path or, you know, how you go about making an analysis in a given situation of how much you go down one path or another.

And I guess I just want to have some sense that the NRC staff has thought about this and has, you know, I think -- I mean, I applaud in fact the efforts that you're making with the owners groups and with NEI, but it is very important that as part of that that, you know, we have some clarity ourselves as to, you know, what, you know, the safety regulator, what we feel is important.

MR. WEST: Yes, ma'am, we agree, and in fact we do have a firm position in the regulatory record, and we are today inspecting to the requirements and the criteria that are in place. And we haven't stopped inspecting or overseeing --

CHAIRMAN JACKSON: No, no, no. You miss my point. See, for instance, we are migrating the oversight paradigm, right?

MR. WEST: Right.

CHAIRMAN JACKSON: And there are some fundamentals that were part of that, i.e., cornerstones of safety.

MR. WEST: Yes, ma'am.

CHAIRMAN JACKSON: You can then -- that does not stop you from working with others, refining them, fleshing them out, revising your regulatory framework. But you have to be clear on what you think is important from the point of view of protecting public health and safety, going in.

MR. WEST: Yes, ma'am, I agree, and I'm not communicating well. I apologize. But we have established --

CHAIRMAN JACKSON: Maybe I'm not communicating.

MR. WEST: No, you are, but we have established through our work with the owners group and NEI what our requirements are and what our expectations are.

CHAIRMAN JACKSON: Okay.

MR. WEST: So it's clear, we're all working from a common baseline, I believe.

CHAIRMAN JACKSON: Commissioner Dicus.

COMMISSIONER DICUS: Yes. When you do the revised guidance, I'm assuming it does take out the conflicts that we currently have in our guidance.

MR. CONNELL: Yes.

COMMISSIONER DICUS: I want to be clear.

MR. CONNELL: Yes.

COMMISSIONER DICUS: Now in the process of doing this, have you identified any policy issues?

MR. CONNELL: Not so far. Most of the conflicts are detailed technical requirements, how long hose needs to be, how far you have between fire hydrants, what kind of separation you have as far as vertical separation between cable trays, things like that.

COMMISSIONER DICUS: Thank you.

CHAIRMAN JACKSON: Okay. Go on.

MR. CONNELL: Okay. I'd like to cover 805 now. The next slide, please, Tanya.

Followed by performance objectives which are more specific, can be -- some are more qualitative, some are more

quantitative, depending upon the specific objectives. Then that follows to the performance criteria, which are quantitative and are expressed in engineering terms and are measurable.

The use of the terms in the standard right now is consistent with the way the staff's draft positions or draft definitions were in SECY-98-144. They are consistent with the National Fire Protection Association's Report on Performance-Based Codes and Standards which was issued in 1995, and the Society of Fire Protection Engineers Draft Engineering Guide, which was issued last year.

I just wanted to note that we had a meeting with

the ACRS Fire Protection Subcommittee a few weeks ago and one with the full Committee last week and we have extensive feedback from the ACRS on the 805 process.

The next slide, please. Here is kind of a graphic overview of the fire protection pyramid. Here, where you have a baseline fire protection program under 805, basically, you use minimal deterministic requirements that we believe are essential for all plants, things like a water supply, a fire brigade, administrative controls, procedures that we do not believe lend themselves to performance-based, risk-informed methods, just good industrial fire protection requirements. That makes up the baseline part of the program.

That follows up to the additional requirements, performance requirements, and here, the way the standard is structured is licensees are given the option of pursuing a deterministic similar to the existing Appendix R approach, or they are given the flexibility of adopting a performance-based approach that could be based upon risk information, it could be based on engineering evaluations, fire modelings, or any other analytical tool that demonstrated they still meet the performance criteria.

This is topped off with a site-wide risk evaluation, similar, but we believe an enhancement to the existing IPEEE to provide some additional information and a

larger overview of the fire protection program to look at the risk insights that might be gained, and if there are any additional improvements that need to be made to the fire protection program as a result of that risk information.

CHAIRMAN JACKSON: Now, are you saying this is where NRC is going, or you are proposing to go?

MR. CONNELL: This is the way the standard is structured, the draft standard is structured today.

CHAIRMAN JACKSON: Okay.

MR. CONNELL: Each one of these will be part of the overall fire protection program if a licensee elects to adopt 805.

CHAIRMAN JACKSON: Okay. Now, there was a recent Commission paper on fire protection functional inspection, and the staff indicated, and I quote, "that the tools to measure the risk significance of specific fire protection inspection findings are not mature." Now, as such, then, how would you say that they are suitable to do this pyramid, but, in particular, the site-wide risk examination?

MR. CONNELL: Well, consistent with that, I think a lot of the things in the baseline fire protection program, we believe that the risk tools are not mature to assess

those. That is why we are prescribing them.
CHAIRMAN JACKSON: So that is why you are going to review those? These are the very prescriptive.

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MR. CONNELL: That's right. But this is a minimal level. This is -- and most of the plants have this already. I mean this is not going to be a change. They already have a fire brigade, they already have a water supply. They have manual suppression capability. They have administrative controls, they have procedures. So this is not going to be change from they currently have.
CHAIRMAN JACKSON: But I am talking about the top of the pyramid.
MR. CONNELL: The top of the pyramid is the risk tools can't address everything, okay, but they do provide additional insights, and that is what the site-wide risk evaluation is for, is to provide additional insights in case something may have been missed by the baseline program or the additional performance requirements, whether they be deterministic or performance-based. That's where we get the risk information into the overall fire protection program, which we currently only have limited with the IPEEE, because we will address things beyond core damage frequency. We will address LERF, we will address shutdown risk.
CHAIRMAN JACKSON: Okay.
MR. CONNELL: My next slide, please. Just a status of where we are and where we are going to be. We did issue the -- or made available to the public the draft standard this past November. We had a meeting three weeks

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ago to discuss some of the internal Committee comments and some public comments that have been received.
The public proposal period for the draft that was issued in November closes next week. We are going to have a meeting on those public proposals next month. The standard will be issued for public comment at the end of July this year, and the public comments will be due for that October, and then the final draft will be published in March and will be voted on by the NFP membership in May of 2000.
CHAIRMAN JACKSON: Does this schedule stay within the Commission's expectations or has it --
MR. CONNELL: This is what we reported in 98-058 and in 92-47.
COMMISSIONER McGAFFIGAN: Madame Chairman.
MR. CONNELL: That concludes my material.
CHAIRMAN JACKSON: Thank you.
COMMISSIONER McGAFFIGAN: On 805, NEI is later going to testify that they have a concern with regard to the staff's intention that 805 be all or nothing. Can you respond to that concern?
MR. CONNELL: I can tell you what our plan was regarding it. We believe that in order to simplify our approach and our oversight of the reactor fire protection program, it would be preferred if licensees either maintain their existing license condition or adopt a risk-informed,

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performance-based alternative in its entirety. Okay.
However, there is nothing that prevents, if they elect to maintain their existing license condition, there is nothing that prevents them from using the analytical tools that will be available in 805 as a basis for future

exemptions or future deviations. There is nothing that prohibits that. We would prefer them to adopt 805 in its entirely. That would eliminate the need for the exemptions and the deviations, but 10 CFR 50.12 is still going to be available for them as an alternative.

COMMISSIONER McGAFFIGAN: Madame Chairman, can I follow up?

CHAIRMAN JACKSON: Please.

COMMISSIONER McGAFFIGAN: At the moment we have Appendix R, we have pre-Appendix R. My assumption is that this new rule endorsing this new standard, which has both prescriptive, deterministic and performance-based options in it will have to be -- it will have to be voluntary because of backfit rule. So you are going to have a new system which itself has multiple options in it, right?

MR. CONNELL: Yes.

COMMISSIONER McGAFFIGAN: So, will you -- I mean I count four at a minimum. You have got pre-Appendix R, if they stay with pre-Appendix R, Appendix R, and then Option A and Option B under the new standard. You are going to

simultaneously have four plus --

MR. CONNELL: There will be three.

COMMISSIONER McGAFFIGAN: Okay.

MR. CONNELL: If they adopt 805, that will be their license condition. Okay. Within 805, there are deterministic and performance, but it is still the same license conditions.

COMMISSIONER McGAFFIGAN: Okay.

MR. CONNELL: So they will have sufficient flexibility, I believe,, that it would be desirable.

COMMISSIONER McGAFFIGAN: Okay.

MR. CONNELL: The additional burden is going to be on the site-wide risk evaluation. We see that as an expansion of the existing IPEEE. So if they want to elect to adopt that burden, they will get better risk information.

COMMISSIONER McGAFFIGAN: Okay.

CHAIRMAN JACKSON: Okay. Commissioner.

COMMISSIONER DICUS: Do you plan to have any pilot plants or have any plants come forward and want to be a pilot plant?

MR. CONNELL: I think, if you notice, NEI, I think is going to cover it in their presentation, but some plants have expressed an interest in piloting the 805 standard, yes.

CHAIRMAN JACKSON: Why don't you go on?

MR. CONNELL: I'm finished. I will turn it over to Steve now to talk about the FPFI.

CHAIRMAN JACKSON: Okay.

MR. WEST: Good morning, I am Steve West, the Chief of the Fire Protection Engineering Section. I am going to give you a briefing on the fire protection functional inspection program, and I will try to be brief. But, basically, the program came out of two staff activities. One was thermo-lag and a commitment we made to inspect the thermo-log corrective actions at all plants, and I think about 80 plants use thermo-lag, so it was a significant inspection activity.

And the other was a fire protection program reassessment that came out of the thermo-lag issue itself,

and in that reassessment, there were recommendations that we relook at the scope and depth of inspections we were doing and maybe make changes to try to preclude problems thermo-lag coming up in the future.

So, basically, the objectives were to --

CHAIRMAN JACKSON: Can you give the timeline for this program?

MR. WEST: Yes, ma'am. We originally identified the need to do the inspections of thermo-lag corrective actions in the thermo-lag action plan which we -- the first revision, or original version we issued in August of 1992 to

the Commission. The fire protection program reassessment was completed in February of 1993, and that was actually a thermo-lag action plan task.

Later, in SECY-93-143, May '93 timeframe, we reported to the Commission our plans to address the recommendations from the reassessment, and in there we identified the need to look at the fire protection -- reactor fire protection inspection program.

It was finally in December of 1996 in SECY-96-267 that we presented to the Commission our final plan for the FPFI program, identifying the scope and objectives of the program. And in a SRM of February 1997, the Commission indicated that they had no objection to the staff going forward with the FPFI pilot program.

Since February of 1997, we have issued at least one interim status report late last year, and there was another one which you may or may not have, it was on its way to you last time I checked. It may be there.

MS. VIETTI-COOK: They have it.

MR. WEST: They have it.

MS. VIETTI-COOK: They got it yesterday.

MR. WEST: Okay. Great. So that is kind of the chronology of where we are. But, basically, four objectives, as I said, to inspect thermo-lag corrective actions. We were also trying to determine if the licensees

were maintaining the licensing and design bases and complying with the fire protection requirements and their commitments to meet those requirements or fire protection guidance.

We also wanted to continue in the vein of the reassessment to assess the NRC reactor fire protection program to determine if it had appropriately addressed all fire safety issues and, kind of along those lines, to assess the strengths and weaknesses of our program, our regulatory process for fire protection.

Another objective was, again, as I said, to reevaluate the scope and depth of the NRC reactor inspection program and to develop a coordinated approach to reactor fire protection and post-fire safe shutdown inspections, and by doing so, to determine the appropriate level of future fire protection inspections.

And another objective which we explicitly identified in our paper was to attempt to renew industry attention to fire safety. There was a feeling in the thermo-log era that the interest in -- or attention to fire safety had dropped off within industry, and I think, to some extent, within the NRC staff also.

CHAIRMAN JACKSON: Steve, how do you foresee fire protection inspections in the new NRC reactor oversight

program? I mean is there a need for a level of baseline

inspection?

MR. WEST: That's a good question and it is one that actually we are trying to come up with an answer to right now. That is one of the reasons we have delayed our final report. As you know, when we started this process, there was no concept that there would be a new performance assessment inspection program, and it is come along right at about the -- you know, they have kind of hit head-on with the end of the FPFI pilots. And we are trying to assess the lessons learned from the FPFI pilot inspections, and a couple of other FPFI-like inspections that we have done, and make a decision on whether or not we should just develop a program that fits nicely into the new process, or whether fire protection for at least some period of time needs to be treated as a special case.

And I think actually if you ask the inspectors that did the inspections, they have ideas. I developed a program, I have ideas. I know my management has ideas in the EDO. So we are really -- I was going to mention later, there is a significant challenge to us right now to try to come up with a recommendation for you that addresses that very question.

CHAIRMAN JACKSON: Okay. Well, I think it requires some specific thought and effort. I mean I encourage you very strongly.

MR. WEST: Yes, ma'am.

CHAIRMAN JACKSON: Because it is an opportunity and coming -- you know, you have the insights coming out of your FPFI.

MR. WEST: Yes, ma'am.

CHAIRMAN JACKSON: So I think it is very important to give some specific thought to it, difficult though it may be.

MR. WEST: Yes, ma'am. And I will talk a little bit about what we are doing now, and kind of they all feed into that, trying to answer that question.

I am on slide number 11. So, anyway, so we can get through this quickly, I will cover what the scope of the program was and what our accomplishments were together, because, basically, we have completed the program, essentially, as we laid it out originally in 1996. We did develop new inspection procedures for FPFIs, and it was a comprehensive fire protection and safe shutdown procedure.

And I should make it clear that when we talk about fire protection functional inspections, we are normally talking about what you would normally think of as a fire protection feature that may be installed in a plant, like a sprinkler system, or the fire extinguishers, or the fire hoses or the fire brigade.

We are also talking about the capability of the

plant being able to achieve and maintain post-fire safe shutdown. So if they have a fire, they are going to have the systems available to achieve shutdown. So it is also classical fire protection, and it is also the safe shutdown capability itself, the plant systems and other features that are used by the reactors to shut the plant down. So it is a

very complicated, complex area.

And the scope and depth of this new inspection procedure went -- I will just characterize it way beyond any previous NRC inspection procedure for fire protection. And another thing that we factored into the program right from the beginning was the use of risk insights to help focus on areas of inspection.

That worked very well. We did conduct four pilot inspections. As we specified in the SECY paper, we went to River Bend, Susquehanna and St. Lucie and did full FPFIs. The fourth one we deviated a bit from what we told you we would do in the Commission paper and we went to Prairie Island, but instead of doing a full-scope FPFI, we did what we are calling a reduced-scope FPFI where we basically inspected a licensee's self-assessment that was based on the FPFI procedure and also Prairie Island, when they did their self-assessment, took into consideration the lessons learned from the previous FPFIs and another difference with that inspection is the first three were led by Headquarters with

regional support. The Prairie Island was led by the region with Headquarters support, so it was a little bit different focus there and we're trying to get information on how well a licensee's self-assessment program may fit into the future of fire protection inspections.

CHAIRMAN JACKSON: Well, see, that's also -- that takes me back to the question I had raised with you via-vis the new Reactor Oversight Program, because, you know, the role of baseline inspections by self-assessments, by special inspections being addressed -- I'm listening.

MR. WEST: You just reminded me I never really did answer your question. You did ask did we think that baseline --

CHAIRMAN JACKSON: Yes, I did. That's right.

I thought you were just being smooth and avoiding my question.

[Laughter.]

MR. WEST: I think whatever we do there will be some NRC baseline inspection involved and that is currently built into the process. What exactly that inspection would look like is up in the air, but I will talk to you a little bit about the current baseline or core inspection on the next slide.

CHAIRMAN JACKSON: Okay.

MR. WEST: In addition to the four pilot FPFIs

that we did, we also did a couple of other inspections. We did inspections at Quad Cities and Clinton, and they were not FPFIs but we used FPFI techniques during those inspections so we are also considering the lessons learned from those two inspections in our process now to assess where to go in the future.

Finally, we had a one-day workshop with industry and the other stakeholders and we did this in November of 1998. It was a very worthwhile exercise. We got a lot of good information out of the workshop from licensees and from industry and from others. We basically discussed the results of the program, got input from the stakeholders.

We learned in the workshop that one of our objectives, to increase industry awareness of fire protection, to refocus industry, we accomplished. For example, a lot of licensees that were not subject to the

pilot program had gone out and done self-assessments on their own initiative. I think NEI -- I don't know if they were going to dover FPFIs in their presentation, but they acknowledged in the workshop and in a later meeting with the Staff that we had been very effective in doing that.

The inspection procedures were I think by everybody that talked about them thought they were outstanding inspection procedures and in fact we will talk in a second about NEI's proposal, but they believe those

procedures could be used in an industry initiative later.

One interesting thing that came up -- well, actually we raised it and industry agreed, licensees agreed, was the use of risk -- risk assessment in fire protection and the need to come up with tools and methods to assess fire protection deficiencies like those that you find during an inspection.

Again, that is something that we are working on now. We have had some internal meetings with our fire protection staff and our risk staff from NRR and Research. We have a meeting in a couple of weeks with the same people plus we are bringing in all the SRAs from the regions and others within the agency that are interested and are responsible for risk assessment.

The real problem is not that it can't be done. We have had some experience in looking at some of the FPFI procedures where we have different groups looking at the same issue, and they come up with different answers. To get the answers we are spending a lot of time and effort and resources. We want to come up with a way to assess fire protection deficiencies, kind of a standardized approach where everybody is looking at it in the same way and you can expect fairly consistent results by somebody that is knowledgeable and experienced and trained in using the method, and it has got to be a method that can be done

easily.

You can't spend two weeks looking at each fire protection deficiency that we find, and industry, NEI in particular, also recognizes the shortcomings and the need to overcome those, and there are some industry efforts underway to develop techniques, and I expect that -- we are going to be having a meeting with NEI shortly, but I expect that sometime we'll come together again with industry and try to continue to cooperate in this area.

Okay, next slide please -- Slide 12.

Some of our preliminary observations -- we have discussed, I think we have discussed these in the interim reports that we have forwarded to the Commission, but some licensees expended more resources to prepare for FPFIs than we had expected when we set up the program.

CHAIRMAN JACKSON: So that was a surprise?

MR. WEST: Yes, that was a surprise.

CHAIRMAN JACKSON: And I mean why are licensees not already ready? I mean I guess that is what is confusing.

MR. WEST: That is another good question.

Some licensees -- I don't want to give the impression that no licensees are ready --

CHAIRMAN JACKSON: No, I am talking about any specific cases.

MR. WEST: Well, one specific example I can give you where we have some letters from the licensee. It was St. Lucie -- and they asked us to postpone the FPFI that we had scheduled there and in their letter they stated that it was going to take them basically 24,000 staff hours to prepare for the inspection, and when you see a number like that, that is a huge surprise.

It turns out in their case we believe that they weren't preparing for the inspection -- just in other words getting the documents ready --

CHAIRMAN JACKSON: They were getting the plant --

MR. WEST: -- for the Staff. They were fixing their program, and it turns out they had some significant problems with their fire protection program itself.

MR. MARSH: Let me add a comment, if I can. To be fair, this is a new inspection procedure, a new inspection process, and there was in my opinion growing in terms of the industry looking at what they needed to do to prepare for it, so there was certainly some getting the plant, getting the procedures ready but it was also where is the agency looking, what does this procedure look like.

There was growth on both sides in this endeavor, I would say.

COMMISSIONER MERRIFIELD: Chairman, I just -- you know, I seized upon the same sense you did, and I am

reminded of the discussions we went through when we had our reanalysis of the OSPRI program --

CHAIRMAN JACKSON: OSPRI --

COMMISSIONER MERRIFIELD: -- where we had spent significant resources to get ready and I think that is a concern. That is a concern, particularly since from a risk-based analysis fire issues are one of the most significant things we have to deal with.

If people have to expend resources at these plants to get ready to do this, and I understand that it is a new program, a new way of doing things --

CHAIRMAN JACKSON: With all the people working every hour for a year, that is a lot.

COMMISSIONER MERRIFIELD: And what does that indicate to us for the other plants that were not doing this kind of an assessment?

CHAIRMAN JACKSON: That's right.

MR. WEST: Again, that is a part of --

CHAIRMAN JACKSON: Speak to the microphone.

MR. WEST: That is part of something we are taking a look at. We touched on the --

COMMISSIONER MERRIFIELD: Well, does it concern you?

[Laughter.]

MR. WEST: Yes, it does. Very much. Very much.

COMMISSIONER MERRIFIELD: Okay.

MR. WEST: And I think comments during the workshop we received from industry for example, they were also quite surprised about this and acknowledged that it was a matter of having a program that needed to be repaired in advance of an inspection, or that was the attempt.

MR. MARSH: During the workshop there was acknowledgement on the part of the industry that there was a

great deal of effort they had to go through to get ready for these inspections, and in the sense that there was some housecleaning that needed to be done on their part to gain -- regain assurance of fire protection programs.

We didn't hear in the workshop the fire protection functional inspections were on the wrong track. They were not finding things that were not important, that the programs were all ready to go. We didn't hear that. We heard an acknowledgement that there was a need for this program and an acknowledgement that fire protection programs needed to improve, and that through many endeavors through either their self-assessment process or through an inspection process they believed that improvements have been made, and that was one of the objectives of this program was to regain the sensitivity to fire programs.

CHAIRMAN JACKSON: Well, again, I mean I sound like -- I will call myself "the broken CD" -- you know,

"record" -- the "broken CD" from now on. I hope you all took notes relative to the new Reactor Oversight Program because you have got to kind of grapple with what at a fundamental level we need to be looking at and what at a fundamental level licensees need to be doing and looking at, because this kind of thing is an eye-catcher.

MR. WEST: Yes, ma'am -- we have been --

CHAIRMAN JACKSON: And when you tell us the numbers, you know, 24,000 hours, that is a lot --

MR. WEST: Right.

CHAIRMAN JACKSON: -- and, you know, there can be a knee-jerk reaction, "Oh, there's the onerous NRC" but if people, if it is a risk-informed look, and folks are not telling you you are barking up the wrong tree, then that says something, that that is an area that we have to ensure that we give attention to, as the regulatory program has migrated.

MR. WEST: In addition, and I am probably getting ahead of you, but the next bullet, the fact that we are finding things that wouldn't have been found through the core inspection --

CHAIRMAN JACKSON: By the core inspection, that's right.

MR. WEST: -- that underscores even more, I believe --

CHAIRMAN JACKSON: I understand. That's the point. That's why I raised the issue about the baseline. What is the baseline?

MR. WEST: Yes, Chairman.

I don't think we really thought about the core inspection program too much before we started the FPFIs but once we got into doing a couple pilots it became obvious that there were problems out there that were not found by our core inspection or licensee self-assessments that were based on the core inspection, and in hindsight when we thought about it, we said that that really shouldn't be too surprising because the core program is set up more along looking at classical fire protection lines and it wasn't looking at the engineering issues. It wasn't looking at design issues. It wasn't looking at configuration control.

Our theory is that there was a feeling, not a feeling but we had done Appendix R inspections after plants

originally complied with Appendix R in the early to mid-'80s and during those inspections we verified that the barriers were there, the seals were there, the sprinkler systems were there, and there may have been a feeling that once that was done it was treated more as a milestone, and all we needed to do in the future was go back and just make sure the barrier was still there.

So the inspector might say, just see a barrier and

say, you know, they're done when in fact no one had really looked at the document base behind the barrier or whether plant mods have made that could have invalidated the safe shutdown capability, so --

CHAIRMAN JACKSON: Well, the key is the second "F" in FPFI -- you know the "functional" inspection.

MR. WEST: Yes, ma'am. Absolutely.

CHAIRMAN JACKSON: And -- okay, I am going to stop talking. You have got the message, I'm sure.

MR. WEST: I think I have gone over my time. I'll try to hurry up.

I think in the -- I am not sure if we have reported it but if you just go through the six inspections that I mentioned earlier and you just do a simple count of anything that was identified as a problem or a weakness or a finding or an unresolved item, we had 140 separate items and obviously they had varied safety significance.

Some were little to no safety significance and some were of more safety significance. To cover those could be another whole briefing.

We did find through Prairie Island we believe that the licensee self-assessments that would be based on an FPFI techniques could be beneficial as a way to continuing to achieve a good level of fire safety within industry.

COMMISSIONER McGAFFIGAN: Madam Chairman?

CHAIRMAN JACKSON: Yes, please.

COMMISSIONER McGAFFIGAN: He flew past the 140 times and said it would take a whole briefing, but could you describe the single most safety significant item you found, just to give a ballpark?

MR. WEST: That's really going to be a judgment call. I mean I'll tell you some that we --

COMMISSIONER McGAFFIGAN: A significant --

CHAIRMAN JACKSON: "A" --

COMMISSIONER McGAFFIGAN: A significant.

MR. WEST: Well, for example, an issue that, a finding that we believe was significant we found during our first FPFI at River Bend and it was a situation where they had a cable that if there was a fire involving that cable and they had a certain type of fire-induced fault all of the safety release valves could inadvertently open, so that would be an example of a significant, what we believe to be a significant finding. The licensee has corrected that problem.

Something that would be less significant may be an isolated example of combustible controls procedures not being followed -- maybe a little too much combustibles in an area that that shouldn't be there, so there really is a large range, and different people will place things in different bins -- high, medium, or low.

CHAIRMAN JACKSON: Did you ever take a look at where combustible gases are stored?

MR. WEST: Yes, ma'am. We did it as part of the FPFIs and it has also been something the agency has looked at several times. There were generic safety issues involving combustible gases, and there is guidance on combustible gases --

CHAIRMAN JACKSON: But things come up from time to time.

MR. WEST: Yes, ma'am. Just quickly, to finish up Slide 12, as I have mentioned, we do think we did renew industry attention on reactor fire safety and in the workshops NEI and others did say that we should take some steps to ensure that we stay there. We shouldn't just back off completely and let things backslide.

We didn't find any significant problems with our Reactor Fire Protection Program, looking at Appendix R and IPEEE and the various guidance documents. We didn't find any gaping holes where there was a fire safety issue that had not been adequately addressed.

Again, there may have been some problems in implementation but it appears that the regulatory framework's health is sound.

CHAIRMAN JACKSON: So you are saying that as long as licensees implement the regulatory framework

appropriately, then there is not a problem?

MR. WEST: Some may say as long as they implement it the way we think it should be implemented --

CHAIRMAN JACKSON: As you define it --

MR. WEST: As we define it -- there is not always total agreement, and that has been one of the problems. As we said, circuit analysis in an area where we think the basic requirements are sound, but there could be confusion in the implementation and we are taking action to address that.

My last slide is Slide 13, before we move into IPEEE, but what do we have left to do? I think we have touched on all of these. I won't go over them again, but we are looking at developing a method for assessing the risk significance of fire protection deficiencies.

We have this big meeting in a couple of weeks. Hopefully we will come out of that with something we can use. We do want to actually assess the risk significance so we can come up with a consensus on the FPFI findings or at least the important ones, so we can report those to you in our final report.

Continuing our assessment of the lessons learned, we do have from NEI a proposal for an industry initiative that would continue some level of fire protection inspections in industry. Basically they are proposing a

phase-out of FPFIs as a routine type of inspection, to be replaced with licensee-managed self-assessments.

We would have oversight of those self-assessments through the new performance assessment and inspection program. We would still have some level of baseline inspection and if a plant gets into a certain range -- you know, the green, yellow, white -- then we may warrant a FPFI.

But we are looking at the NEI proposal.

CHAIRMAN JACKSON: Commissioner McGaffigan?
COMMISSIONER McGAFFIGAN: Part of the NEI proposal is to develop fire-protection performance indicators, and, you know, the notion generally in this assessment process is where there are indicators we will inspect less, and where there aren't indicators, we'll inspect more.
How difficult is it going to be to come up with indicators? I mean, I can count combustibles lying around on the floor or whatever, but, you know, the one you cited, the cable -- the analysis which leads to the conclusion that, you know, if our induced faults could have all the safety valves -- relief valves open, that doesn't sound like something that you're going to have a performance indicator on very readily.
MR. WEST: We in the industry have acknowledged that it would be very difficult, it would be challenging.

We had, when we met with the ACRS subcommittee and full committee last week, they also agreed that it would be difficult, but they seemed to believe it could be done. We really need to think about that before I could give you specific examples.
I mean, you've given some examples, and certainly those could be performance indicators. It may not be -- it may end up that it's not very discrete items like, you know, how well is your surveillances or maintenance of sprinkler systems. It may be a more general type of indicator like if you do a self-assessment, you need to look at the results of the self-assessment and consider what that means to the health of your fire-protection program.
CHAIRMAN JACKSON: Okay. I think we'd be interested in -- the Commissioner wants to hear NEI's, you know, commentary in this area. But I just wanted to mention to Commissioner McGaffigan, the baseline inspection program is meant to cover areas where there are no --
COMMISSIONER McGAFFIGAN: Right.
CHAIRMAN JACKSON: Indicators, and to validate --
COMMISSIONER McGAFFIGAN: Validate. I understand.
CHAIRMAN JACKSON: So that would help --
COMMISSIONER McGAFFIGAN: More --
CHAIRMAN JACKSON: Right, but that would help in --

COMMISSIONER McGAFFIGAN: But the thrust of this briefing so far has been that maybe a larger part of the baseline inspection program than perhaps is currently planned needs to be focused on fire.
CHAIRMAN JACKSON: Right. That's an interesting point, or at least fire needs to be squarely addressed as part of that.
MR. TRAVERS: It could be viewed as similar to some of the issues that have been raised on design basis and how you get to a comfort and confidence level, you know, because of the lack of good performance indicators.
CHAIRMAN JACKSON: Right. Right.
COMMISSIONER DICUS: Do you think that this self-assessment program would keep the licensees focused on fire protection? Because apparently they've wandered off from being focused on that, which is part of what we're doing here.
MR. WEST: Well, at this point we're really still considering that. It's not clear, and we need to have

additional interaction with NEI as to exactly whether this would be a voluntary initiative or whether NEI is going to recommend or make a stronger recommendation that licensees do it. And we would imagine if we bought into this type of approach there would be some period of maybe a higher level of oversight to really try to gauge that licensee's --

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CHAIRMAN JACKSON: Commitment to the --

MR. WEST: Commitment to the program.

I think in the -- just to make one other comment about performance indicators -- I believe in the development of the oversight, the new oversight process, the team looked at performance indicators for fire, and basically they said the only one that made sense was the number of fires, but then they concluded that that really -- that's a good performance indicator, but you can't do that.

Anyway, we're going to -- we have this work to complete. We have a lot to think about. We have a lot to work out. And in the end we will give you a final report in April which will lay out, you know, what we've done, why we did it, what we believe the viable options are for the future and what our recommendation will be.

CHAIRMAN JACKSON: And you are looking to factor it into the new oversight.

MR. WEST: Yes, ma'am, we definitely are.

CHAIRMAN JACKSON: Okay. This is April?

MR. WEST: Yes, ma'am.

CHAIRMAN JACKSON: The final report?

MR. WEST: Yes, ma'am.

CHAIRMAN JACKSON: Okay. All right.

MR. WEST: That concludes my presentation. If there are no more questions --

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CHAIRMAN JACKSON: Counting the number of fires is like going down the highway at 100 miles an hour and when you've passed a red barn, you've gone too far.

MR. WEST: Alan Rubin will be the next --

MR. RUBIN: Good morning. My name is Alan Rubin. I'm section chief for the PRA Branch of the Office of Research.

And in the interest of time, I'm going to be covering two topics with three slides total, try to be concise. However, there are additional backup slides which are provided in your package to provide some additional information.

I'm going to talk about the IPEEE program and the fire risk assessment research program.

First, in the IPEEE program, that's on slide 14, we originally anticipated that there would be 74 submittals from licensees. However, four plants have permanently shut down, and we've completed the preliminary reviews of all 70 submittals to date. We have also completed final reviews and issued staff evaluation reports for 11 library submittals. And the reviews are being conducted in a similar fashion to the way the IPE program was done.

It involves quite a significant number of steps along the way. I won't get into them in this meeting. But just to again focus what the attention of the reviews are,

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we're looking to see whether the licensee submittals are

complete, whether they're reasonable, whether they have significant gaps, whether they have significant problems in the assumptions or the analysis or the methods in the program. We're particularly focusing to see if the assessments can address plant-specific severe accident vulnerabilities, which is really to meet the overall objectives of the IPEEE program.

In addition to that, we're also looking to see how specific generic safety issues that relate to IPEEEs are being addressed and resolved, and I'll talk a little bit about that on the next slide.

In January of last year we provided a report to the Commission that included preliminary perspectives from the review of the submittals that were conducted up to that time which were about a third to one-half of the submittals. And let me just highlight some of the major conclusions from that, and they really haven't changed since then. But I think they're important to just go over again.

First we've seen that many licensees have implemented improvements at their plants, made modifications to improve plant safety. They include both procedural modifications such as improving fire protection, fire response procedures, improving administrative procedures for transient combustibles, and they've made some hardware

improvements as well, such as relocating cables out of fire areas, made improvements to their fire-suppression systems, and several others. There's a backup slide that provides some more examples in your package.

In the fire area, about half the plants' licensees have made improvements to their plant. That's a substantial number. And overall in the IPEEE program about 80 percent of licensees have made some improvements, which is either fire, in the seismic area, or high winds, floods, and other external events.

We've seen from results in the submittals that fire events can be a significant and in fact a dominant contributor to core damage frequency, to the total core damage frequency at the plant. The range of core damage frequencies reported by licensees is from 10 to the minus 7 to on the order of 10 to the minus 4 per reactor year.

We make an important point about I'd say the comparing of core damage frequencies between plants or even between IPE's and IPEEE's. Anyone who's got a number is going to make a comparison, but it's got to be done with caution. There are some significant things I want to point out to demonstrate where a comparison is not really straightforward.

Similar conclusions were drawn from the IPE program. First, there were differences in the modeling

assumptions that analysts have made. And you've seen the significant difference in the example already at Quad Cities what that can do. There are differences in methods that are used. These were approved methods that were put out in guidance for doing IPEEE's. And there are acceptable methods that differ from submittal to submittal. And there's also a difference in the level of detail themselves in the submittals from one plant to another.

COMMISSIONER McGAFFIGAN: Madam Chairman?

CHAIRMAN JACKSON: Yes, please.

COMMISSIONER McGAFFIGAN: We had ACRS in last week

and we were talking about elevating core damage frequency to a safety goal, and it strikes me that we've just been warned by the staff that, you know, not to trust these overall numbers, which is a conversation we also have had with ACRS. But how could we get -- I mean, if we ever do go down the line of making core damage frequency a safety goal, do we have to standardize these methods and have a standard method, a standard level of detail, you know, in order to get the comparability across?

MR. RUBIN: Simple answer, in my view, yes, I think so. I mean, we were looking at the, you know, reviews not so much focusing on the quantitative number --

COMMISSIONER McGAFFIGAN: Looking at relative --

MR. RUBIN: We're looking at relative risk at the

plant to see whether the licensee has done that.

COMMISSIONER McGAFFIGAN: Right.

MR. RUBIN: But for the objective that you're talking about, yes, I think you would need some kind of a standard. And a standard is being developed for the internal events PRA, and you're aware of that, and certainly in the IPEEE that could be as well.

CHAIRMAN JACKSON: But when you get to the IPEEE's, your uncertainties --

MR. RUBIN: State of the art is different.

CHAIRMAN JACKSON: But nonetheless, your point is well taken.

MR. RUBIN: Okay. Going on to the next slide, I just wanted to focus on areas in addition to the plant-specific reviews where the staff and industry is using risk information from the IPEEE program. First, as I mentioned, the licenses have made improvements to their plants in a number of areas. In addition to that, the staff has used the IPEEE program to identify or to help identify and prioritize the fire risk research program. For example, at Quad Cities we saw that the area of turbine building fires can be a significant contributor, and that's part of the fire risk assessment research program.

We're also looking at how the submittals can address and resolve specific IPEEE-related generic safety

issues. Brian Sheron mentioned there are about a dozen of those in the fire area.

CHAIRMAN JACKSON: Could you give us one, using Mr. McGaffigan's technique, give us one example?

MR. RUBIN: Yes, the effects of smoke on manual fire suppression is one example. It's a fire-risk coping study issue. Seismic fire interaction is another issue. Okay. There are again twelve in the fire area.

CHAIRMAN JACKSON: Are you doing this yourselves? Are you doing it with international cooperation? How is it working?

MR. RUBIN: No, this is not being done -- the reviews are not being done --

CHAIRMAN JACKSON: No, I'm talking about the research program.

MR. RUBIN: The research program, yes. I will get into that. It's done in a collaborative, cooperative program with both international participants as well as industry and economic.

CHAIRMAN JACKSON: Okay.

MR. RUBIN: Yes. You're at the conclusion of my last bullet.

CHAIRMAN JACKSON: Oh, I'm so sorry.

MR. RUBIN: There are 25 issues that are being addressed in the IPEEE program, including one unresolved

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safety issue, one shutdown decay heat removal requirements, seven generic issues of which some have nine to seven to ten subparts in them as well as fire-risk scoping study issues. And the resolution of each of those issues is documented in each plant's staff evaluation report.

Of the reports we've completed to date, we've seen that not all issues were resolved in each plant, and for those cases, there will be followup by the staff, either on a generic basis or a plant-specific bases if an issue is not resolved.

However, in large part we are finding that the issues are being addressed and the IPEEE's are adequate to resolve a number of issues.

The fourth area that we're using risk information is to provide input to NRR and prioritization of areas for fire plant inspections. Which areas, for example, in the IPEEEs are showing up as dominant risk contributors? And that's very useful information that's input to where fire protection inspections can focus their activities.

CHAIRMAN JACKSON: Doesn't that help you get at the issue of the risk significance of inspection findings themselves?

MR. RUBIN: That's the other side of the coin. This is an input to the --

CHAIRMAN JACKSON: Right.

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MR. RUBIN: Risk program. The other side, as we've probably -- I'll talk a little bit -- may need some new tools or additional tools, to help assess what the risk significance is of the findings.

CHAIRMAN JACKSON: Were you going to talk about that?

MR. RUBIN: I'll talk about that when I get into the --

CHAIRMAN JACKSON: Okay.

MR. RUBIN: Fire risk assessment.

CHAIRMAN JACKSON: Fine. I'll wait.

Commissioner Merrifield has a question, I think.

COMMISSIONER MERRIFIELD: I was going to wait till his next point and ask my question.

MR. RUBIN: Okay. Next point I'm certain is of interest to the Commission. In fact, in response to a Commission SRM that was issued in June of last year, we're assessing the effect of exemptions to Appendix R on fire risk, and this stemmed initially from Quad Cities, and there are other overall significant impacts on exemptions.

CHAIRMAN JACKSON: Do you have any preliminary results?

You knew I was going to ask that.

MR. RUBIN: I knew you were going to ask that. And I was going to tell you we are on schedule for

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providing a report to the Commission in May of this year, which is consistent with the SRM.

It's a challenging and difficult activity, as

we've seen. It depends on the level of detail we need to get into. Is there enough information in the IPEEE's themselves? Do we have the event trees and fault trees to do an adequate assessment? And let me just tell you the methodology of the approach that we're doing, see if that satisfied you temporarily. You'll still be here in May.

CHAIRMAN JACKSON: I'm looking forward to your --

[Laughter.]

And I'll even be around a little while after that.

MR. RUBIN: We don't have the time or resources to look at all 70 submittals, but we've picked ten plants, those which have reported the higher core damage frequencies, on the order of about 10 to the minus 4th. And the range of exemptions for those plants is from three to more than 20 per plant, typically nine or ten exemptions for each plant that we're looking at.

To assist the risk significance, we're asking three questions. The first one is do the exemptions, can they contribute to a significant increase in the total core damage frequency at the plant. That's an obvious question. The second question is can the exemptions contribute to a change in the dominant risk contributors or profile of risk

at the plant. And, thirdly, can the exemptions contribute to a change in plants' reliance on various fire protection functions.

So I think with those three questions in mind, you can see it's a challenging issue. We're in the midst of doing that review. We have some contractor support to help us in that area. And we're working actively to get the job done.

CHAIRMAN JACKSON: Commissioner Merrifield I think had a question.

COMMISSIONER McGAFFIGAN: Yes, mine goes to sort of the cumulative effect of the exemptions. I mean, we do have a number of exemptions out there, and many of them -- at individual plants. And do we have a good safety valve, a good safety check to make sure that that one additional exemption does not have in combination with all the other exemptions we've given --

CHAIRMAN JACKSON: That's part of what you're looking at --

MR. RUBIN: We're trying to assess for each exemption is there a contributor, is an exemption -- does it affect an area that's a high-risk contributor, a dominant risk contributor for the plant. And we're trying to bin those -- to answer your question that, you know, the incremental or the marginal increase in risk, that's going

to be a tough one.

CHAIRMAN JACKSON: But wasn't it true -- well, before this analysis exercise -- that at least in a certain instance at Quad Cities that you had exemptions that overlaid with each other in terms of their net effect on the plant?

I mean, that was my understanding in at least one instance with Quad Cities specifically.

Mr. West.

MR. WEST: I'll try to address that.

When we originally went to Quad Cities after they submitted the IPEEE, we thought that that may be the case.

And we did find one exemption where we thought it contributed to a vulnerability, and the licensee took action to correct that problem, although they've indicated that in risk space it really was not significant, but in practical terms it could create a problem for plant shutdown.

We met with the licensee again in December of this year, and they have gone through and did a detailed assessment of their exemptions including the cumulative effects of exemptions. And they stated in the meeting that none of the exemptions where the cumulative effect was not a significant contributor to fire risk.

We didn't have a chance in that meeting to get into the details of their analysis, but we're scheduling a

followup meeting at the site in March where we're going to meet with them and go through in detail the assessments and analyses that they did to reach those conclusions, because we're -- you know, we're interested to find out how they did it and how they got to the conclusions they got. So we would know more in March.

CHAIRMAN JACKSON: Commissioner, you were asking the question relative to cumulative effect at a plant or cumulative effect across the industry?

COMMISSIONER MERRIFIELD: I was looking at the cumulative effect at a plant, an individual plant.

CHAIRMAN JACKSON: Right.

COMMISSIONER MERRIFIELD: Do we have the right assessment mechanism to be able to gauge that as we had additional exemptions?

CHAIRMAN JACKSON: Why can't that analysis --

MR. RUBIN: We'll keep that it mind, that is a valid point, as we do this. We are in the midst of doing that, and we will keep that in mind.

CHAIRMAN JACKSON: But I thought I had already asked you to do that sometime ago. No, I had. That was exactly the point at Quad Cities, was whether there was a cumulative effect of the exemptions. And so if you can't answer that for us, then we have no ability to answer the question.

MR. RUBIN: No, that is part of it. We are doing them separately, but we will combine each of the exemptions to see what the cumulative effect is.

CHAIRMAN JACKSON: Okay.

MR. RUBIN: The last point on the slide is just to point out that both -- another use of risk information from the IPEEE program, both by the staff and industry, is to incorporate lessons learned from the risk insights from IPEEE into the NFPA standard. And I mentioned a little earlier where the appendix being developed for that standard, which focuses on the site risk evaluation, will provide guidance for NFP 805.

Just to conclude that final statement, that we will issue a final IPEEE report after all the individual plant evaluations are completed.

Let me move on to the next slide on the fire risk assessment research program. I would like to acknowledge Dr. Nathan Siu, sitting in the audience, who has got the lead for this program. He is raising his hand right over there. And just make a couple of points with regard to this program.

As the agency and the Commission has moved towards

more risk-informed, performance-based regulation, there certainly is a need for robust fire risk assessment methods, tools and data to support those activities. We know there

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are some weaknesses in the current state of the art in FRA, fire risk assessment, and, in fact, we have seen how that can contribute to variability in the IPEEEs in other plant assessments.

There have been weaknesses that have been identified in fire risk assessments, and improvements, work has started -- was initiated to address some of those weaknesses. For example, analyses or data for fire frequencies, fire modeling, looking at thermal fragilities of cables, looking at circuit failures, which was brought up earlier, are some of the areas that are in the program.

And then SECY-98-30, which was provided to the Commission in October '98, summarizes the key research findings from the fire research program, as well as needs for improvements.

And the last point goes to your question, Chairman Jackson, in order to leverage our resources, the fire risk program involves collaboration with industry, that includes NEI and EPRI, with academic, with universities, with government, for example, NIST, and with international organizations. And, as I said earlier, that program will have significant improvements by the end of 2000, but there are products that have been developed and will be developed before that time period.

CHAIRMAN JACKSON: Okay.

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MR. REYNOLDS: Good morning. Let me pull this over. Okay, there we go. In the interest of time, I will just stick to my prepared remarks, and we will start with slide 17.

As you may recall, Quad Cities shut down both Quad Cities' units in the fall of 1997 due to significant discrepancies between the safe shutdown analysis and the safe shutdown implementing procedures, and the resultant potential increased risk of damage from fire. Commonwealth Edison then undertook a number of corrective actions to deal with the identified fire-related safe shutdown deficiencies and to support plant restart.

The licensee revised and validated the safe shutdown analysis for each unit. They revised and validated and approved their safe shutdown implementing procedures. Additionally, the licensee implemented a number of enhanced fire protection compensatory measures in the high risk plant areas. These included fire watches, enhanced controls over combustible materials, enhanced controls over activities than represented increased fire risk like welding and grinding.

The licensee also augmented the additional operating shift crews with one additional staff member per shift to ensure they had sufficient personnel to be available to perform safe shutdown activities.

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Additionally, the licensee provided training to the operational personnel and all other personnel required to implement the new safe shutdown actions.

And in May of 1998, the NRC reconducted a

comprehensive inspection of their safe shutdown corrective actions, and at that end of that inspection, the staff concluded that the Quad Cities' safe shutdown analysis, and their implementing procedures, along with the compensatory measures I just mentioned above, were acceptable to support plant restart for both units. And subsequent to the inspection in late May, both units restarted.

Moving on to slide 18. Since plant restart, the licensee has continued to take actions to reduce the Quad Cities' fire risk and to improve the safe shutdown capabilities. In November of 1998, the licensee completed a revised core damage frequency assessment for Quad Cities' Unit 1. This improved risk assessment resulted in a core damage frequency of 6 times 10 to the minus 5 per reactor year. As you have earlier, this is a significant improvement over the core damage frequency of 5 times 10 to the minus third, which was included in the Quad Cities' IPEEE which was submitted to us in 1997.

CHAIRMAN JACKSON: So the 6 10 minus 5 is a Unit 1 number?

MR. REYNOLDS: Right.

CHAIRMAN JACKSON: What about Unit 2?

MR. REYNOLDS: They haven't finished that analysis. Based on discussions with them, they think it is going to be about the same.

CHAIRMAN JACKSON: The 5 10 minus 3, that was for both reactors?

MR. REYNOLDS: Yes, ma'am.

CHAIRMAN JACKSON: So it wasn't done on a per reactor basis?

MR. REYNOLDS: Right.

CHAIRMAN JACKSON: Okay.

MR. REYNOLDS: The two major factors in reducing the risk between the 1997 and the IPEEE and the one they just finished in November was a more accurate understanding and determination of actual cable routings, where the cables are, and a reduction in the conservatism of the fire modeling. Knowing the actual cable routings allowed the licensee to identify a number of additional components that would be available to achieve safe shutdown. These pieces of equipment had been previously assumed to be unavailable due to fire damage.

The licensee is still continuing to implement a number of actions to improve their safe shutdown capabilities. These include a better safe shutdown system optimization, a reduced unit interdependent study, and a

cable separation study. Additionally, the licensee has implemented a number of plant modifications which have resulted in improved safe shutdown and performance.

CHAIRMAN JACKSON: Now, is that part of 6 10 minus 5, of is that above and beyond that?

MR. REYNOLDS: A little of both. They have completed insulation of some pathway fire barriers, that was included in the change. And then they have relocated some critical cables. And they are going to plan additional changes. Some of those include they are going to have modification to the safe shutdown makeup pumps, the station blackout diesel generator control circuit, and they have changes to the reactor -- excuse me, the high pressure coolant injection system, and they are going to do

modifications to the fire protection features in the reactor feedpump areas.

CHAIRMAN JACKSON: Are you able to include the effect of fire watches on the mitigation of core damage frequency due to fire, can you model that in a PRA?

MR. REYNOLDS: I'll let you try to answer that one.

MR. RUBIN: The question is, can you model the effect of fire watches in the PRA?

CHAIRMAN JACKSON: Correct.

MR. RUBIN: Our expert is shaking his head no.

Dr. Siu is our fire PRA expert. Do you want to expand on that?

DR. SIU: Chairman, at this moment, fire frequencies are estimated based on statistical data, and those data generally don't include whether or not a watch was available. You can sometimes infer that the fire was started by people who by there, and you can say, well, there's -- you know, obviously, it was detected quickly. But as far as fire frequency effects go, we don't have a way to measure that.

CHAIRMAN JACKSON: Is that an issue, when one thinks about compensatory measures that involve fire watches?

DR. SIU: It is certainly an issue. Whether it is one that we can really deal with in research space, I am not sure.

CHAIRMAN JACKSON: Okay. Thank you.

MR. RUBIN: Is that it?

MR. REYNOLDS: Just the last point I wanted to make is the NRC staff, both NRR and Region III, is going to continue interact closely with the licensee as they continue to make improvements.

CHAIRMAN JACKSON: Are there other plants with similar issues, if not the same core damage frequency numbers as Quad Cities? There were some questions about

Salem and the Salem restart. I mean that is not in your region, but --

MR. REYNOLDS: I will tell you the next one we are worried about is Dresden. Dresden has a 10 to the minus 4 number and they are basically in the same spot where Quad Cities was. They didn't do a good job of understanding where all their cables are, so they are in process.

MR. TRAVERS: They are in the midst of a reanalysis?

MR. REYNOLDS: Right. And they are right behind Quad Cities. I don't know if you wanted to speak to Salem.

MR. RUBIN: Salem doesn't come to mind as a real plant that had a significant problem, but there was no plant that had 10 to the minus third core damage frequencies. There were a number of plants, approximately 10, that had on the order of 1 to 4 times to the minus fourth core damage frequency, and Dresden was among those 10.

CHAIRMAN JACKSON: I think Salem had an issue having to do with fire penetration seals. Anyone want to speak to the fire penetration seal issue?

MR. TRAVERS: Do you know, Steve, about Salem?

MR. WEST: Yes, ma'am, I can address that. Salem, prior to the restart of Salem, NRR assisted Region I in a

fire -- a couple of fire protection inspections there, and the inspectors did identify a minor problem with the fire

barrier penetration seals. It was basically a documentation problem, which I understand has been resolved. The more significant problem was the fire barriers themselves that were installed at Salem to protect electrical raceways.

There were questions about the qualifications of those barriers and the licensee, prior to restart, committed to a program to correct that, and they are into that program. They have done some testing and there's meetings between Region I and NRR and the licensee to review progress.

CHAIRMAN JACKSON: Okay. Thank you very much.

MR. TRAVERS: That completes our presentation.

CHAIRMAN JACKSON: We will now hear from our second panel, Mr. Ralph Beedle, a Senior VP of NEI, Mr. David Modeen from NEI and Mr. Anthony O'Neill, who is Vice President of Government Affairs for NFPA, National Fire Protection Association.

MR. O'NEILL: Good morning, Madame Chairman. Would you like the NFPA, National Fire Protection Association, to go first? You had introduced us in that order, and that is fine with us. It is up -- it is your choice.

CHAIRMAN JACKSON: Actually, I introduced you in opposite order, but it's okay. You all decide.

MR. O'NEILL: Okay. We will do it that way, and

perhaps the projectionist can come to the NFPA logo slides and we will start there.

Good morning and my name is Tony O'Neill, and I am Vice President of Government Affairs at the National Fire Protection Association. We are certainly pleased to be here We -- NFPA has appeared a couple of times in front of the ACRS, but this is the first time we have had an opportunity to appear before the full Commission.

As a way of introduction, over the years the NRC, the Department of Energy, the nuclear industry have used NFPA codes and standards regularly as a part of their program for assuring safety in the use of atomic energy. Of course, last year, as was mentioned by Chairman Jackson, we entered a new era of cooperation with the NRC, and with the support of NRC, the nuclear industry, insurance, specialists in a number of different fields, we started the development of NFPA 805, which has already been described.

Today, what I will do is give you a brief overview of NFPA and how we develop codes and standards through a national consensus process. And before I do that, though, I want to apologize for not having our Chairman of the Committee, Len Hathaway, here and Rich Belon, who is our Senior Engineer who is assigned to the project. Both of them are in Europe at this time and, in fact, are looking at methods and methodologies that are used in Europe for

accomplishing the task at hand.

I would like to move to slide number 3, which goes past the introductory items, and start with just a brief overview of what NFPA is all about. The National Fire Protection Association was founded over a hundred years ago, and its purpose was to develop national consensus codes and

standards and, over the years, that has been our primary purpose, although the Association has also evolved into a public safety advocate organization in a very general sense, including public education activities. We are a private, non-profit, voluntary codes and standards developer, and the Association's standards making activities are accredited by the American National Standards Institute.

What does that mean? It means that we, in our process, invite all effected and interested parties to participate in the codes and standards making activity, not only on the Committee, but in any way, shape, form in which those people, individuals would want to be involved in that process, and I will get into that a little bit more.

The process also is completely transparent, so that anyone can participate, and we will talk about that. And the process involves adequate due process to make sure that the standards are arrived at in a fair and equitable manner. We have members, close to 70,000 members in the United States and some 79 nations around the world.

I would like to move to the next slide, slide number 4, and you will see that NFPA has been involved in providing codes and standards for the federal government use as we have with states, counties, cities, towns. The codes and standards are used by architects, engineers, designers. Many of them are adopted and referenced in building codes and they are widely used as a basis for underwriting and insurance, and, of course, they are used by industry.

In the federal government area, just to mention one or two of those that are listed on the slides, all Medicare, Medicaid funding eligibility to some 35,000 healthcare institutions in the United States has as a prerequisite the compliance with the Association's life safety code, as an example.

Federal Aviation Administration, all the ground servicing, fueling and aircraft rescue, fire-fighting activities are governed by the NFPA codes and standards that deal with that.

Next slide, please. Starting in 1983, the Office of Management and Budget, through OMB A-119, required that federal government staff participate in the development of private sector standards and that the OMB circular urged the adoption of these standards in carrying out public policy. In 1996, that was codified into Public Law 104-113, the Technology Transfer Act, and I will quote from that. It

directs, "All federal agencies and departments shall use technical standards that are developed or adopted by voluntary consensus standards bodies using such technical standards as a means to carry out policy objectives."

Moving to the next slide, and I am going to move quickly because I know time is of essence here, but please stop me at any time in the presentation if you have any questions. Some of the more recent projects that have been requested by the federal government, in addition to the NRC project to develop 805, includes electrical safety requirements for work place, employee work places.

In the Environmental Protection Agency, we work very closely with them to develop a new clean agent fire extinguishing system to replace system -- and agents to replace the halogenated agents that were affecting the ozone

layer. That is, of course, an extremely important milestone for the nuclear industry also, in that those agents are used in this industry as well.

Recently, the Coast Guard has, and we have just published a Merchant Vessel Fire Protection Life Safety Code for merchant vessels, or popularly known as cruise ships, and you know from the media that there have been major problems in those cruise ships in terms of fires at sea.

COMMISSIONER MERRIFIELD: If I may interrupt for a second.

MR. O'NEILL: Sure.

COMMISSIONER MERRIFIELD: And this raises this one. Of the types of projects you have done here recently for other federal agencies and departments, have any of those been risk-informed, performance-based approaches?

MR. O'NEILL: None of these that I have mentioned have risk-informed, risk-based approaches. However, the Life Safety Code, which I mentioned earlier, for Medicare, Medicaid, is developing alternatives which would include risk-based, and we have a couple of other documents in which our committees are also providing a separate parallel potential use of risk-based approaches. But this, the NRC project on 805, is the first project created from scratch in which we are developing risk-based.

CHAIRMAN JACKSON: How challenging is this proving to be for you?

MR. O'NEILL: It is quite challenging. However, as I mentioned earlier, we are on schedule. Your staff has been very heavily involved with us, as has the nuclear industry that will be represented here. And we are very confident, as a result of the meeting that occurred two weeks ago, that Mr. Connell mentioned, and I am being told this by our Committee and by our staff, that we will achieve the objective of bringing the project in on time, and that it will address the issues that are important to NRC.

CHAIRMAN JACKSON: Do you have experts that you are able to draw upon independently of the industry or NRC?

MR. O'NEILL: Yes. Yes, we are --

CHAIRMAN JACKSON: You have capabilities in these areas?

MR. O'NEILL: Yes, we are.

CHAIRMAN JACKSON: Risk assessments and the like.

MR. O'NEILL: Yes, we have. And I would be glad to supply the names of the Committee to the Commission. We have also had ACRS involvement, as I said, formally, a couple of times here, plus they have been involved at the Committee meetings and the meeting that occurred a couple of weeks ago. And from then, we have received quite a bit of advice on how to achieve the input of experts.

Let me just mention two others that are not on here. This past year we were asked by the Department of Housing and Urban Development not a risk-based standard but to update the standards on the preemptive manufactured housing standard, which incidentally covers one-third of all new single-family dwelling construction in the United States. So in addition to the traditional State and local government adoption and Federal Government adoption, there have been a number of new projects.

The next slide, just to briefly talk about the process, as I mentioned earlier, the association standards

are accredited through the American National Standards Institute and do become American national standards. The process includes the involvement of some 5,400 committee members who volunteer their time for the various committees. We have over 200 committees working on various aspects of fire protection and some 290 -- I believe it's up to 300 now -- documents, those would be code standards, recommended practices, and so forth.

A key ingredient of arriving at a consensus is that no more than one-third of the committee members may represent any one interest category, and it takes a two-thirds consensus to change the document, and that is the basis of our approach to developing a consensus document.

On the next page, as I mentioned earlier, our activities are hopefully completely transparent. This shows how any individual, any member of the public, any interested party or affected party can access the activities association, look at the draft standards and so forth, which were explained earlier, will be coming out this year.

The other thing that's --

CHAIRMAN JACKSON: Let me ask a question relative to the specific standards you're working to develop here.

MR. O'NEILL: Sure.

CHAIRMAN JACKSON: To what extent do organizations like the Union of Concerned Scientists and the Nuclear

Information Resource Service have access to the process?

MR. O'NEILL: They have complete access to this process in several ways. They can apply and become members of the committee, and we would welcome that, the actual technical committee that's putting together documents. They can access the committee reports on how they react to public proposals or committee proposals, all of which is published and is available on our Web site. And then there's a third step, and that is after the draft standards are published, then the committee must justify what they're -- how they're reacting to and whether accepting, rejecting, or what have you, each proposal.

That is then sent out again for a second review, and that second review, which is our review which is outlined in the schedule here, would also be available. We welcome and urge again all affected and interested parties to become fully active in the process. We however cannot demand or require them to become active in the process or access it. But we provide the facilities for that.

The only other thing I would make on that last slide was that we are the only private-sector standarddeveloping organization who puts notices in the Federal Register at our cost as to the status of each document. So it's another attempt to get widespread use and accessibility to the standard.

Now Mr. Connell earlier had gone through the last three slides that I have here, namely the status of the document, and to answer your question further, Chairman Jackson, after that February 19 date on the next -- that is due next week, after that the committee will meet on March 16 and 18, and then the results of that activity will be published in what we call a report on -- the committee

report on proposals. And then if you fast-forward then there's a public comment period where the public can review that and make comments back to the committee, and that would be that October 8 deadline, and then the final report will come out after December 27, 1999, and be available for public review and consideration.

Then in May of the year 2000 the NFPA membership -- the committee will present its report to the membership, in this case in Denver, Colorado, and at that meeting anyone who has made a proposal before or commented on the document has the ability to advance their proposal or their comment for consideration by the entire NFPA membership that are attending that meeting.

Then as indicated here the summer of the year 2000 we -- by the way in these processes between the publishing of the standard there's also an opportunity for someone to appeal if they were not comfortable with the methods used by the committee and that type of thing. And then the

Standards Council, which is a body appointed by our board of directors, will issue the standard on July 20, year 2000.

And conclusions, the project is on schedule, and we'd be glad to answer any other questions that you might have.

COMMISSIONER McGAFFIGAN: Madam Chairman?

CHAIRMAN JACKSON: Yes, please.

COMMISSIONER McGAFFIGAN: Last year we had a meeting on codes and standards, and the main theme that came across from ASME and IEEE and others was the need for us on a concurrent basis if we're going to endorse a rule, endorse a standard through a rule, that we get that rulemaking done in parallel to the extent that it's practical rather than waiting for this process to complete and then start a rulemaking.

Looking at your schedule, it sounds like the final document's available -- is it's going to go to your members to vote in March of 2000. Is that the time frame we should be thinking about starting our proposed rulemaking so that, you know, sometime reasonably after the standard is finalized, if it's finalized, we could endorse it formally?

MR. O'NEILL: That is really your decision.

COMMISSIONER McGAFFIGAN: Right.

MR. O'NEILL: Agencies -- our experience has been that agencies -- some agencies use a parallel track, other

agencies will wait until the document is published, an official American national standard, then go into rulemaking. And I can give you examples of both of those. But it is your decision.

I would certainly, given the history of the process and your decision making up to this point, would assume, and from talking to your staff and so forth, that you may wish to parallel the two and get moving on the rulemaking.

COMMISSIONER McGAFFIGAN: But March of 2000 would be about the time we could realistically start the process.

MR. O'NEILL: You will see the final draft standard that will be presented to the NFPA annual meeting and to our membership at the end of March 2000; correct.

CHAIRMAN JACKSON: Okay. Yes?

Oh, I'm sorry. Commissioner.

COMMISSIONER MERRIFIELD: No, I was just going to

say it's certainly a deliberative process you use. There's plenty of opportunities for public comment. And there's a reason for that.

COMMISSIONER DICUS: Do you take a position at all on whether or not the implementation of the standard should be an all-or-nothing situation?

MR. O'NEILL: No, we do not have a position on that.

CHAIRMAN JACKSON: Let's see if we can move along.

Mr. Beedle.

MR. BEEDLE: Commissioners, we appreciate the opportunity to discuss with you today some of our views on this risk-informing of the fire-protection standards.

Dave Modeen in a moment will discuss in some detail our views and involvement with this process.

First I'd like to mention that Jim O'Hanlon is the chairman of our working group. He's the senior vice-president of Virginia Power, very active in this process, and regrets that he was unable to be here today.

Before I turn to Dave, I'd like to make an observation concerning the previous panel's discussion with you and presentation. Clearly the NEI and the industry has been involved in this fire-protection effort, and we're certainly committed to it. And I would like to point out that the industry as a whole is very concerned about fire protection.

It's an economic issue. Insurance rates are predicated on keeping the plants free of fire hazards and ensuring that systems work properly, and to develop a notion that because we have a fire-protection functional inspection is the only reason that the industry really focuses on fire protection is an absolute mistake.

So I just want to make sure that we understand

that that's -- that the staff is not the reason that we're focused on fire protection.

Now, I think that when we talk about doing a functional fire-protection inspection and we spend money trying to prepare for it, I'm reminded of the time that I went through an inspection some years ago, and I do not recall ever having to worry about smart fires. But that's a problem that we have to deal with today. So as we go from on and on in this process, we develop more and more interpretations of the existing rules, and the plant staff have to deal with that. And it costs you money to do that.

Now I'm not suggesting for a moment that there aren't things that need to be remedied in the process of preparing for an inspection, but we have to address an awful lot of new issues as we go about dealing with this fire-protection process. And it just seems like it's a never-ending ordeal as we try and come to grips with it.

I think the most heartening things about this whole process this morning is the question that Commissioner McGaffigan raised when he said what's the most significant thing that you found in all this process. So with that I'd turn to David and ask him to --

COMMISSIONER McGAFFIGAN: But before I let him go --

CHAIRMAN JACKSON: I was waiting to see if you

were going to --

COMMISSIONER McGAFFIGAN: Just on the issue, you say the insurance industry, you know, monitors this area. Do insurance rates differ from plant to plant based on performance indicators the insurance industry uses, or do they use these core damage -- conditional core damage frequency numbers for fire that come out of the IPE's? What is --

MR. BEEDLE: They do their inspections and they find -- they look at the fire-loading issues, whether or not you're complying with the rules and regulations that you've set down. And it affects the rates.

COMMISSIONER McGAFFIGAN: So rates do vary --

MR. BEEDLE: Absolutely.

COMMISSIONER McGAFFIGAN: Rates do vary --

MR. BEEDLE: That's right.

COMMISSIONER McGAFFIGAN: Within the industry.

MR. BEEDLE: Right.

COMMISSIONER McGAFFIGAN: So a performance indicator would be what your insurance rate is.

MR. BEEDLE: Uhhh --

[Laughter.]

CHAIRMAN JACKSON: That's good.

COMMISSIONER McGAFFIGAN: I mean, I don't know. I mean --

MR. BEEDLE: It's certainly a performance indicator when I pay the bill. Yes.

MR. MODEEN: I think a better indicator might be what are the findings from your insurance regulator and the followup activities actually.

Let me turn my attention also to NFPA 805. Slide number 2, please.

NEI has been represented specifically on the committee by two utility fire-protection experts since the initiation of this project, but clearly it is an NFPA show, I think, as Tony had indicated, or just part of the process. We did, however, have -- probably the most significant meeting so far for the industry was in October of '98 where the standard, the draft standard had gotten to the point that we could have a fairly good discussion at the semiannual fire-protection information forum where we had over 100 industry peers that are -- and the lead members of the committee were able to explain the process, the thoughts, the structure, et cetera, so we could one, start warming our peers to the idea as well as make them aware that there was going to be a draft issued the end of November that they could then comment on, and I think again as Ed Connell had indicated, those comments or proposals are due back February 19.

NEI will be commenting along with other members of

the public and the committee on that. And we heard quite a bit of discussion at the meeting. I think that's -- and I'll come to this later -- as to at least some of our perspectives on the all-or-nothing and what that might mean and how the standard might be embraced by the industry.

And also related to the question of pilot plants, though, we don't have plants identified yet, but it's our intention between the time frame that the next draft is issued, that is, after these current proposals are dealt

with in February, so that puts us into the late March, early April time frame. And prior to the publication of what would really be the ready-to-go standard, I think in the October '99 time frame, that we'd be able to shake it down a little bit and actually have some users use it and tell us how it really works.

CHAIRMAN JACKSON: I think it's important if you really do that that you not only get "good plants" but plants that have, you know, a history of having had some issues.

MR. MODEEN: Yes, ma'am, I understand.

COMMISSIONER McGAFFIGAN: Madam Chairman?

CHAIRMAN JACKSON: Please.

COMMISSIONER McGAFFIGAN: The other point seems to be, if I understood the standard from earlier, there are two options within the standard, one more deterministic and one

more performance-based. I don't know whether when you get the pilot demonstration whether you'd want to pilot both options, if I'm understanding the standard right. I have not ever seen the standard.

MR. MODEEN: Yes, and in fact I think we may even cut it a little finer than that, that when finding pilots and to spend resources on this activity, there has to be an incentive for that, and my sense is we would be most likely to find candidates that really want to try to shift more to this probabilistic risk-informed, use those elements, and probably the more traditional prescriptive deterministic, they already know where they sit there.

There's not a whole lot of -- my impression reading the standards, not a whole lot of difference compared to current practices today and maybe what the standard might require, I'm not so sure I'm going to find too many volunteers that really want to work through that part of it. I mean, that's a difficulty we're wrestling with, trying to offer incentives there for the licensee.

CHAIRMAN JACKSON: Okay.

MR. MODEEN: Slide 3, please.

Again, my observation, but at a distance, is that there has been a tremendous amount of activity on this standard. I think the draft's a good first cut, but it does need much work. I had heard at the ACRS meeting that up to

as many as 51 people had been at a committee meeting at a time, and only about a third of those really are from the utility industry. Looking at this thing, I think when you get a lot of cooks working on that thing, undoubtedly it needs additional work.

CHAIRMAN JACKSON: That's the nature of developing consensus.

MR. MODEEN: Yes. Our view is that we need to see this through to the end. I know we had gotten some feedback from the industry and other I'd say doubters and otherwise as to at least looking at the current standard and the state that it's in, but it's really our sense is this is the best avenue in town to really bring in all those stakeholders, work through the process, do the pilots, and see where that puts us. I think also we were I guess heartened by the Commission direction last summer to really pursue this process as opposed to any other immediate rulemaking on that activity.

At this point I'd like to turn my attention to the opportunities as well as what the concerns are, and I think that's related to what in our sense would be impediments to really having licenses use the standard in the future.

Slide 4, please.

First of all, the opportunities. Again, yes, this standard has a little bit of everything in it, whether you

want a more deterministic approach or a probabilistic one, and using performance-based ideas, and the flexibility is built into the guidelines so that the licensee can try to take advantage of that.

I think it clearly supports the application of risk-informed insights, which, down the road, I believe will help us focus NRC and industry resources. I have observed in my time at the utility, as well as in Washington, that we continue to work on potential risk significant issues in fire protection. Some were noted this morning that have been on the table since the Sandia fire scoping study, and it provides a framework by which I think the regulator and the licensee can kind of communicate on where does this fit relative to my overall fire protection program.

Next slide, please. Shifting attention to concerns, clearly, what we are hearing from our members is that, obviously, a lot of work, a lot of effort to ensure that they comply with the current regulations, the licensing basis they do have, the long litany of changes that may had occurred there, and exemption processes and relooks and things like that. So, for those plants, it is relatively late in a plant life cycle to forego that licensing basis and adopt the new standard in totality. What does that really mean? I think that is probably the number one concern, what would be the expense involved there?

I think that leads me to the next point, is that -- or at least it is our sense that an all or nothing adoption is really too restrictive and, in fact, there can be ways to incrementally adopt pieces of the standard where you see some benefit. I think oftentimes one looks at fire and fire risk, and we all recognize that inherently -- and the PRAs tell us this, our own intuition tells us this, there are pinch-points and areas of concern that one really needs to pay attention to, and then there are other areas in the plant that just one exposure fire in and of itself doesn't make a whole lot of sense to protect to the same level.

CHAIRMAN JACKSON: Well, I mean, presumably, I mean that is your challenge. I mean I don't view that -- I wouldn't call that under incrementalism. If you have appropriately developed a risk-informed standard and an approach that goes along with that, by definition, that should cover those issues. If not, then you have failed in developing a risk-informed approach. I mean that is what I would say.

MR. MODEEN: I see, I understand the point, Chairman. I would agree with you, and I think, at this point, perhaps we might be failing because if one looks at the first -- or Section 3 of the standard, when you define that minimal fire protection program, many of the elements,

I would agree with Ed Connell, belong in a minimum-base

program. I believe there are some elements in there, however, that if I took a risk-informed approach, I would not address all those elements to the equal degree in all my fire areas. And, again, I understand your challenge, that is back to the Committee and those of us providing comments into the process.

CHAIRMAN JACKSON: That's right. I mean because -- I mean that, to me, is not something that comes here. It is something that is back with where you all are in terms of working through and making the standard really risk-informed. And if you don't, then there is not a lot that we can do, if you go through this two year deliberative consensus development process, and you don't come out. Because when you talk incrementalism, you have to be careful with your language, because, in point of fact, -- I will make two comments to you.

One, that sends a message that you want to pick and choose where, you know, as opposed to having a comprehensive risk-informed approach. And I think, you know, a comprehensive risk-informed approach is what you want, not cherry-picking. And the second comment is that at an earlier stage, NEI was on the record as being against incremental improvements to the fire protection rule. I mean that was -- had come through. You were not in the

particular Commission meeting.

But I am just -- so, you know, we can say that incrementalism is okay when we are taking a voluntary approach, but incrementalism is not okay when we are doing a rulemaking. But incrementalism, as opposed to a comprehensive risk-informed approach, is the wrong way to talk about it.

MR. MODEEN: Chairman, I understand the point.

CHAIRMAN JACKSON: Yes.

MR. MODEEN: Oh, I am trying -- the last point on slide 5 is that --

COMMISSIONER MERRIFIELD: No, no, please finish your thought.

MR. MODEEN: Is that I believe there is a strong nexus between what we are doing in this area, and also the industry activities with the Office of Research and NRR in trying to define what some of that criteria is and to what level, the degree of rigor. Some of these issues -- I heard earlier today about IPEEE, and I had significant involvement in that. I relate back to -- what are the figures of merit? Where do you stop your analysis? When you are satisfied with the answer, you are no longer satisfied, or someone else isn't, so we go analyze some more, and we obviously need to work through that.

CHAIRMAN JACKSON: Well, the question I have,

since we still have a year-and-a-half to go on the MPFA schedule -- NFPA schedule, is that enough time? When you say time to develop?

MR. MODEEN: Yes, I think it is. Yes. We have had a lot of interactions. In fact, a sideline to this has been I think a very profitable effort between industry and NRC responding to the generic request for additional information on IPEEE fire modeling, on the EPRI fire PRA model. It probably gave us a jump start on a lot of what those issues are.

CHAIRMAN JACKSON: Okay. Thank you. Commissioner.

COMMISSIONER MERRIFIELD: Mr. Beedle, at the very beginning of your presentation, you made I think a very rigorous and fair defense of where NEI and its members are in terms of the degree of seriousness that they take fire protection. One of the problems, it seems to me, is partially an NRC problem, as was described, we have got five binders, comprising 125 different guidance documents, overlapping, confusing, and that obviously causes a problem for licensees, and that is something that we are having to address and we should address.

However, in the earlier presentation, it was also pointed out that there was one licensee that spent 24,000 man-hours getting ready for the inspection. And so, I am

wondering, is that reflective of the NRC problem? Is that reflective of the licensee not being where they should be relative to their baseline? Or is it both? And what are the lessons that we have to learn from that as it relates to other licensees?

MR. BEEDLE: Well, I think it is probably attributed to both the NRC and the utility. I mean I would be hard-pressed to tell you that it wasn't. On the part of the NRC, I think it is a continuing changes in interpretation of some of the requirements, and as those go from one plant to the other, every time you have an inspection, you hire some consultants and they go find out all the problems in the previous plants. We correct those in preparation for the inspection this time around.

Also, as you go through and you look with fresh eyes at your program, you might find the need to replace and remedy some situations that exist in order to make sure that you do, in fact, meet the standards that are expected today. So I think it is both.

CHAIRMAN JACKSON: Do you feel that this consolidation of the guidance and eliminating -- you know, where the guidance conflicts with itself, is a helpful -- will be helpful?

MR. BEEDLE: I think eliminating ambiguity is a good thing in any sector of regulation, including the

Appendix R fire protection area. So if we can consolidate and get clear, concise identifiable requirements, I think that is both to our advantage, from the utility point of view, and to the regulator's point of view.

CHAIRMAN JACKSON: Okay.

MR. MODEEN: If I could also follow up on Ralph's answer. Relative to the FPFI, I think it is important to realize that the very first plant that was looked at, supported by a larger utility with other -- more than one unit, did no significant preparation for the FPFI. I have confirmed that with the licensee. And then, of course, this is a rather significant team inspection, issues get raised. We were sharing all those issues with the industry, and then you go, in sequence, to smaller licensees that don't have the large staffs, can't pull people from other staffs. They get a little concerned about things, and what is their bases and stuff.

Again, I am not trying to say that there weren't issues and maybe lose the bubble here or there, but it is not everyone at 20,000 man-hours.

CHAIRMAN JACKSON: No, I think that was clear from what Mr. West said. He was not implying that it was every licensee who expended that kind of effort.

COMMISSIONER MERRIFIELD: Chairman, just as a follow up, I mean I guess that raises the question then, we

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have had a series of these inspections and there were various responses of the licensees to those.

Where are you as an industry now? I mean has there been some generic follow up across industry? Say, okay, this is what we have found from these analyses, how can we apply that industry-wide?

MR. MODEEN: Yes. There are several things. One, both by e-mail and also by semi-annual information forms, we have been sharing all the insights from these inspections with all the other plants. We did a survey -- don't hold me to the date, but about six months ago, wondering if other people looked and did their own self-assessment as a result of these things. We had about two-thirds, I think, of the industry that had already started in various levels. I think one of the issues on the part of the staff is, you know, are you as self-critical on yourself as the NRC might be?

The part in the proposal that we put forth to the staff, and understanding where the inspection and core baseline program oversight was heading, that it seemed to be a natural thing to take the FPFI insights, mesh it also with the staff role in the licensee rule for self-assessment, say, hey, this ought to be where the follow-on is across the board, because, let's face it, four FPFIs a year, you are not going to get to every plant in twenty-something years,

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and we will all -- you know, they won't be there. So some other approach probably makes more sense.

CHAIRMAN JACKSON: Okay. Commissioner McGaffigan.

COMMISSIONER McGAFFIGAN: I am going to pile on the Chairman's question just to try to be clear. The regulatory acceptance criteria, I assume is our Reg. Guide for how the new standard would be -- you know, how the staff would deal with the new standard. Looking back at the staff's presentation, the comprehensive Reg. Guide that Commissioner Merrifield just referred to is going to keep them busy until September getting -- issuing a draft, and then, presumably, working on the final.

When, realistically, could they begin the work of developing the regulatory acceptance criteria for this evolving new standard? It sounds like it is needed to provide some clarity to the industry as to how we would actually carry out the endorsement. Is it -- I am still in this technical issue of how much parallelism is possible here.

MR. MODEEN: I believe, and I don't know if the staff would quite agree with this, but I see the new standard as very much akin to a new Regulatory Guide, so, in fact, as you are developing the standard, most of what is satisfactory in the criteria is in that standard itself. Okay.

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The second piece, and what I was referring to in criteria, is more in agreement along the ways in the

probabilistic models and the figures of merit, and what is acceptable in that area. It is a little bit different than --

COMMISSIONER McGAFFIGAN: So on this SRE that the Chairman pointed to earlier, what the acceptable way to carry -- to do an SRE?

MR. MODEEN: Yes. Yes.

COMMISSIONER McGAFFIGAN: Will that be in the Guide or would that be in the acceptance criteria? Or is that something to be worked out?

MR. MODEEN: I don't know that it is totally worked out there. There is an appendix to the standard that addresses the use of probabilistic tools and the site-wide risk evaluation. I don't believe I have seen it yet. I think it is still being worked. And to some degree that will have criteria, but I think we were trying to mesh both criteria, as we understand it, in big picture, risk-informed, performance-based regulation, the NRC oversight process, the performance indicators, that type of criteria -- How does all that fit together? -- which I think would go beyond where the standard would end up.

COMMISSIONER McGAFFIGAN: But do you need that? If we are going to be endorsing a rule -- the standard by

rulemaking, does that have to be part of the published package, in your view, what you are describing, in order for people to comment on whether we are on the right track or not?

MR. MODEEN: Yes, I think we would, and I think we ought to be able to have it there. I don't see a disconnect timing-wise, or for a way of going on.

CHAIRMAN JACKSON: Okay. Mr. McGaffigan -- I mean Merrifield, please, Commissioner.

COMMISSIONER MERRIFIELD: One final question. Assuming we were to endorse the NFPA standard, how many plants do you think would come around that direction to want to participate in that, if we had a two track program? And layered on top of that, there are some questions -- we have plants that are coming in for license renewal, and, so, what would the reaction of the industry be if we said that plants that are coming in for renewal would have to go that direction?

I mean you raise the question, wanting to have two track. But you have some plants that are not going to be going for license renewal, they are only going to be operating for a while longer and they don't want to switch over. But what about the plants that are going to renew for 20 years?

MR. BEEDLE: The answer is whether or not

implementing that new standard would overall reduce the cost of operating the plant. Is it going to be economics.

CHAIRMAN JACKSON: Okay.

COMMISSIONER MERRIFIELD: Okay. But the other part of my question was, how many plants do you think would go that direction?

MR. BEEDLE: It depends on how much money they have got. It is hard to say, Commissioner. And until you see it and you do some analysis of it, and determine what it is going to cost you to implement it, you know, if you can -- if it is going to cost you $12 million to implement this new program, if you are going to operate for three years,

you may not want to do it. If you are going to operate licensee renewal and operate for an additional 23 years, it would make a difference in how you approached it.

CHAIRMAN JACKSON: Presumably, the pilot, if well-structured, could help you to address those questions.

MR. BEEDLE: It would certainly help us determine the economics of it.

CHAIRMAN JACKSON: Right.

MR. MODEEN: I would say, based on a preliminary look, very reticent acceptance by the licensee.

MR. BEEDLE: By the very fact that we are working on it, there is a presumption that it would cause us to focus on the things that are more important and, thereby,

avoid spending money on things that aren't important and, therefore, save money overall. So I mean that's --

CHAIRMAN JACKSON: That's the risk-informed and performance-based approach, right?

MR. BEEDLE: That's the assumption. Absolutely.

CHAIRMAN JACKSON: Okay. I think we --

MR. BEEDLE: And maintain safety at the same time.

CHAIRMAN JACKSON: Well, risk-informed being safety is at the heart of it, by definition.

MR. BEEDLE: Yes, ma'am.

CHAIRMAN JACKSON: Do you have any final comments? I think we have covered it all.

MR. MODEEN: No, I think the last slide is pretty self-evident.

CHAIRMAN JACKSON: Mr. Beedle, did you have any further comments?

MR. BEEDLE: No. Thank you very much.

CHAIRMAN JACKSON: Okay. Thank you. We will move on to the third panel. I would ask Mr. David Lochbaum from the Union of Concerned Scientists and Mr. Paul Gunter, Director of the Reactor Watchdog Project at the Nuclear Information and Resource Service, to please come forward.

Thank you. And we'll begin with Mr. Lochbaum.

MR. LOCHBAUM: Good morning.

CHAIRMAN JACKSON: Good morning.

MR. LOCHBAUM: Slide 2, please.

If a moving target is difficult to hit, then fire protection problems must be one of the easiest targets to hit. The Appendix R regulations went into effect in January 1980, yet the majority of nuclear plants are still not in compliance with these regulations.

COMMISSIONER McGAFFIGAN: Madam Chairman?

CHAIRMAN JACKSON: Please.

COMMISSIONER McGAFFIGAN: Could I clarify, what do you mean by not in compliance? They have an exemption?

MR. LOCHBAUM: Well, exemption is a form of compliance, so it's --

COMMISSIONER McGAFFIGAN: Yes, I agree.

MR. LOCHBAUM: So it's not the exemptions, it's the fire watches and these surprises that we keep finding. This industry is too old to be constantly surprised like it is.

COMMISSIONER McGAFFIGAN: Okay. So it's not the 10, 15 exemptions per plant that were granted after Appendix R went into effect.

MR. LOCHBAUM: That wouldn't be the optimum form

of compliance, but that is a form of compliance.
COMMISSIONER McGAFFIGAN: So that's not your concern.
MR. LOCHBAUM: That's not our issue, no.

If compliance -- we feel if compliance were needed to generate electricity, we feel confident that the situation would be very different.
To be fair, this regulatory stagnation has been very helpful to me. Today's presentation is basically the same one I made to the ACRS Fire Protection Subcommittee in 1997. All I had to do was revise the date and reorder the slides to make it look like a brand new presentation. Unfortunately, it looks like I'll be able to recycle this presentation for many more years.
Last week, you proudly informed the United States Senate that the Calvert Cliffs license renewal process was ahead of its aggressive schedule and should be completed during the first half of next year, or 25 months after it was first submitted.
Ironically, the first half of next year also marks the 25th anniversary of the Browns Ferry fire that prompted the Appendix R regulations. Perhaps you can understand why people think that this agency places economic viability of the industry ahead of health and safety of the American public when you place design certifications and license renewals at the top of your priority list and resolution of fire safety issues on the back burner.
Slide 3.
On March 22nd, 1975, a worker using a candle to

check for air leaks ignited combustible material and a penetration in a cable spreading room at the Browns Ferry nuclear plant. Workers responded by trying to extinguish the fire that they ignited. The fire burned out of control before anybody reported it to the control room or anyone else.
The local fire department arrived within an hour. The fire chief advised the plant manager to use water to put the fire out. The plant manager, concerned that this water would further damage electrical equipment in the fire area, refused that suggestion. The fire blazed for over six hours, disabling most of the emergency core cooling systems on both of the operating units.
When the use of water was finally allowed, the fire was put out within ten minutes.
Slide 4.
More than 20 years later, a worker at the Waterford Nuclear Plant reported heavy smoke in the turbine building following a turbine trip. The plant's fire alarm was not sounded for 29 minutes, as workers searched through the heavy smoke looking for the source of the flames.
During this period, fire detector alarms in the control room were ignored by operators, who were busy directing fire workers in their search for the flames.
When the plant's fire brigade finally responded,

the fire brigade leader did not allow water to be used, again because of the energized electrical equipment. As a result, the fire blazed for over an hour. When the use of water was finally allowed, the fire was put out within four

minutes.

CHAIRMAN JACKSON: Let me ask you two questions. I mean, you're aware of the fact that the NRC did put out after the Browns Ferry fire an information notice that --

MR. LOCHBAUM: Yes.

CHAIRMAN JACKSON: -- does allow the use of water.

MR. LOCHBAUM: Yes, I am. In fact, I worked at Browns Ferry after the fire, and we were trained to use it.

CHAIRMAN JACKSON: Okay. And so this -- so what I'm interested in understanding is to what extent these as examples, particularly the later one, relate to what you feel is a failure in the regulatory framework, a failure in performance by a licensee, and to what extent they're connected, if they are. And secondly, I'm interested in the Waterford fire, what you feel the significance of -- the safety significance of the event was.

MR. LOCHBAUM: Working backwards through those issues, I think the significance of that issue wasn't too bad. It was a turbine building, there was no direct threat to safety equipment based on the location of that fire. It wasn't a switch-gear area, but the equipment that was

actually lost or could have been lost posed no direct threat to the reactor core or associated cooling.

However, the fact that the fire brigade leader, with the benefit of 20 years of hindsight and this knowledge that the Browns Ferry should have put out, didn't use the best thing he had available to put out that fire, which was water, would have put it out within four minutes, suggests that if that same fire had been somewhere else that was a more significant risk, that water still would not have been used because of the reluctance to use it for causing -- the reason he didn't use it wasn't because --

CHAIRMAN JACKSON: So is the implication of his behavior, if -- in the -- given the information notice, given the Browns Ferry experience, the implication of having the same response as the workers in the Browns Ferry situation, and they got away with it, you're saying, because it wasn't in a safety significant area, but if that is characteristic of the behavior, that's the problem.

MR. LOCHBAUM: Right. Exactly. And they didn't get away with it; the NRC wasn't real happy with what happened down at Waterford.

CHAIRMAN JACKSON: Absolutely. I was going to point that out next.

[Laughter.]

MR. LOCHBAUM: Still I think those two events 20

years apart, the fact that the -- Browns Ferry, one of the things we learned was, report the fire to the control room right away.

CHAIRMAN JACKSON: Right.

MR. LOCHBAUM: You don't wait to figure out what it is, how bad it is, whatever; you report it right away. That didn't happen at Waterford. The second thing was to put the fire out. Use whatever you have to put it out. That wasn't done.

So there's a lot of lessons that were clearly learned from Browns Ferry that weren't captured.

CHAIRMAN JACKSON: This is 20 years later, one licensee. I mean, do you have reason to believe that this

is characteristic of the nuclear industry? I mean, it is 20 years later, one licensee.

MR. LOCHBAUM: I think I could go through -- I didn't do that -- I think I could go through and look and find more than this one example. I don't think this is the sole example of the time. It just happened to work out good for the timing --

COMMISSIONER McGAFFIGAN: May I ask, you said NRC wasn't happy. What is the problem with the regulation? I mean, you know, --

CHAIRMAN JACKSON: Or the regulatory implementation of the regulation.

COMMISSIONER McGAFFIGAN: The regulatory implementation. The regulatory implementation by the licensee I understand, but what is it that NRC could have done to make sure that that person had learned a lesson of 20 years ago? Isn't it the licensee's responsibility to make sure that their control room follow presumably their procedures that said to do exactly what you said to do? What is it that we would have done differently?

MR. LOCHBAUM: I think some things you did do that I thought were good, was after the Waterford fire, you clearly indicated that this was unacceptable performance, so that sends a message to everybody else: try not to do this again.

But I think when -- you can't wait for a fire all the time to learn these things. They are very expensive and they can be very costly.

COMMISSIONER McGAFFIGAN: But how do you not learn them? If the problem is a response to a fire, how do you learn -- I guess we could give everybody a test, you know. Maybe -- I don't know whether there are testing requirements and whatever that you feel are inadequate. But I'm trying to figure out what is the regulatory thing that the NRC could have done to prevent the second fire?

MR. LOCHBAUM: Well, you couldn't prevent the second fire -- prevent the performance problems in the

second fire.

COMMISSIONER McGAFFIGAN: Right. Right.

MR. LOCHBAUM: You can't just be in a fire brigade. There is training and qualifications to do that. In the inspections conducted by the NRC to look at the licensee's fire brigade training and qualifications issues, the reluctance -- or the knowledge of the most significant fire in the industry should be a part of what the NRC does to look at the licensee program.

If, you know, it's not stressed both to the fire brigade and to other workers at the plant, because at Browns Ferry we were taught if we got hurt at the plant to yell fire because that got people there real quick because everybody was so trained to respond. So you've got to look at those kind of things.

COMMISSIONER McGAFFIGAN: In our inspection module for the core inspection program, this revised core inspection program, you're suggesting that our residents look for this exact -- look at how the fire brigade training is carried out and whether people have knowledge of now two events, Waterford and Browns Ferry?

CHAIRMAN JACKSON: Let me piggyback onto that because I --

COMMISSIONER McGAFFIGAN: I just want to understand.

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CHAIRMAN JACKSON: -- noted that you have as your third bullet on the Waterford fire that the fire detector alarms in the control room were ignored by the operators, who were directing the search for the flames, and therefore the fire was out of control before a fire alarm was sounded. The question becomes, I mean in addition to what Commissioner McGaffigan has raised, is it a training issue, you know, or something in the simulator with a crew? That's the kind of thing we need to understand. Is it something that can be accounted for in an inspection program? Is it something that's a training issue that we need to adjust? Is it something in the regulations or in some guidance we put out?

MR. LOCHBAUM: Well, I think it harkens back to some of the questions asked of the previous panels, the sensitivity or awareness of the industry to these problems. I think this demonstrates that awareness or emphasis in this area, at least at Waterford, was dropping off and people weren't responding.

As far as the bullet that you mentioned, what concerned me -- us about that issue is the control room operators -- those alarms that were going off in the control room told the operators where the fire was. That's why they put them in. Instead of looking at that and finding out where the fire was, he sent three more people into heavy

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smoke to look for the flames, ignoring information available to him in the control room that told him where they were. So he was jeopardizing those people and slowing down the response overall.

To me, that was the lesson of TMI. You had the back-up information; it was not used for a while. So again, it's a training awareness issue.

CHAIRMAN JACKSON: Okay.

Mr. West, you were going to make a comment?

MR. WEST: If you'd like, I could provide a little insight into the specifics or the event. I went to Waterford after their fire and helped supervise the NRC inspection team, and the real problem at Waterford was a problem with their procedure for fire notification. The licensee had had a problem with false alarms, false fire alarms based on operators or other plant personnel observing smoke and sounding the fire alarm, which would dispatch the entire fire brigade.

They addressed that problem by revising their procedure to say, don't sound the fire alarm unless you actually see flames. You have to see flame, it can't be a smoking motor. So they had an inadequate procedure, which we -- and they had inadequate fire brigade training because they did not use water on the fire. We took appropriate enforcement action and the licensee has corrected those

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problems.

We have factored, of course, the lessons learned from that event into our inspection program -- specifically the FPFI -- and we have looked at those issues during FPFI inspections, and we think it's a -- I don't know if it's an

anomaly but it's a unique case.

AEOD did do a study which they completed in 1997 of all fire experience in commercial U.S. reactors, and they looked at the fire experience from -- I believe it was 1965 through 1994, and there are some rare cases like this, but it's not common. In most cases, the fire brigades and the plant operators take appropriate action. There have never been any deaths or injuries as a result of fire in a nuclear power plant.

CHAIRMAN JACKSON: Well, that one you could -- that one is less of -- that doesn't give me comfort. All you need is one. But you're saying that there was some fallout for us in terms of normalization via-vis inspection against procedures in this area.

MR. WEST: Yes, ma'am.

CHAIRMAN JACKSON: And the second having to do with training via-vis the fire brigade.

MR. WEST: Yes, ma'am. The fire brigade should all be trained, classroom training and practical training in using water on fires.

COMMISSIONER McGAFFIGAN: Madam Chair?

MR. WEST: It's specific in the regulation.

COMMISSIONER McGAFFIGAN: Before we let him go, how -- I mean, the root cause, a root cause was they had the false alarm issue, which they dealt with in an inappropriate way. How common are false alarms in the industry? Do you know at a given plant how many false alarms are there per year or per month? Do you know?

MR. WEST: I couldn't say off the top of my head. I know they occur. I'm sure we don't even have data on that. The false alarms can occur in any --

COMMISSIONER McGAFFIGAN: I'm just trying to understand whether there's a big generic -- I mean, a lot of folks were facing this, and maybe a lot of folks developed inappropriate procedures to deal with false alarms.

MR. WEST: We don't believe so.

COMMISSIONER McGAFFIGAN: Okay.

MR. TRAVERS: Just a clarification. I don't believe that this is as much the false alarms at it is over-conservatism in response --

CHAIRMAN JACKSON: To an alarm.

MR. TRAVERS: -- to a perceived fire where you may or may not have an alarm.

COMMISSIONER McGAFFIGAN: Right. Well, Mr. West said that they had developed a procedure because they had

had lots of false alarms, and the procedure said see the fire, and I was just trying to understand whether false alarms were a general issue.

MR. WEST: Could I clarify that just a little bit? If I said false alarm, I didn't mean a situation where the detection system alarms falsely; I meant a situation where a plant operator or some other plant person would sound an alarm that would dispatch the fire brigade when, in fact, there was not a fire. They may see smoke, a smoking motor or some other condition where you would not need the full fire brigade, but by sounding that alarm, the procedure required the licensee to dispatch the fire brigade.

CHAIRMAN JACKSON: Thank you.

MR. LOCHBAUM: Slide 5, please.

Another Browns Ferry lesson that seems to have

fallen by the wayside is the need for noncombustible fire-barrier penetration seals. In an October 16, 1980 meeting, the Commission explicitly refused the industry's position that penetration seals only need to have the same fire rating as the wall, floor, or ceiling that they are sealing.

The Commission pointed out that the penetration seals are more likely to be challenged during a fire because combustible material, i.e., the cable insulation, will bring the flames to the fire-penetration seals, whereas the walls,

floors, and ceilings may or may not be exposed to direct flames. The Commission therefore concluded that the fire-barrier penetration seals needed to be noncombustible. The staff's current position on penetration seals is in direct opposition to the position taken by the Commission in 1980 and as promulgated in the Appendix R regulations and associated guidance documentation.

However, having said that, we don't care if people use kerosene in those penetration seals, as long as they pass the fire test. The problem we have and that we constantly find out is that these things are installed without tests or documentation to support them. Maine Yankee had one test that backed up 90 percent of their seals, and it didn't bound hardly any of those installations. At Salem that F195 product is hard to tell what the test is because there's no dimensions given on the drawing. So we don't know if it bounds one or none or all. So that's why that licensee is now doing some tests, because the documentation doesn't give you that answer.

CHAIRMAN JACKSON: So let me make sure I understand. So the issue is really not the combustibility versus not combustibility, it's the actual performance verification against the performance, the requirement or the, you know, and one aspect of that is installation with the appropriate testing and documentation. Is that right?

MR. LOCHBAUM: Right. The staff in responding to us and to Representative Markey says things like, you know, if properly designed and installed fire barrier provides adequate protection. And we would -- if that's the condition we were at, we probably wouldn't be here today. We don't have properly designed and installed fire barriers or assurance of that.

CHAIRMAN JACKSON: Right.

MR. LOCHBAUM: That's the issue. Like I said, they could be kerosene as long as they meet the one- or three-hour test. I doubt that they would, if they were kerosene, but -- Slide 7?

We recognize that things change, and the position taken in 1980 may not be valid today. We fully recognize that. But we feel that the staff is corrupting the regulatory process by essentially ignoring the portions of fire-protection regulations that they unilaterally feel are meaningless. The proper and legal course of action would be for the staff to change the regulations to whatever it is they feel is right. Until that time, the staff should enforce the regulations that are on the books, even those that they don't care for.

COMMISSIONER McGAFFIGAN: Madam Chairman, I think that's exactly what we're going to do. This rulemaking

package is going to be out for comment on combustible versus

noncombustible, but, you know, one of the fundamental problems with Appendix R, and I went and read a court case in which a liberal group of judges on the U.S. appeals court panel, a panel of judges on the U.S. appeals court, you know, listened to a challenge to Appendix R and ruled in March of 1982, and I wish I had it in front of me, but they basically only supported the rule because in trying to defend ourselves at that time the Commission said we're going to use exemptions, we're going to use exemptions. And --

MR. LOCHBAUM: And you did.

COMMISSIONER McGAFFIGAN: And we did. We did. But otherwise the court probably would have tossed the rule out, because as I understand Appendix R the way it was put together, I mean, the complaint that was made was we basically stapled together every best practice that anybody brought forward and said okay, here's our rule, but here's our exemption process. And come one, come all, to use our exemption process, because we realize stapling together all of these -- it's exactly how you don't do rulemaking, I would posit.

So now the piece of the rule that -- I think we've almost exempted everybody from the combustible versus noncombustible over the years. So now we're going to bring that into fact. But we are going to do it by rulemaking,

and we are going to justify it as we've already done in the correspondence with Senator Biden and Representative Markey that you're citing, and we'll see how the discussion goes.

But the frustration I have with this whole area is there was a really flawed rulemaking; the reason you can shoot at this target so easily is the Appendix R rule is probably the epitome of how not to rulemake. If you do a rule and say, you know, with a big sign saying, "See our exemption process" --

CHAIRMAN JACKSON: Right. Go this way.

COMMISSIONER McGAFFIGAN: This way to the exemptions. It's a hell of a rule.

MR. LOCHBAUM: What position are we in today though with adopting an NFPA standard that perhaps nobody will embrace? You know, it will be an awful --

COMMISSIONER McGAFFIGAN: I think that's a fair issue too.

MR. LOCHBAUM: So whether you point to exemptions or point to a standard that nobody follows, that's semantics largely. So we're concerned that we can go through this rule and develop a new standard, but nobody will follow it.

Slide 8, very briefly. Last month at a Commission meeting I told you that plant risk assessments are nonconservative because they unrealistically assume that fire barriers are 100-percent effective. Regarding the

information that was discussed earlier from the earlier panel, the Quad Cities situation, with the two-orderof-magnitude pencil whipping that was done, the point I tried to make at last month's meeting was that if I was going to make a change to my plant to put kerosene in the fire spray headers, that it would increase the risk by two orders of magnitude.

I could pencil whip it, because this can be done, and it would show that my balance was net zero, and that would allow me to do that. That would be one of the dumbest things I've done, but technically I could do it. There's no provision against it, other than common sense. But the fact that you can do this allows those kind of abuses to occur, and we're very concerned about those kind of abuses. Not that people will be using kerosene.

CHAIRMAN JACKSON: Let me ask you this question. Would the development of the PRA standard help to address this issue?

MR. LOCHBAUM: Definitely. I was encouraged by Mr. Rubin's comments about standardization and things like that. We would advocate that needs to be done before we really proceed much further towards risk-informed regulation.

Slide 9. There's been a lot of talk about focusing both industry and NRC efforts on the right areas.

I would argue that that can't be done until plant risk assessments accurately account for fire-barrier problems. For example, in plants that have 10,000 penetration seals, if it took one hour to inspect the penetration seals, then it would take five man-years to examine all 10,000.

If you had a realistic PRA that accounted for possible nonperforming or nonfunctional fire barriers, then you could use the results from those realistic risk assessments and expend 100 inspection hours and cover the 100 highest-ranked penetration seals, which would probably comprise the bulk of the fire-risk profile. So on one hand the industry is arguing about risk-informed regulation and focusing the priorities in the right area, and this is an area that they definitely could do that.

CHAIRMAN JACKSON: Let me ask you a question, because this is an interesting area for me. Are you implying that the PRA's have to be able to deal with degraded performance?

MR. LOCHBAUM: I think the record shows that there is degraded performance. Penetration seals are typically nine inches for fires and walls. If you only have seven inches of foam due to some installation error, then that affords you less than the three- or one-hour rating, whatever it's designed for. PRA would account for those kind of things on a statistical basis and would say where if

you only have an hour's worth of combustibles in a region, then that might exclude some areas from concern.

But that kind of information would tell you based on the evidence that's out there where your weak spots are, and that's where you would focus -- both yours and the industry -- would focus their resources, inspection resources.

CHAIRMAN JACKSON: Okay.

MR. LOCHBAUM: Slide 10. In summary, we feel that Browns Ferry's lessons have not been fully captured by the industry or the staff. We feel that plant risk assessments are invalid because they do not reflect reality. If this problem were fixed, the plant risk assessment results would allow properly focused safety inspections.

This Friday is Abraham Lincoln's birthday. If Lincoln were alive today and working for the NRC, perhaps

not so far-fetched that the rail-splitter might become an atom-splitter, he might say we can enforce some of the regulations all the time, all of the regulations some of the time, but we cannot enforce all the regulations all the time. I would agree with Abe, even if he wasn't carrying that ax of his. All we are asking for is for the NRC to enforce the fire-protection regulations now.

Thank you.

CHAIRMAN JACKSON: Thank you, David. A historical

perspective is always instructive.

[Laughter.]

MR. LOCHBAUM: It gets easy with this issue.

CHAIRMAN JACKSON: Mr. Gunter.

MR. GUNTER: Thank you.

My name is Paul Gunter. I'm director of the Reactor Watchdog Project with Nuclear Information Resource Service. I'm going to go through these slides very quickly here in order to proceed. But I would like to say that I was involved in the petition writing on the Thermo-Lag issue back in 1991 and '92, and it's from my perspective and organization's perspective that we recognize that the resolution of this issue still lags.

Just go to slide 3.

I think that we can quickly recognize, and I'm sure we're all aware of how Thermo-Lag has demonstrated failure. The Office of the Inspector General reported as early as 1982 NRC had a warning that Thermo-Lag didn't work. These were the fire tests over at Susquehanna, I believe. Yet a replication of those fire tests was used to qualify the barriers at other nuclear power stations.

It was a safety-conscious fire protection consultant frustrated by the lack of NRC enforcement who reported his concerns to the NIRS in 1991 that began to put some public profile on this issue.

Finally, on June 24 Information Bulletin 92-01 came out declaring Thermo-Lag barriers inoperable. NIRS filed its 2.206 petition shortly thereafter, which was rejected by NRC on August 12, 1992. I would point out that six years later one of our contentions in that 2.206 petition with regard to new information on seismic qualification of Thermo-Lag that it could actually shear fall off and break or damage cables was in fact a bona fide issue in an information notice in '98. But by the end of 1993 in this chronology the nuclear industry through the guidance of NUMARC sets up a special task force as we see to scrimmage with NRC over this very expensive item, and they establish it as a priority item to reestablish the technical and licensing basis to qualify Thermo-Lag material for use in one- to three-hour barriers as required by Appendix R.

There's a long gap here of where we attended a lot of meetings, a lot of staff time involved, a lot of information notices, but from our perspective essentially the industry was successful in dragging out a resolution to 1997 when we finally began to see confirmatory action orders issued during 1998 to noncompliant utilities, most of whom are the licensees with extensive applications of the material. We've seen to date some resolution in minor or, you know, the moderate users of the material, but still the outliers here are those who are extensively reliant upon

Thermo-Lag.

It's our concern and our frustration that rather than move towards enforcement of a prescriptive regulation which these fire barriers were intended to represent, we now see the potential for another extensive delay as NRC and industry begin to approach another layer of regulation, but not to take the Thermo-Lag issue out of isolation, but the same kind of problem that's involved with Thermo-Lag we see reoccurring in the Salem nuclear power station with regard to the F195 barrier, the E-50 inner ram barrier, and the Kale-Wool barrier.

Again here's a chronology that basically goes through an identification of the problem. In 1992 we proceed through a 2-1/2 to 3-year outage for Salem unit 3 and -- yes, Salem unit 2 -- and still the issue's not really addressed as a restart issue where these inoperable fire barriers are still in place. This was also identified in a NUMARC industrywide workshop. So it's not that the industry didn't know about these III.M barriers and the problems associated with it.

CHAIRMAN JACKSON: Let me ask you a question. To what extent do you feel that a let's say for the lack of other terminology a fire-protection defense-in-depth approach should play a role, where you have this combination of fire prevention, detection, and suppression along with a

safe-shutdown capability, that it's really the balancing of those in the face of any one given issue which may include degraded barriers? I mean, to what extent is that kind of approach valid? I mean --

MR. GUNTER: We believe that to be a valid approach. And frankly I believe that that's why the noncombustibility factor is in the penetration seal regulation, that in fact we know the derated barriers are out there in the industry. They are turning them up all the time. That's why we believe that it's appropriate to leave the noncombustible standard in there as an element of this defense in depth, that you don't have the barrier itself lending as a fuel to a fire.

CHAIRMAN JACKSON: Well, I mean, is it true that all -- so your assertion is that all combustible barriers are fuel -- add fuel to the fire. Is that your point?

MR. GUNTER: I can understand that, for example, Mr. Connell's earlier example of this wooden door over here being involved as a rated barrier for this room or to protect this room, whichever side the fire's coming out. But when inspection procedures find that the wooden door itself is hollow in many cases or cracked or has gaps, and that the current inspection procedures for determining whether or not that barrier's degraded is extremely difficult with -- there's really no nondestructive analysis

available is my understanding -- to actually determine if these penetration seals have voids and cracks, because they're largely hidden. That's why I believe that you have that noncombustible standard in that penetration seal as an element of this defense in depth.

CHAIRMAN JACKSON: Okay. Proceed.

MR. GUNTER: But just to pick up the chronology again, September 23, 1998, we finally see -- the public, at

least, finally sees that the Salem Nuclear Power Plant Stations's fire project plans for compliance by 2002. Now, this can only reflect to us a lack of resolve, both on the industry's part and on the regulatory agency's part, to actually bring plants into compliance and to enforce regulations. It also constitutes an example of where NRC all too often has simply accepted without verification and validation the licensee's representation, and which turns out not to be the case.

I think it is quite obvious that the industry, as identified, puts economics as one of the principal issues in determining resolution, and that the scrimmage in coming to some kind of meaningful mitigation of this issue is based largely on economics, from our perception. And now we are involved in this rewrite, another avenue of regulation, which we believe is actually sidestepping a key and a problematic regulatory requirement for tested, rated

barriers which could be part of a prescriptive regulation for this particular problem.

So I think that what that really brings us to is there is no real resolution in sight from a public health and safety concern. We are -- what we see is an industry inching towards a goal line of closing some of these plants down rather than addressing -- you know, running them to their operational life without really addressing the fire safety issues, basically, because the economics is a hindrance to bringing some resolution and compliance to the issue.

We believe that that strategy is at much higher risk because as we move down the line, these plants are getting older and age-related degradation is more and more of a factor, and cost-cutting incentives only grow larger as plants move towards the end of their life.

CHAIRMAN JACKSON: Do you believe that there can be an appropriate risk-informing of fire protection regulations?

MR. GUNTER: I think it is going to be difficult. I think that there has to be -- it is like approaching traffic regulation through risk-informed, performance-based. There have to be stop signs. And there has to be enforcement.

CHAIRMAN JACKSON: But there aren't stop signs at

every corner.

MR. GUNTER: There don't necessarily have to be stop signs at every corner, but there are appropriate times to have police enforcing speed limit, and red lights. And if you run a red light, you get ticketed. So, I think my concern, as we move down this avenue of risk-informed, performance-based regulation, that there will be more arguing when they are pulled over to the side, in terms of, you know, violations, and that is -- I don't believe that that is done at the behest of optimal public health and safety. But it is concern, again, that it is an economic issue that prioritizes the approach.

Reliance on indefinite and unreliable fire watches. First of all, we believe that there is an appropriate time and place for fire watch. These are temporary circumstances, of course. But, as we see, the current use of fire watch as a compensatory measure for long-term inoperable fire barriers, this is an obvious abuse

from our concern and perspective.

I think that Commissioner Ivan Sellin also pointed this out in a statement made in testimony before the Subcommittee -- or the House Subcommittee on Oversight and Investigations. I think that it is really evident here that even then NRC saw six to nine months as an optimal time, and that when you start running into fire watches over a two

years timeframe, you are running into real problems, not only in terms of expense, but in terms of surveillance problems.

Thermo-lag fire watches have now been in place for 78 months at plants where there are extensive applications of thermo-lag. At least two reactor sites will probably close with thermo-lag fire watches in place. Again, this is this whole strategy that we see of inching towards a goal line without really remediating the problem.

CHAIRMAN JACKSON: Which plants are those?

MR. GUNTER: That would be -- well, certainly, Oyster Creek, by confirmatory order, and their response back, they are looking at 2000. I think it pretty well known that they intend to close before 2000. The other plant that we are suspecting would be Clinton.

The issue here, though, is that fire watches do not constitute a compensatory level of protection for a rated, passive fire barrier system. Obviously, a fire barrier is what it states, it is a physical barrier used to protect safe shutdown cables from fire for up to three hours in the event that you can't get a fire brigade to put out that fire, and that can occur either by heat or by radiation in the case of nuclear power stations.

Obviously, that level of compensatory action cannot be taken by a fire watch. As a matter of fact, most

fire watches don't even carry suppressions systems with them. *They are a more appropriate measure for a detection system, for compensating lack of detection, from our perspective. But what is most troubling is to see, time and time and time again, where fire watches have been noted for dereliction of duty. And there is a whole range of problems here, not only just that they get caught in an elevator and can't get to watch, but that in the case of Turkey Point, the thermo-lag fire watch was found overdosed on heroin.

So, and then there --

CHAIRMAN JACKSON: Where was this?

MR. GUNTER: Turkey Point. That was through a -- there is a P&O; on that was quite interesting to read. But then, again, we also see the falsification of duty logs as a problem and it broadens this range of uncertainty, just exactly how much of a measure of protection we have with fire watches even in place.

So, in closing, I think that it is appropriate to look to a recent Washington Post article dated November 8th, 1998, where the FAA missed a warning on insulation burn tests regarding the September 2nd crash of Swiss Air Flight 111, which involved combustible insulation. We view this as a case study of a critical safety issue being buried within a government institution subject to tight budgets and a single event.

The public wouldn't tolerate fire watches for -- on-board fire watches in its airline industry. And there is significantly much more riding on nuclear power stations operating without operable fire barrier systems and without timely regulatory resolution enforcement. And why should the public be any more tolerant of the nuclear power industry and the Nuclear Regulatory Commission?

CHAIRMAN JACKSON: Thank you. Commissioner Dicus, any questions? Commissioner Diaz, do you have a question or comment to make? Yes, this is the end of the line, so if you are going to make a comment, make the comment.

COMMISSIONER DIAZ: This is the end of the line. Okay. Since I have been so quiet, you might indulge me with an integral response in here. I think this issue, which I have been facing since I got to the Commission and before, as everybody is saying, it requires an integral solution.

But it just reminds me, you know, of a story and the ending of the line, a story probably everybody knows is this city council meeting in which people were discussing what to do about dogs that have rabies and how to take care of the problem. And the mayor just feel asleep in the middle of that meeting. And then the subject changed to how they were going to take care of this epidemic of measles in the schools, and how they are going to try to prevent the measles and how they are going to help the kids and so

forth. And then the mayor just woke up in the middle of that discussion, and they asked him, mayor, what do you think? And he said, shoot them all. I mean shoot them all. Track them and shoot them all.

And then the gentleman came and said, but, Mr. Mayor, we are talking about curing them, not shooting them. He said, cure them or shoot them, but solve the problem.

I think that in this case, we have been arguing for this for so long that it is a matter of shoot or cure them. And it is obviously that the industry and the NRC put such enormous resources for so long, patching these type of things, that it is time that we look at realistic solutions.

Now, I am not an expert on fire protection. I really don't know what to do with many of the things. We need to trust, you know, in the staff and the industry. But it is time that we realize we cannot continue to look at this problem time after time, day after day, and not get a solution. Now, the solution might very well be different. There are people that will be able to do risk-informed regulations and tackle the ones that really need to ensure that the problem is solved with some more deterministic way. But whatever it is, let's shoot them or cure them, but let's finish with the problem.

CHAIRMAN JACKSON: Thank you. Commissioner McGaffigan.

COMMISSIONER McGAFFIGAN: One question I had that came up with the previous panel, do either of you intend to play in this NFPA standard drawing-up process, either as members of the Committee or as commenters on the rule -- or the standard as it comes out?

MR. GUNTER: NIRS has the document under review at this point.

COMMISSIONER McGAFFIGAN: Okay. But you didn't ask to be part of the Committee itself?

MR. GUNTER: Not at this point.

COMMISSIONER McGAFFIGAN: Okay.
MR. LOCHBAUM: NIRS has the lead on this issue, and I support Paul as he needs help but he hasn't for it yet.
COMMISSIONER McGAFFIGAN: Okay. And the second question I have, I heard Oyster Creek earlier, and I remember I happened to have the CEO of GPU in to see me about the time that one of Mr. Lochbaum's reports came out that gave him a sort of UCS Good Housekeeping Seal of Approval, in some sense, I mean he said it was a pretty good plant. How do you balance, when you make that sort of assessment, fire versus everything else that GPU does at Oyster Creek that went into your overall conclusion that they were among the UCS good plants?
MR. LOCHBAUM: It is a good question. I think

-- but the other 10 plants we had also had fire protection problems. So, on a relative basis, and ours was a relative basis, they looked the least evil perhaps. But a more correct answer is that -- the thing, the most striking performance aspect that Oyster Creek had was a good percentage of their problems were identified by looking at other people's -- other plants' problems, and looking at their own plant to see if they had the same thing, rather than waiting for the NRC to find it, or waiting for it to be self-revealing. We gave a lot of credit for that, because that is very commendable. That is more than they have to do. And those -- there was enough of those ones, they kind of brought their score up, I think second overall.
And we, although we disappointed some of the groups we worked with that were -- not NIRS, you just happened to be happened to be sitting over there.
COMMISSIONER McGAFFIGAN: Right.
MR. LOCHBAUM: But some of local groups were upset with our ranking, but we couldn't adjust the data, and that is what the data showed.
COMMISSIONER McGAFFIGAN: Okay. Thank you.
CHAIRMAN JACKSON: Okay. Commissioner Merrifield.
COMMISSIONER MERRIFIELD: I don't know if I would agree with the analogy of shoot it or cure it, but I certainly would agree with Commissioner Diaz that this is

one that we need to put the attention to and get it solved, because keeping it lingering longer is not helping anyone.
CHAIRMAN JACKSON: Well, that was what we thought we were doing in the fall of '96, and the Commission switched directions in the spring of '98. But, nonetheless, I feel that today's discussions have been beneficial in focusing the Commission in those areas where we do need to resolve and to finalize these going fire protection issues. And as I stated at the recent Congressional hearing on NRC oversight, fire protection issues remain a challenge, I mean we are being honest, for the NRC to resolve. This is especially significant given the risk significance of fires at nuclear plants.
And so I want to thank all of the participants for their input and insight and we are going to encourage the staff, of course, to continue their interaction with the stakeholders in developing timely and effective risk-informed solutions to these problems.
Nonetheless, I take heed of the admonition that a

changing regulatory framework is no excuse for our not effectively and appropriately implementing existing regulatory requirements.

So, unless there are any other further comments, we are adjourned. Thank you.

[Whereupon, at 12:15 p.m., the briefing was concluded.]