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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

REACTOR DECOMMISSIONING PUBLIC MEETING

U.S. NRC
Two White Flint, North
11545 Rockville Pike, Room T2-B1
Rockville, MD

Tuesday, April 13, 1999

The above-entitled meeting commenced, pursuant to notice at
1:00 p.m.

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P R O C E E D I N G S

[1:00 p.m.]

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3 MR. DUDLEY: Good afternoon. I'm Richard Dudley and I'm a
4 senior project manager in the reactor decommissioning section of the
5 Office of Nuclear Reactor Regulation. On behalf of the NRC, I'd like to
6 welcome everyone to this public meeting on reactor decommissioning. On
7 March 17, 1999, the NRC commissioners met with the NRC staff and with
8 industry representatives from the Nuclear Energy Institute. We
9 discussed a new approach to establishing rules for power reactors in the
10 decommissioning process. At the meeting it was decided that the NRC
11 would perform a special review of certain decommissioning issues to
12 explore a risk informed approach to issuing new regulations in these
13 areas.

14 The NRC also decided to ask stakeholders from the nuclear
15 industry and the public to give us their input and comments as we began
16 this effort. Thus in today's meeting, the NRC will begin by discussing
17 our ongoing efforts to explore risk informed rulemaking for
18 decommissioning plans. After that, we will listen to comments and
19 recommendations from both members of the public and from the nuclear
20 industry.

21 The slide that's up shows today's agenda. Extra copies of
22 the agenda are available at the counters near the doors on either side.
23 First on our agenda, Stu Richards of the NRC will have some opening
24 remarks on the work that's ongoing to explore risk informed rulemaking
25 for decommissioning reactors. Next Vonna Ordaz will summarize the
current effort by the technical staff to establish a risk informed
technical basis for future rulemaking and for interim staff reviews.

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Next, Diane Johnson will discuss some of available technical
information on the zircaloy fire scenario. The NRC's presentation
should be over by about 1:45, and then we'll have a 15-minute period for

1 questions and answers. After that, stakeholders from the general public
2 will be given an opportunity to speak. We have a sign up list for
3 speakers on the table in the back. Etoi Hilton is maintaining that
4 sheet. So if anybody from the public that wishes to speak has not
5 signed that sheet, you should do so now. When we know how many people
6 wish to speak, we'll divide the allotted time into segments, and that
7 way we'll be sure that everybody gets an opportunity to be heard. So if
8 you want to speak again, please be sure that you've signed up at the
9 back table.

10 After that, representatives from the Nuclear Energy
11 Institute, or NEI, will speak for about an hour or more on their views
12 regarding risk at decommissioning reactors. When they finish, we'll
13 have another 15-minute period for questions and answers. We are
14 recording today's conversations so we can make a transcript of the
15 discussions. Because of the transcript, I ask that all speakers and all
16 people making comments or asking questions should first identify
17 themselves before they speak so that the transcript will be accurate.
18 If you forget, we'll try to remind you.

19 Right now we're going to circulate attendance sheets for
20 everyone to sign. We have some clipboards and we need -- these are just
21 attendance sheets. Everyone who is here should please sign them. This
22 is essentially a regular technical meeting of the NRC, and so we do want
23 to maintain an attendance sheet as we normally do at all such meetings.

24 So if you could circulate that one. When the attendance
25 sheets are circulated and completed, we'll collect them and make copies
and you can pick up copies of the complete attendance sheet from the
table in the back.

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Now I'd like to introduce Stu Richards, the director of the
PD 4 and decommissioning project director who will make the opening
remarks.

1 MR. RICHARDS: I'm newly responsible for the decommissioning
2 area, and so I'm somewhat in the learning mode. I'd like to make a
3 couple of comments before we go to the slides. First, why are we in
4 this room today and it's a working meeting? It's because it's the only
5 room we can find that could hold this many people. So normally we would
6 have had this meeting in a smaller conference room, understanding that
7 it's our chance to get down and talk with our stakeholders and NEI about
8 the details of some of these decommissioning issues. But again, we had
9 to go to this room because of the number of people we expected to
10 attend.

11 So this is a working level meeting. We got a number of the
12 working level staff here today. I'd like to also point out that we're
13 in the receive mode. We told the Commission that we wanted to take a
14 step back as part of the NR reorganization, take a look at where
15 decommissioning has come from and where we're going and try and make
16 sure we're headed in the right direction and this is a part of that
17 effort to reach out to both the industry and the public and receive
18 comments on the decommissioning area.

19 So we're looking for feedback on some of issues we are faced
20 with in decommissioning. Right now we don't have many answers but we do
21 want to have your input to where we're going.

22 If we could go to the number 2 slide on our presentation.
23 10CFR Part 50 primarily addresses operating reactors, and the risk
24 primarily addresses an operating plan. Of course a permanently
25 shut-down reactor has reduced risk, and we think that we need to make
sure that the regulations comport with that reduced risk. Next slide
please. Presently we have two efforts underway to re-examine where
we're at in decommissioning. The first effort is that we put together a
group of the technical staff to review the risk associated with keeping
spent fuel in the spent fuel pool. The primary issue involved with that

1 is the so-called zirc fire. We addressed that with the Commission and
2 with NEI about a month ago and agree that we needed to take a step back
3 and gather together the information we had available in that area and
4 reassess what we know and where we ought to be headed. I think that's
5 primarily the issue we'll be talking about today.

6 The second bullet on this slide indicates that we also have
7 a second group that we've set up to take a look more at the
8 administrative aspects of the decommissioning rulemaking. We have a
9 number of rules, I think about five right now in progress, and we wanted
10 to take this opportunity of the NRR reorganization to stop, look at the
11 rulemaking, and assess whether we needed to make any adjustments to any
12 of those rulemakings; whether we needed to look at it as perhaps one
13 large decommissioning rulemaking or what.

14 So we're putting together a group, we have formed that group
15 to take that step back, and in the regulatory realm and the rulemaking
16 realm, take a look at where we should be headed. So both those efforts
17 are underway. Today's meeting is primarily to address the technical
18 issues.

19 Next slide please. I think the agency has learned a lot
20 about the decommissioning area in the last five or six years. Our
21 intent is to try and build on that experience as we move forward. In
22 the past, as decommissioning plants have gone into that mode, they've
23 come into us for licensing amendments, and generally we dealt with a lot
24 of those issues on an exemption basis to the regulations. It's not an
25 effective and efficient way to do business. For the future, we're
trying to get to more of a routine mode where we recognize the stages
that decommissioning plants are going to go through and get into a more
effective and efficient way of doing business, part of why we're looking
for your inputs today.

I'd like to add that in following through on this process,

1 we're sensitive to the pillars that the chairman has laid out for us.
2 We not only want to be effective and efficient, reduce regulatory
3 burden, but we're going to maintain safety and we're going to maintain
4 public confidence. So those are our goals in setting out on this course
5 we're headed off on.

6 With that, I'd like to turn the program over to Vonna.

7 MS. ORDAZ: Thank you. Good afternoon. I'm the team leader
8 for the technical working group, and I'm going to discuss the current
9 task that we have underway. We recently assembled a working group of
10 technical experts in the areas of spent fuel pool systems, thermal
11 hydraulics, probability, criticality, dose assessment, fire protection,
12 structures, maintenance rule and quality assurance. Our mission is to
13 review and evaluate available technical information and methods
14 pertaining to spent fuel pool accidents, to formulate a risk-informed
15 technical basis for reviewing exemption requests. And follow-up actions
16 applicable to rulemaking. The working group will assess the potential
17 scenarios probabilities and consequences of spent fuel pool accidents
18 during decommissioning based on the available technical information.

19 Next slide please. We will have two short term outputs in
20 our two-month effort, which include establishing a risk informed
21 technical basis for spent fuel pool accidents that supports predictable
22 methods for reviewing exemption requests and follow-up actions to
23 rulemaking related to emergency preparedness, safeguards and other areas
24 based on this available technical information. Also, we will be
25 identifying the need for follow-up research or technical activities to
address any large uncertainties that we have in this information.

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Next slide please. Our long term outcome is to achieve
realistic, risk informed criteria to address spent fuel pool accidents
at decommissioned plants in a predictable manner while maintaining
safety, reducing unnecessary regulatory burden, increasing public

1 confidence, and improving effectiveness and efficiency.

2 Next slide please. We welcome comments, questions and
3 technical information from NEI and the public stakeholders. We will
4 consider your comments in our working group effort. If you have any
5 additional comments or other technical information after today's
6 meeting, please provide them to Mr. Richard Dudley. His mailing address
7 and phone number are on the handout. If you would like any of these
8 comments considered in our working group effort, please provide them to
9 Mr. Dudley by the first week in May. Thank you.

10 MR. DUDLEY: Okay. Next I'd like to introduce Diane Jackson
11 of the NRR plant systems branch, and she'll discuss technical
12 information related to the zircaloy fire scenario.

13 MS. JACKSON: I'm a member of the technical working group
14 and the lead for this spent fuel pool systems. I'm going to talk
15 briefly about one aspect of our evaluation effort, and that is the
16 zircaloy fire. Please note that this information presented today is
17 some of the available information based on operating plant conditions.
18 The staff is evaluating if and how this information applies to
19 decommissioning plants. These are not conclusions of the staff, it is
20 merely our starting point for our evaluation. Decommissioned plants
21 have requested exemptions for off site emergency preparedness, since
22 operating events are no longer a concern. Because it is emergency
23 preparedness, the staff has identified a spectrum of accidents,
24 including beyond design basis accidents that could cause off site
25 consequences.

The loss of water from a spent fuel pool and a subsequent
self-sustaining zircaloy oxidation or zircaloy fire is a concern due to
the potential significant off site consequences.

For those who may not be familiar with zircaloy, it is a
zirconium metal that is used to make the rods to hold the fuel pellets,

1 and it is also used in boiling water reactors for the channel boxes
2 around each group of fuel rods. Next slide please. Zircaloy fire is
3 not a new issue. In the 1980s, it was investigated as part of generic
4 safety issue 82, which is severe accidents for spent fuel pools.
5 Sandia, Brookhaven and Lawrence Livermore Laboratories study the
6 probability, phenomena and consequences of a zircaloy fire in air for
7 operating reactors. They found that if the decay heat and the spent
8 fuel was only air cooled, the onset of clad blistering could occur at
9 565 degrees Centigrade, and self-sustaining oxidation could occur at
10 approximately 850 to 900 degrees Centigrade. They also found that if a
11 zirc fire occurred in the newer fuel, that the heat from the reaction
12 could cause odor fuel to heat up and oxidize as well. And therefore, a
13 zircaloy fire could include more than just the last core.

14 They also found that the conditions which could lead to
15 oxidation are extremely dependent on the storage configuration of the
16 fuel and the decay power of the fuel. These are some of the conclusions
17 that they found regarding the phenomena of a zircaloy fire. The staff
18 is evaluating this information due to operational and storage changes
19 since these studies were completed. We're also evaluating the
20 temperature limits to see what the important ones are for the reaction.

21 Next slide please. The National Laboratories also
22 investigated the probabilities of initiating events that could lead to a
23 loss of water. Structural failure due to a seismic event was found to
24 be a dominating initiating event. It was estimated a mean of 1 times
25 10^{-6} per reactor year and a range of 1 times 10^{-5} to 10^{-11} per reactor
year was the range. As you could see by this wide range, there are
large uncertainties existing in this estimate. Structural failure due
to cask drop was also estimated. Brookhaven compared a value from
& NUREG-0612, which addressed heavy load for nuclear power plants to a
structural failure do to a cask drop. The value that Brookhaven

1 estimated was less than 3.1 times 10^{-5} or greater than 3.1-8. This is
2 not a typical range due to NUREG-0612 and the Brookhaven report did not
3 assess one value for all the required actions. It was just the
4 recommended actions, all or none, so it's somewhere in between those
5 numbers.

6 Structural failure due to an air crash was also estimated to
7 be less than 1 times 10^{-10} per reactor year. The National Laboratories
8 and the staff are also looking at other loss of coolant accidents and of
9 human failure associated with pertinent actions such as cask drop and
10 siphon events. Next slide please.

11 Zircaloy fire consequences. It is known that after a
12 certain period of time following final shutdown that air cooling is
13 sufficient to remove the decay and zircaloy oxidation cannot occur. The
14 National Laboratory studies identified that those consequences were
15 significantly different if the accident resulted in a fire or release of
16 radioactive gas between the gap between the rod and the fuel or a gap
17 release. Within the time between final shutdown and the time that a
18 zircaloy fire cannot occur, the safety margin is increasing due to the
19 decrease in decay heat, the decay of short-lived radio nucleides and
20 therefore the increase in time available to take mitigative or recovery
21 actions.

22 Next slide please. The staff feels that a critical
23 evaluation of available information is needed. Here are some of the
24 areas in question that the staff is posing to itself and to you to
25 better understand the spent fuel pool accidents that should be
considered for decommissioned plants. The identification of initiating
events and accident sequences, what are the correct accidents that need
to be evaluated? Why or when can an accident be eliminated as a
& concern? The probability of initiating event and accident sequences,
existing information based on operating reactors based on and include

1 large uncertainties in the estimates. How can these estimates be
2 improved? What else such as human error may need to be included in a
3 new estimate?

4 The methods or criteria to assess scenarios and
5 consequences. This is a very large fundamental question. What type or
6 types of analyses should be used? What criteria should be used? Can
7 generic parameters be defined for all plants? Mitigative actions or
8 features. Is there equipment or personnel actions that can be given
9 credit for to mitigate or provide early indication of an accident? The
10 characteristics of a zircaloy fire. How does it behave? How energetic
11 is the release? How much is released? The dose from a fire after 30
12 days after final shutdown and beyond. Previous studies evaluated a fire
13 at 30 days, a limited fire at 90 days, but did not evaluate a fire when
14 the fire fuel is older than 90 days. Is there a point in time that the
15 vent does not have off site consequences? These are the areas that the
16 staff is looking at and your assistance is welcome. This concludes my
17 presentation. Thank you very much.

18 MR. DUDLEY: Okay. That concludes the NRC staff
19 presentation. We have a little question and answer period next, but
20 before we get into that, I just want to check, did everyone sign the
21 attendance sheet? Has everyone gotten to sign that? Okay. That's
22 fine. We've completed that.

23 Okay. Now we're going to go into a question and answer
24 period for about 15 minutes. Anyone who has questions I would like, if
25 you would, please, come down and use the podium right here. That way
you have access to a microphone and please identify yourself before you
ask a question. So are there any questions? Okay. There will be
another question and answer period later if anyone thinks of a question.
At this point, I would like to go next to the public speakers. I have
four names of people who signed up, Paul Gunter, Paul Blanche, Ray

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1 Shadis and Cindy Folkers. Are there any additional people who would
2 like to speak and didn't get signed up on the sheet? Okay. Paul,
3 you're all welcome to sit at the table. You're all welcome to sit at
4 the table now or when you speak or however you would like to do it.
5 Paul Gunter will start, and Paul, is 10 minutes about okay?

6 MR. GUNTER: Probably less.

7 MR. DUDLEY: Okay. That's fine. Thank you.

8 MR. GUNTER: My name is Paul Gunter. I'm with Nuclear
9 Information and Resource Service in Washington, D.C. and I'm the
10 director of the Reactor Watchdog Project. And I think that what's
11 important to address the Commission in this public process right now is
12 that first of all, from our perspective, we're starting at a very low
13 level of public confidence in this agency and frankly what we expect to
14 see from a risk informed process for decommissioning is nothing more an
15 effort to reduce the cost and burden to the industry without the utmost
16 regard to public health and safety, and we believe that that should be
17 reversed, that no cost should be spared from this industry for the
18 problem that -- and the legacy that it leaves with the decommissioning
19 of these reactors. And frankly, our concern is that in the
20 decommissioning process, once the profit motive is lost on this industry
21 is when we face some of our greatest dangers, and that's why it then
22 becomes your agency's prerogative, and actually your mandate to uphold
23 the public safety, public health mandate that you were charged through
24 Congress.

25 So the whole shift towards risk informing this process is,
from a public point of view, a shift towards easing the industry's
financial responsibilities for this problem that they've generated. I
think that with regard to -- this particular process I know you're
& speaking to the whole issue of zircaloy fire and irradiated fuel, but it
is an introduction, the risk informed process to the decommissioning

1 regulations which many of us believe are already in disarray,
2 particularly those of us who are following the Yankee Rowe
3 decommissioning process and the various contentions that are now before
4 the Atomic Safety and Licensing Board, and what we have seen to date to
5 be a process where the industry is cherry picking through a variety of
6 NRC historical approaches to the decommissioning problem and in its
7 efforts to formulate and promulgate regulation.

8 So one concern is that to add this risk informed process is
9 an apparent, another cherry to add to this tree that industry can sort
10 its way through, to find perhaps the most economically beneficial
11 process when the industry, in fact, has lost all profit motive on
12 generating electricity from these plants.

13 But my final point is just that the process of introducing
14 risk informed regulation extends beyond the management of irradiated
15 fuel. And in fact, it's our concern that it introduces the possibility
16 for risk informed regulation for low dose issues following in the
17 decommissioning process. And this is a very controversial process.
18 Perhaps you might be able to comment to me in following here, if in fact
19 I'm completely off base, to suggest that this is a foot in the door for
20 a risk informed decommissioning policy in regulation that potentially
21 affects the public in terms of low dose exposures, and how this
22 particular course of regulation can impact the public to its
23 disadvantage, and essentially raising risk to the public while lowering
24 financial risk to the utility.

25 And you know, this is a real concern to us that when we talk
about risk that, in fact, the risk that we're really talking about here
is reducing the financial risk to the utility with increasing risk to
public health and safety that might be gained through a more vigilant
& prescriptive process.

MR. RICHARDS: All right. We thank you for your comments.

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1 I'd like to just say that again, one of our pillars for our job is
2 safety, maintaining public safety and we intend to do that and we thank
3 you for your comments.

4 MR. GUNTER: You know, I understand how -- I mean, we've
5 come across this from issue to issue to issue that your agency basically
6 puts up front in terms of its rhetoric that safety is the issue, but in
7 fact the actions that the agency takes are in fact economical risk
8 reduction regulations for this industry, and we'd like to see that shift
9 to what your mandate originally as designated by Congress was to protect
10 public health and safety.

11 MR. RICHARDS: Thank you. All right. Next is Paul Blanch.

12 MR. BLANCH: Good afternoon. My name is Paul Blanch and I
13 live in West Hartford, Connecticut. I'm here representing myself today
14 as a member of the public. I appreciate this opportunity to comment on
15 your efforts, and I think your efforts are very, very worthwhile. Over
16 the past few years, I have had many discussions with the staff and
17 discussions with Mr. Zwolinski and I think that we both see a need for
18 further definition related to decommissioning. Presently, utilities are
19 decommissioning under 10 CFR part 50, and we know that this is really
20 not an appropriate rule to decommission a plant. Part 50, as everyone
21 knows, is for power reactors and production facilities.

22 We also, I think, realize that eventually, every utility
23 that goes into decommissioning will be going to part 72, that is the
24 long term storage of spent fuel. And reading part 72, I believe that
25 part 72 is applicable not only to dry cask storage, but also wet
storage. And whether people elect to stay with wet or go to dry cask,
they'll eventually, or at least they should be going to part 72. I
consider part 72, while it does have minor shortcomings, to be adequate
& for the long term storage of spent fuel. The problem is how do we get
ASS from a part 50 license to a part 72 license, and I think that's what the
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1 NRC staff needs to address.

2 There are, as you well recognize, many areas that are
3 totally undefined in how to decommission. Not only does the public want
4 to see clear regulations related to decommissioning, but I think the
5 utilities and the industry want to know these regulations, and I think
6 that the staff recognizes where these shortcomings are, where this lack
7 of definition is. I can just cite a few. For instance, 10 CFR appendix
8 A, what is the applicability of appendix A in that phase of
9 transitioning from part 50 to part 72? Another one is appendix B,
10 quality assurance. I understand that some reactors are conducting or
11 decommissioning or certain portions of their decommissioning under an
12 appendix B program while others are electing not to do it. We need
13 definition. We, the public, we, the utilities. Security requirements
14 need to be addressed, and one of questions that I was going to ask, but
15 seeing that I was up here making a statement is how do you factor in the
16 potential for sabotage? I know you see numbers like 10⁻⁶, 10⁻⁵. Some
17 of these spent fuel pools are vulnerable and dry cask may be vulnerable
18 to sabotage, and I don't think this is something you can totally ignore
19 and say it's not going to happen, because there is a possibility of it
20 happening.

21 Other regulations that need to be clarified, fitness for
22 duty, operator training, appendix R, fire protection, emergency
23 planning, and quality assurance and regulations within part 72.

24 Some of the concerns related to some of these
25 decommissioning plants, we recognize that wet storage requires, in some
case, power to power the pumps to cool the water. What are the
requirements? Should this be a quality system for appendix B? Do you
need diesel backups? Do you need emergency power? I don't think these
& things are covered properly within 10 CFR part 72, but that's a minor
ASS problem.
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1 The other issue that I brought up are at two public
2 meetings. One related to Yankee Rowe, and one remitted to Millstone,
3 the latest being in February of this year is the remediation level for
4 unrestricted access. At the Yankee Rowe meeting, and there is a
5 transcript of this, Yankee Rowe, the licensee, committed to remediation
6 down to 15 millirem per year for unrestricted access, and I personally
7 don't believe that it matters whether it's 15 millirem, 25 millirem or
8 75 millirem. Whatever it is, inform the public what it is. At the
9 meeting at Yankee Rowe in January of 1998, we were informed that the
10 remediation, as I said before, was going to be 15 millirem per year
11 based on 24 hours per day, 365 days a year occupancy.

12 That satisfied most of the members of the public, a
13 subsequent meeting at Yankee Rowe and also at Millstone. We were
14 informed that remediation level is going to be 25 millirem per year
15 unrestricted access based on eight hour a day. That kind of statement,
16 and again there's a transcript of that, is just totally inconsistent.
17 Again, we talk about public confidence and when the NRC says at one
18 meeting it's going to be based on 24 hour a day, 365 days a year, and
19 then a year later they're saying unrestricted access is based on eight
20 hours a day, it certainly does not help public confidence, and that
21 issue -- I understand, I got a message from the NRC staff yesterday by
22 e-mail that I will have a response within about two weeks on that
23 extremely important issue, and it's very important to members of the
24 public, and it's also important to the utilities that they understand
25 what the rules are.

 That concludes my brief statement and I thank you for the
opportunity to listen to my concerns, thank you.

MR. RICHARDS: Thank you very much for your comments.

MR. DUDLEY: Next is --

MR. HANNON: Paul, could I follow up? This is John Hannon,

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1 plant systems branch chief. I wanted just in one narrow area, make sure
2 I understood your comment. I think you indicated that there is more
3 definition in a number of areas needed, included fire protection. Does
4 that --

5 MR. BLANCH: Fire protection is just an area that needs
6 clarification, what applies during that decommissioning phase.

7 MR. HANNON: Maybe we could talk later to get the details,
8 but currently my understanding that 10 CFR 50.48 does include provision
9 to phase out fire protection post decommissioning.

10 MR. BLANCH: That's just fine if you believe that part 50 is
11 applicable through the decommissioning phase.

12 MR. HANNON: Okay.

13 MR. RICHARDS: Okay.

14 MR. DUDLEY: Okay. Cindy Folkers.

15 MS. FOLKERS: Okay. There's a statement here under current
16 technical tasks. Staff has recently assembled a working group of
17 technical experts in the areas of, and one of those areas is dose
18 assessment. As a member of the public, my name is Cindy Folkers and I
19 work for Nuclear Information and Resource Service, but as a member of
20 the public, I am extremely concerned about the method of dose
21 assessment, and I don't -- I mean, there are questions I have on this
22 particular issue, but I want to walk through some of my concerns first.
23 One of my concerns is that it's not just a dose assessment if there's an
24 accident, but I think there's also a clean up level like Mr. Blanch was
25 discussing a little bit ago regarding these sites for decommissioning,
and I am concerned, and I want to share some information from some
studies that I happen to get from the National Library of Medicine
concerning dose. One of the studies was a study done on a facility, a
nuclear power facility in Germany called the Krummel, and there happens
to be an elevated rate of adult and childhood leukemia more childhood --

1 childhood leukemia is more elevated than adult there. And so what they
2 said is said okay, what's going on? They took a set of genetic
3 analyses, which is an analysis they do of the chromosome structure of a
4 human being and they found centric and dicentric rings. Now, if you're
5 not a biologist or a physiobiologist or anything like that, that's not
6 going to mean a whole lot to you, but it's a radiation tag.

7 And as such, it is almost exclusively do to radiation
8 exposure. So what they did when they found these chromosome
9 abnormalities of these people, as they looked at the dose levels that
10 these people supposedly got and they looked at the thermoluminescence
11 and the dosimeters around the plant, and they found that the average
12 dose to these people was .09 millisieverts a year. By my calculations,
13 that's 9 millirem. Nine millirem, and apparently there are cases of
14 elevated leukemia and dicentric and centric rings in their chromosome
15 structure.

16 So what I want to impress upon you is that many members of
17 the public are going to think that no level is safe. And in fact
18 there's a lot of literature, scientific literature and studies that back
19 this up, so you have to consider that, even if you establish a level, if
20 that level is at all perceived to be above natural background, there are
21 going to be a lot of people who are not trusting what you're doing,
22 especially when you look at a level of 9 millirem around this facility,
23 and you see what's happening there.

24 And there are other studies that are like this and I won't
25 go through all of them, but one more quote from Eric Wright who's --
what is his title? He's a radiobiologist with Oxfordshire, England, the
university there, and he was at a seminar recently last September and he
said basically that one alpha particle through a cell is enough to
& administer a dose of a gray. Now if that alpha particle, for instance,
is in your lung, then the dose may be distributed among your entire

1 lung, but the dose is actually not received among your entire lung, it's
2 given to a single cell. So I don't know exactly how the dose
3 assessments are going to be worked for any of these; accident scenarios
4 or decommissioned land or whatever. But there are a lot of questions
5 that I have and there are a lot of places where the public is not going
6 to be comfortable with this, and I wanted to get that on the record.
7 And if anybody wants copies of these studies, I'll be more than happy to
8 provide them.

9 MR. RICHARDS: Thank you very much.

10 MR. DUDLEY: Next is Raymond Shadis.

11 MR. SHADIS: Thank you. My name is Raymond Shadis. I am a
12 founder of Friends of the Coast opposing nuclear pollution. I now serve
13 on the staff of New England Coalition on Nuclear Pollution, and I am a
14 member of the Maine Yankee's decommissioning community advisory panel.
15 And I applaud your creativity in trying to structure the format of this
16 meeting. It has not been my experience to have the public sandwiched in
17 a schedule between the regulators and the utility. In fact, when I was
18 invited to this meeting, Mr. Dudley called, I was under the impression
19 that this was to be a meeting on risk informed decommissioning rule.
20 And I am surprised to see the focus directed to the zirc fire. I had
21 anticipated coming to the meeting, listening to those people whose
22 initiative this rule is, hearing their presentation and then being able
23 to comment on it, and I hope that later on in our question period, we
24 can comment on whatever it is that the Nuclear Energy Institute has to
25 present. I think that from my perspective, the most that I can offer
you is in the area of public confidence. The public gets their
information on nuclear safety from NRC spokespersons, from the nuclear
industry, whatever materials they may put forth, and then there is a
& small band of nuclear safety activists if you will, or environmentalists
OCI out there in the public trying to read through this material, trying to
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1 sift it out, with the bias strongly on the side of protecting what we
2 value, human lives, the environment.

3 And I want to tell you that in my experience, which is now
4 some 20 years of activism, I've been led deeper and deeper into a
5 distrust of what NRC promulgates as fact. And I don't mean this to be
6 insulting, but if you look at the history of this zirc fire issue, you
7 find some very, strong statements coming from the Nuclear Regulatory
8 Commission, from your generic letter, from the subsequent studies that
9 would lead a person to believe that it is not only possible but probable
10 to have a zirc fire. The window where there is sufficient latent heat
11 to generate a zirc fire has been variously reported in NRC documents as
12 300 days, 700 days, 100 days. There was something on an earlier slide
13 here about 90 days, 60 days. Who knows? What greets us is a constant
14 round of new news, and there's nothing wrong with that if the
15 adjustments are minor. But in this case the adjustments are extreme.
16 The probabilities, as Mr. Blanch mentioned, of sabotage, are extremely
17 difficult to calculate. But from the public point of view, when NRC
18 concocts a reference bomb vehicle and limits the size of the vehicle and
19 the ingenuity of the terrorists in getting that vehicle to a fuel
20 storage facility, they lose credibility with the public.

21 The public remembers quite well the pictures of the Federal
22 Building in Oklahoma City where a vanload of explosives parked at least
23 60 feet away and down a long flight of steps blew the entire front from
24 that building. One takes no comfort in the fact that a spent fuel pool
25 wall is four feet thick or six feet thick or 10 feet thick if the
president of the utility will admit that you can drive a bomb laden
vehicle right up to that spent fuel pool wall with the new security
measures in place.

Well, NRC, and this is the case with Maine Yankee, Maine
Yankee removed its vehicle barriers last July. In February NRC sent

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1 Maine Yankee a letter saying we're concerned about this and we're
2 seriously thinking about sending a team up there to look at it and find
3 out whether or not you have a safe situation or a situation of
4 compliance or maybe just look at it. Or maybe they are just waiting for
5 summer.

6 But our terrorists in the meantime are frustrated because
7 they don't know if they can have access to the building or not under the
8 present security conditions. I think I'm getting to -- the point here
9 is that timeliness and the response of NRC to the public and to public
10 concerns is of the essence. Let me demonstrate this briefly. This is a
11 letter from Mr. Seymour Weiss, NRR, dated March 26, 1999. This letter
12 is a response to a letter I wrote asking about zirc fire potential,
13 asking about loss of coolant potential, laying out a list of scenarios
14 for the accident at Maine Yankee, including tornado driven missiles. We
15 have a backup diesel power plant on a trailer outside the tin building
16 that houses the spent fuel pool. The trailer is not bolted to the
17 ground. It's not fastened down, in fact, the tongue rests on a cribwork
18 of wood. Mr. Weiss's response is that very likely a tornado would not
19 be a sufficient strength to toss that trailer and diesel generator
20 around and cause it to become what NRC pictures as an ideal wind-driven
21 missile.

22 The fact is, I was in Florida a little bit over a year ago
23 when tractor trailer trucks were being thrown around by the stream of
24 tornadoes that came through that state. So when Mr. Weiss tells me
25 that, his credibility drops to zero, especially when it's a response to
legitimate concerns. And let me give you the kicker in this. This
letter is dated, the response letter is dated March 26, 1999. Dear
Mr. Shadis, I'm responding to your letter of June 5th, 1998 which you
sent to Leonard J. Callan regarding emergency preparedness and financial
protection exemption requests, et cetera, et cetera, Maine Yankee. One

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1 of NRC's criticisms down at Millstone was that worker concerns were not
2 promptly addressed. Well, in a sense, although nobody asks me and the
3 pay is very small, I'm a worker out there for the public. We in Maine
4 have voted three times on whether or not to retain nuclear power in the
5 state and on average, something over 40 percent of our public voted to
6 close Maine Yankee. Within the emergency planning zone, more than half
7 of our public voted to get rid of it.

8 And so when we raise issues, we hope to get a realistic
9 timely response, and if you think that that's poor public relations
10 right there, let's try another example. This is dated April 8, 1997.
11 And it is a letter from Jean Lee of the allegations department informing
12 me that a 40-page memorandum which we gave to the Commission and
13 commissioners in a full Commission meeting on February 4th of 1997 will
14 soon be addressed. Her date is April 8th. All well and good. I have a
15 collection of them. The most recent one about six months ago. Many of
16 the issues you raise, Mr. Shadis, it says, are no longer relevant as the
17 plant has long been shut down. We were dealing at the time with an
18 operating plant. And they were real issues based on an informed
19 layman's knowledge of the workings of our local nuclear power plant and
20 expressing the safety concerns of our public, and I have yet to get an
21 answer to that memorandum. Now I think if you want public confidence,
22 then the public is going to have be dealt with differently in issues
23 that they bring forward to you.

24 I hope that this meeting and its format may be the beginning
25 of that kind of public confidence. One of the strong points of the
effort to do away with adjudicatory proceedings altogether, which I
understand is now a foot in the agency, is the notion that the public's
interest is well satisfied by informal public meetings in which the
& public, as I'm doing now, gets to vent a little bit and that notes are
OCI duly taken and response is duly made. However, as you well know,

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1 there's no accountability in these meetings; there's no cross
2 examination; there's no test of truth as it would come down in any
3 adjudicatory proceedings. And I presume we have truthfulness here and
4 trust. But I can tell you that in local meetings with NRC, it's been
5 anything but.

6 And so this process whereby we have informal meetings and we
7 have informal groups such as our community advisory panel will not stand
8 the test of time and it will not serve for the credibility of this
9 agency. I think some other method needs to be devised. Let me just
10 give you a brief example on how some of this is structured. This is a
11 November 30th, 1990 letter to Mike Masnick, and I presume this is
12 Dr. Michael Masnick, now heading up a good portion of our
13 decommissioning from Adam Bless, who is the nuclear safety advisor of
14 the state of Oregon. And in it Mr. Bless advises on how a public
15 meeting can be controlled so as to avoid unpleasantries from the
16 antinuclear crowd.

17 I think once in a while when this sort of things falls into
18 our hands, it's going to take an awful lot to get to the other side, to
19 get to the point where we feel that we're not being used or being
20 handled. Now, I just want to say a few words about the risk informed
21 aspect of this. I'm not altogether certain that putting together a risk
22 informed regimen for decommissioning isn't the right thing to do, but I
23 do know that all of these power plants were sold to the public by your
24 predecessor agency, the AEC, and by the industry on the basis that there
25 were redundant safety systems, that there was defense in depth, that
every conceivable kind of accident was dealt with. We later found out
there was a difference between conceivable, credible, or whatever, but
nonetheless, that's the basis on which all of this was sold to the
& public. And now it's a changing game. And I think the public has to
know why there is a need to change at this point. If the industry has

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1 become safer, as it is said by NRC spokespersons and the industry,
2 because of the way that NRC has comported itself since Three Mile
3 Island, then why change?

4 The risk is that the industry will become less safe with the
5 change, and therefore we take a very careful look at it. Another point
6 I want to make to you is that decommissioning is more than catastrophic
7 accident considerations. If you want to risk inform decommissioning,
8 then do it start to finish. Do it through licensed termination. I want
9 to point out to you that the EPA's 15 millirem plus 5 millirem water
10 standard is a risk informed rule. It is generated by the calculation of
11 risk and cancer and mortality out of chemical pollution, chemical
12 toxins, and EPA's position very plainly is that that risk factor needs
13 to be carried over to dealing with radiation, that radiation is not a
14 special exempt form of contamination, but should be dealt with at the
15 same precise risk factors as PCBs or lead or arsenic or anything else.

16 And so you might well consider plugging that into your risk
17 informed rule. I want to point out to you that the best risk experts in
18 the United States probably anywhere, as the insurance industry, and if
19 you're going to risk inform the rule, I think it would be probably the
20 best consulting money that could be spent rather than burden our little
21 national labs with conclusion driven tests.

22 Let's go to the insurance industry and see if we can't get
23 them to reduce the premiums while maintaining the coverage given that
24 the risk is less on any one of these aspects of decommissioning. And I
25 just, a final note, and I'm sorry to take so long. I got a raft of
stuff. Final note, I was speaking with Mr. Richards prior to the
meeting and he mentioned being struck in a traffic jam on U.S. route 1
near a high level bridge in the city of Bath, Maine. This is a coastal
& city. Either early last year or late the year previous, and I'll find
the clipping and send it to you, we had a collision of two trucks on

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1 that bridge head on. One of drivers reached over to get a sandwich
2 across the seat, tucked his head down and brought his left fender
3 against the front left fender of the other truck and drove it into the
4 guardrail. The guardrail on that bridge, by the way, is rusted and
5 decayed. And next to that guardrail is a new bridge under construction
6 with all the rebar and concrete sticking up and so on, it's a couple of
7 hundred foot drop to the river. Pretty amazing.

8 Those two trucks, one was loaded with aviation fuel. The
9 other was an aviation fuel truck empty. One was coming from Brunswick
10 Naval Air Station. The other was coming from a fuel depo, another 70
11 miles down the coast. What are the chances that those two trucks would
12 collide? What are the rules for the drivers? Where is the regimen here
13 to take that into consideration? For us, those of us that live in the
14 area, whenever we see one of those trucks coming across the bridge now,
15 we're not going to open a book and try to figure out what the chances of
16 having that truck cross the line are. We give it plenty of leeway. I
17 don't know that the public will take a laboratory experiment or a
18 calculation, which is not extremely conservative, and accept it in the
19 place of real world protections. And I thank you and I apologize for
20 taking so long.

21 MR. RICHARDS: Thank you very much for your comments.

22 MR. DUDLEY: All right. That concludes the public
23 presentations portion of the meeting. Next, NEI, the Nuclear Energy
24 Institute will make a presentation to the NRC, and after they're done,
25 there will be another period of questions and answers and Ray, if
there's anything that comes up in their presentation that you wish to
discuss, you have another opportunity in the question and answer period.
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Right now I'd like to introduce Lynette Hendricks of the Nuclear Energy
Institute, and she will introduce the other members of NEI associated
with the presentation.

1 MS. HENDRICKS: Thank you, Dick. I'm the director of plant
2 supported NEI, and decommissioning is one of my major issues. We
3 appreciate this opportunity to meet with NRC on risk informing
4 decommissioning regulations. We're going to share some of our general
5 thoughts. Mike Meisner, who is chairman of our decommissioning working
6 group, will take the lead on the overview and then we're going to have
7 presentations from Duke Engineering on specifically probability from the
8 seismic perspective.

9 MR. RICHARDS: Before you get started, I know you came in
10 late. Are there copies of your presentation for members of the
11 audience?

12 MR. MEISNER: Yes.

13 MS. HENDRICKS: We may not have brought a sufficient number.

14 MR. MEISNER: As I was listening to the earlier discussions,
15 I thought it might be worthwhile to take a minute or two right up front
16 and maybe talk a little philosophy of risk informing and some of the
17 benefits. We're all struck with the idea whether you're regulators or
18 utilities or other stakeholders with the notion that nothing is
19 infinite. We have limited resources in one form or another. And
20 probably the worst thing we can do with those limited resources is to
21 spend them on things that aren't important. And in my mind, that's what
22 the real benefit of risk informing a process or regulation is that you
23 understand technically what's important to safety. And you use that
24 understanding to put your attention, your time, your money, whatever it
25 may be, on those things important to safety.

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If I got a choice between spending X number of dollars on something that will reduce someone's exposure by 10 millirem or reduce it by one millirem, I sure want to know which one is that 10 millirem. The only way I know how to do that is to become technically knowledgeable in these areas. Understand what's important to safety.

1 And risk inform it through not only understanding consequences but
2 understanding what the probabilities are that are involved in those
3 consequences.

4 The difference between an airplane crash into our fuel pool
5 building and a car crash into the building are quite significant. So
6 I'm not going to spend as much preventing that airplane crash as I am
7 the car crash. So I think we're all searching for ways to be good
8 stewards of what we have responsibility for. I know Maine Yankee where
9 I work, and actually all the decommissioning facilities, we have a
10 limited pot of dollars to do something worthwhile with, and I think you
11 all need to understand, if you don't already, that those dollars aren't
12 coming out of the pockets of the owners or the utilities. Those are
13 rate payer dollars that flow through. Utilities don't make anything on
14 decommissioning. What we try to be are good honest responsible stewards
15 of those dollars, and doing a good job under the regulations.

16 And I think the session that we're having today maybe
17 somewhat historic because we have the opportunity to work with those
18 regulations, risk inform them, get rid of the things that don't make
19 sense. So we can take those what would have been wasted resources and
20 apply them to things that are important to safety. So with that
21 rambling opening, let me go to my first overhead.

22 MR. RICHARDS: Did they get a copy of your slides?

23 MR. MEISNER: They did. I think everybody has handouts.

24 Let me start with the outline page after the title page. We'd like to
25 cover four key areas here this afternoon. First of all, we'd like to
respectfully propose a risk informed framework. Not technical
information but decision-making framework in going forward to completing
a task. We would like to spend about half our time on what we think is
the missing side of the zirc fire analysis, and as the risk informed
side or what probabilities are we talking about for this event? We

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1 think we have some updated information that you may find very useful in
2 your analyses.

3 Assuming that zirc fire is really not the demon that it's
4 thought to be, if we don't use that to define boundaries in risk
5 informed regulations, what do we use? We have a few ideas we think has
6 some constructive input, then we won't spend any time on it, but we'd
7 like to -- we passed out to you areas of the regulations that we think
8 need attention, and we'll just briefly mention it. So the introduction
9 overhead. I think much of this has been covered. I'll make the point
10 that the reason we're really talking about zirc fire here is because
11 there's really not much else to talk about beyond the design basis area.
12 It's the only real beyond design basis event that's been given some
13 credibility by the regulator.

14 Now it was Diane Jackson earlier that talked about NUREG
15 1353 and some of the results there. We think that was an excellent
16 document because what it did was really truly risk inform the process.
17 It took a balanced view of consequences and probabilities and try to
18 draw some conclusions from those values. We think that's the way to go
19 and the problem is up to this point is that some of the positions taken
20 on decommissioning based on zirc fire haven't credited the probabilistic
21 side of things. Instead they've been focused on kind of a zero risk.
22 You know, example on the next page, if you'll turn to the next page is
23 the idea that we calculate when a zirc fire is impossible. That's a
24 zero risk mindset, or as done at Maine Yankee, we apply an impossible
25 situation in adiabatic up where you have no heat transfer across the
fuel and try the figure out how much time you have until you reach a
particular temperature. And the reason of course we're here is because
most of us were in the this room talking to the commissioner a few weeks
& ago in very positive and agreeable frames of mind, and I know I heard
from the Commission that that was their intent as well. And I think we

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1 have quite common cause here.

2 MR. RICHARDS: Mr. Meisner. I think we're out of sync with
3 you. We got your slides but we're behind --

4 MR. MEISNER: I'm on the "history continued" page. I'm just
5 leaving that going to "how do we risk inform decommissioning?" Okay.
6 One more, please. Okay. Well, I'm going to proceed since we have a lot
7 of handouts. How do we risk inform decommissioning? I think it's real
8 straightforward, and I think everybody at this table knows how because
9 we've all done it in the past. It's a process that the staff had used
10 quite often and asked that we combine a deterministic evaluation of
11 consequences with a probabilistic evaluation of likelihood. After all,
12 that's what risk is, it's probability times consequences. So in the
13 case of the zirc fire, for instance, we'd want to look at zirc fire
14 consequences immediately after shutdown. That's clearly the worst case.
15 And let's take an informed look at seismic initiating event
16 probabilities immediately after shutdown and combine those numbers and
17 come up with some conclusion. And once we combine those numbers,
18 there's a well understood framework for determining how significant
19 those are.

20 Staff does it all the time and safety and cost benefit
21 analyses, and the traditional number to use is now \$2000 per person rem
22 averted, and you have a cutoff point of 10⁻⁶. Lower than that it's an
23 area is not considered to be worthwhile in pursuing in regulations, and
24 we can combine those if you go to the next overhead, with -- in zirc
25 fire and when we talk probabilities and consequences, we're really
talking about beyond design basis activities. But there are some things
that we need to take account of within the license and design basis as
well in order to properly risk inform the regulations and it primarily
ties to emergency planning, and of course it's the one rem EPA
protective action guideline value, where traditionally we look at if

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1 your license basis consequences are below that value, then you're
2 justified in not having an off site emergency planning capability. You
3 retain your on site emergency plan, of course, and I think these are
4 straightforward, decision-making processes.

5 I think it fits in well with what the staff has always used
6 in the past, and I want to come back to this chart in a little bit after
7 we talk through first some of the probabilistic basis, some information
8 that I think you'll find interesting and maybe new on how to evaluate
9 the probability of a zirc fire. So I want to introduce first John Oddo.
10 John is with Duke Engineering, and the NEI Decommissioning Working Group
11 has asked Duke to gather some additional information on seismic issues
12 and see what they can do with it.

13 MR. ODDO: Good afternoon. Again, my name is John Oddo and
14 I'm the manager of regulatory affairs for decommissioning for Duke
15 Engineering and Services in Bolton, Massachusetts. We're the former
16 Yankee Atomic Electric Company. The subject of this presentation is an
17 EPRI NEI project to risk inform decommissioning emergency planning, and
18 this is a major indicator of risk informing all of decommissioning, we
19 believe. I have a number of overheads in the handout. I'll be skipping
20 to a few key ones so the next overhead will be number 12 in your
21 handouts. Our investigation focused on as a starting point NUREG 1353,
22 which is apparently familiar to most people here. The regulatory
23 analysis for the resolution of generic issue 82, beyond design basis
24 accidents in spent fuel pools, which was completed in April, 1989. And
25 just in summary, the point of my presentation -- this issue was
satisfactory resolved for all plants at that time. The conclusion
remain valid today, the decommissioning state does not affect the
conclusions, and we feel that there are significant improvements as a
& result of some evaluations of the seismic contributor to this issue that
are possible. And Tom O'Hara will be the next presentation from Duke

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1 Engineering, and he will go through the details of what those
2 improvements are available in that area.

3 If you could go to the slide labeled number 16. This is the
4 one headed NUREG CR-4982 -- I'm sorry, I skipped one. NUREG 1353 had
5 two particularly important supporting technical documents. NUREG CR
6 4982, a Brookhaven study, and it was the basic -- it established the
7 basic structure of probabilistic risk assessment structure for 1353. It
8 evaluated two particular sites from the seismic viewpoint. When 1353
9 was actually published, those two sites were replaced with two different
10 sites and those sites, the evaluation of those sites came from
11 NUREG/CR-5176, a Lawrence Livermore report dated 1989. So there are a
12 total of four sites for which there is data available and Tom will go
13 through the seismic aspects of all four of those sites. But the bottom
14 line, is in 1353, the Lawrence Livermore, 1989 vintage data was used.
15 That's where the seismic hazards and fragilities were derived. Going
16 back to the structure from the Brookhaven report, it's a class PRA
17 structure of accident initiating events. Again this is number 16 in the
18 handout which considered accident initiating events probability, the
19 sequence probabilities, and the consequence evaluation, and the
20 combination of those two gives the risk result. I'm going to focus on
21 the first two of those, the initiating event and sequence probabilities.

22 The next table which is very busy, this is slide 17, is
23 table 4.7.1 which is printed verbatim from NUREG 1353. And I'd like to
24 highlight a number of points on this which are amplified on the next
25 four subsequent overheads. First of all, there is a key figure of merit
that is derived -- I'm sorry, lets me back off. Notice in the left-hand
column the particular initiators and sequences that were evaluated as
potential initiators for the draining of the pool, and the subsequent
& possible events. Under the heading of "structural failures" there's
missiles, aircraft crashes and heavy load drops. There are a variety of

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1 other types of failures, seal failures, inadvertent drainage. That
2 might be through some sort of siphoning effect or something like that,
3 and loss of cooling and make-up, and all of those total, in terms of
4 frequency, 1.5 E-7 and either the case of the BWR or the PWR on a best
5 estimate basis.

6 When you look the seismic structural failure, this is the
7 potential failure and draining of the pool from a seismic event, it's
8 1.8 E-6 in the case of the P, and 6.7 E-6 in the case of the B. If you
9 look at the next slide, you see how these values, these numbers are
10 combined in a particular figure of merit for the frequency of a fuel
11 pool accident resulting in spent fuel damage. The first part of the
12 equation gives you the PWR contribution where both 1.5 representing all
13 the other accidents and the seismic 1.8 are added, and then multiplied
14 by the conditional probability that you get in zircaloy reaction given
15 the loss of water. And the case of PWRs, that was evaluated to be
16 guaranteed.

17 In the case of the Bs, it was evaluated to have a
18 probability of $.25$. And then you average the two results to get the
19 frequency of a fuel pool accident resulting in spent fuel pool of 2 E-6 .
20 We'll come back to this in a latter portion of this presentation and
21 also Tom will be explaining how this has been evaluated from the seismic
22 viewpoint.

23 The next overhead, number 19, gives another figure of merit.
24 The seismic contribution to this total initiator frequency, and you can
25 see in both cases it's greater, much greater than 90 percent. Now I'd
like you to go to slide 20, the seismic structure failure frequencies
and come back to the numbers that are from that table, 1353 for the PWR,
the BWR, consider a base case of 1.8 E-6 and 6.7 E-6 . If a seismic
& reduction by a factor of 5 were achieved, the numbers would be reduced
ASS to 3.6 E-7 , 1.3 E-6 . And if it were a factor of 10 improvement, you can
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1 see you were down to 10-7 range.

2 MR. RICHARDS: You're talking to these four sites that
3 we're --

4 MR. ODDO: I'm just talking about if you were to
5 hypothetically reduce the values given in 1353, these are the reductions
6 you would get in the figure -- I'm sorry, in the seismic frequency.

7 MR. RICHARDS: All right, just to make sure I'm with you
8 here, the study, 1353 talked about --

9 MR. ODDO: Four sites, and Tom will go through --

10 MR. RICHARDS: So these numbers were derived from just those
11 four sites.

12 MR. ODDO: Right. If you take -- well, 1353 is actually two
13 sites. It's the two sites with Lawrence Livermore hazards. So if you
14 take those two sites and were to reduce the probability of the seismic
15 hazard, you would get a reduction of these values. And Tom will go into
16 as to why that's appropriate, the basis for achieving that. I just want
17 to show you the effect first.

18 And more importantly, if you go to the more significant
19 figure of merit, if you reduce the seismic initiator frequency, that
20 number alone. What does it do to the frequency of fuel pool accidents
21 resulting from spent fuel damage? It takes the two E-6 value from 1353,
22 and for a factor of 5 improvement, we're down to 9-7, and for a seismic
23 factor of 10 improvement, we're down to 5 E-7. Okay. And the point I'd
24 like to make here is those numbers are an absolute basis, very low, and
25 also they are comparable now to all the other initiators. We've
achieved essentially a flat risk profile where there is no dominant
contributor as there was in the analysis performed ten years ago for
1353. Instead of one sticking up so to speak, instead of one being 90
percent of the contribution, we have essentially a flat profile where
all of them are comparable and no single contributor warrants special

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1 attention, number 1, and none of the contributors warrant attention
2 because they are also, on an absolute basis, low.

3 Now Tom will go through the justification for the reduction
4 of 5 to 10 in the results, and we'll go to slide 25. He will take these
5 two figures of merit, the estimated frequency of fuel pool accident
6 resulting in spent fuel damage of 2 E-6, and the seismic contributions
7 are greater than 90 percent of the total, and he'll focus on those two
8 figures of merit, and with a new evaluation approach, this is slide 26,
9 he'll employ exactly the same methodology and inputs as NUREG 1353,
10 except he will replace the seismic hazards with updated Lawrence
11 Livermore, he'll just replace them, the exact same Lawrence Livermore
12 results with an updated version, a more recent version, and as well,
13 he'll provide with the exact same methodology the new EPRI inputs and
14 demonstrate this factor of 5 to 10 for Lawrence Livermore is justified
15 and beyond a factor of 10. It's justified if you use the EPRI results.

16 And with that, I'll turn it over the Tom to go into some
17 details on the seismic portion.

18 MR. O'HARA: Good afternoon. My name is Tom O'Hara. I also
19 work for Duke Engineering. Sounds like Tom is going to be doing a lot
20 here. As John said, the spent fuel pool failure frequencies are
21 dominated by seismic and NUREG 1353. However, there have been revisions
22 made to the seismic hazard at those sites where previous spent fuel pool
23 failure frequency analyses have been made. And the purpose of my
24 presentation will be to demonstrate the effect of simply changing the
25 hazard on the overall spent fuel pool failure frequency. In other
words, as John said, holding the methodology the same and the
methodology comes from NUREG 5176. That was adopted by 1353. Just hold
that methodology the same and change the seismic hazard inputs and show
you what the delta is, what the change is in spent fuel pool, failure
frequency.

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1 Okay. I see in the overview here, and for the -- I'm going
2 to give a brief review of the Livermore and EPRI seismic hazard studies
3 just to give you a flavor how long those studies have been around. I'm
4 not going to summarize NUREG 4982 nor 5176. Based upon our premeeting,
5 we decided that what was important was number one, to show you the
6 change in the seismic hazard and number 2, the change in the spent fuel
7 pool failure frequencies. However, the slides are in the handout so you
8 can go through them and you can see what I've would have talk about. I
9 do want to raise a couple of points. Number 1, for NUREG 4982, the two
10 plants evaluated were Millstone and Ginna. In NUREG 5176, the two sites
11 evaluated were Robinson and Vermont Yankee. And it is the 5176
12 methodology that I have duplicated, and all I'm doing is changing the
13 seismic hazard. Once I've -- as I say, I'm not going the summarize 4982
14 or 5176. I will present some preliminary results of this evaluation,
15 and again, they're for the four sites I just mentioned, and also, based
16 upon some rules of thumb I sort of gleaned from this analysis, I'm going
17 to project the effect on the population of plants.

18 Let's go with the next slide please. As you can see, the
19 Livermore methodology has been evolving for a long time. 1582, that was
20 used in support of the systematic evaluation program. Millstone and
21 Ginna were part of that. There were ten sites. In 1982, the USGS came
22 forth with their Charleston issue and that precipitated two large scale
23 seismic hazard, shall we say studies or methodologies. The first was --
24 the basic methodology developed by Livermore was first presented in
25 3756. There were also results, interim results for ten sites, Millstone
was one of them, Ginna was not. The EPRI program really started to roll
about 1984, and all of these results were culminated in 1989, for
Livermore was NUREG 5250, and EPRI was 6395.

 Bear in mind that the results that are published in NUREG
1353 for the spent fuel pool failure frequencies at Robinson and Vermont

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1 Yankee are based upon the 1989 Livermore results, the 5250.
2 Subsequently, what I tend to do is refer to those as LLNL 89. At the
3 same time the EPRI results were published, and I'll just refer to those
4 as EPRI. Then in 1993, revised Livermore seismic hazard results were
5 published for the 69 sites, and that's in NUREG 1488 and you'll hear me
6 refer to that as LLNL 93. And I'll be using both the Livermore '93
7 values and the EPRI '89 values and just showing the effects of using
8 both of these sets of hazard curves.

9 Next slide please. Now you're going to have to bear with me
10 here. Let me just say a few things about this curve, this figure.
11 Number one, the lines that connect the symbols have no meaning other
12 than to help me track what's what, hopefully help you too. The results
13 are for PGA at 1 G, based upon my experience, this is where you start to
14 see the seismic contribution to spent fuel pool failure probabilities.
15 What I have there is a thick dashed line, you can see it on your
16 handouts, and they separate the sites. And the first one is Millstone,
17 the second is Ginna, comes Robinson and Vermont Yankee. Within the
18 first bin for Millstone, you see LLNL 89 and again, what you're seeing
19 there is the mean 85th percentile in the median values at 1 G for the
20 Millstone site. The next couple of symbols are Livermore 93.

21 And again, now you see the 85th percentile, the mean in the
22 50th percentile. This shows about a factor of 20 reduction and the
23 uncertainty between the 85th percentile in the median. This becomes
24 significant, especially when using the 5176 methodology because in that
25 methodology, they make an assumption that the probability of exceedance
is distributed lognominally at a given acceleration value, and this
ratio of this 85th percentile to the median, that's -- you can get your
logarithmic standard deviation, so when you generate your family of
& curves, they use 11 hazard curves in NUREG 5176. So this beta, this
logarithmic standard deviation, tends to spread out these hazard curves,

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1 whereas if the uncertainty collapses, in other words, beta gets smaller,
2 then this family of curves collapses also. And as you perform your
3 analysis, this carries through, and this is how you get your reduction
4 going from the Livermore 89 to the Livermore 93 results. You can also
5 see here in this figure that the EPRI results are in reasonable
6 agreement, much better agreement between EPRI and Livermore 93 and EPRI
7 and Livermore 89. In general, that's true across the board. The point
8 being -- I'll raise one point here, which is if you look at Robinson,
9 which is the third bin, there is very little change in the uncertainty,
10 i.e., the 85th percentile to the median, and what you'll find is there's
11 very little change in the spent fuel pool failure frequencies. So the
12 message to learn -- but as it turns out --

13 MR. MEISNER: But it's already low.

14 MR. O'HARA: That's correct. But as it turns out, Robinson
15 is already a relatively low -- has a relatively low spent fuel pool
16 failure frequency. The message from the slide is there's been a
17 significant reduction in the hazard from Livermore 89 to Livermore 93,
18 and it carries through. And this is a generalized statement, it carries
19 through into these spent fuel pool analyses.

20 MR. MEISNER: Can you tell us what's changed over time?

21 MR. O'HARA: I can, but a better person would be Bob Rothman
22 up there or John Savy at Livermore, but I'll tell you what my assessment
23 of it is. And number 1, it is the seismicity parameters. They've come
24 up with more realistic estimates of the seismicity parameters; and
25 number 2, their attenuation model. Their attenuation model has changed,
and that has basically brought down the hazard curve. I think those two
factors contribute most significantly to the reduction between the 89
and 93 results. And again I would talk to John Savy at Livermore
because he performed those analyses.

Any other questions? Let's go to, as I say, in your

1 handouts you've got all this information on the BNL report. We're going
2 to skip those and let's go to slide number 36 please. Excuse me. It's
3 36 in your handouts but it's the next slide up there. This table
4 summarizes the results of the analysis at these four sites, and let me
5 just talk to you through this table. Row A, those are the published
6 numbers, published numbers from NUREG 4982, which is the BNL report, and
7 published numbers from NUREG 5176. Row B, those are the spent fuel pool
8 failure frequencies, if you use the Livermore 1993 hazards. Row C,
9 those are the spent fuel pool failure frequencies if you use the EPRI
10 hazards. And let me go back to row A at this time. To show the change,
11 what you want to do is have results from Millstone and Ginna based upon
12 the 5176 methodology using the Livermore 89 hazard curves. The values
13 in parentheses below the larger numbers in row A from Millstone and
14 Ginna, are those numbers. So now, for row A, 6 times 10⁻⁶, 4 times
15 10⁻⁶, 1.8 times 10⁻⁶, and 6.7 times 10⁻⁶ represent -- this is holding
16 the methodology the same, using the same Livermore 89 hazard curves.
17 Row B shows the effect of using the 1993 Livermore hazard curves.

18 The conclusion from this table is that relative to A, B
19 and -- rows B and C are generally much lower. Robinson basically has no
20 change, and I'll show you why in a moment. But the hazard already is
21 quite low. And lastly, there's much better agreement between Livermore
22 and EPRI as you can see from rows B and C.

23 Next slide please. Remember what I told you is that the
24 family of hazard curves generated in NUREG 5176 is based upon the
25 assumption of a lognominal distribution at each acceleration level.
Important in that generation of the family of curves is the logarithmic
standard deviation. On this figure, I've put beta, which is the
logarithmic standard deviation. And what you can see is that there's a
substantial difference in terms of beta between the Livermore 89 and the
Livermore 93 results. And if you went back to the table, you'll see

1 that there was a significant reduction in the overall spent fuel pool
2 failure probabilities. Similarly, one sees as the beta for Ginna is 4.5
3 for '89 and 2.4 for '93. And let me just say one more time, the beta is
4 the natural log of the log of the ratio of the 85th percentile to the
5 50th percentile. And so let's go to the next slide please. Here we
6 have Robinson and Vermont Yankee, and what you find is that the beta is
7 about the same. The --

8 MR. RICHARDS: Which number slide are you on?

9 MR. O'HARA: 37.

10 MR. RICHARDS: All right.

11 MR. O'HARA: Robinson and Vermont Yankee. In fact,
12 Robinson, what you'll find is that the beta is about the same. Very
13 little change, and the medians are about the same. For Vermont Yankee
14 where we saw a large reduction in the overall spent fuel pool failure
15 frequencies, again, we go from a large beta to a small beta. And what
16 I've done is -- I would call this somewhat of a rule of thumb if you're
17 trying to figure out what kind of reductions you're going to see at the
18 rest of the plants is you can pretty quickly compare what the betas
19 basically between the '89 results and the '93 results and get a handle
20 on what, in terms of projecting, what the reductions would be at the
21 population of sites.

22 I want to make one more point is that one thing you'll find
23 is that there's reasonable agreement now between the Livermore and EPRI
24 results as compared to what it was in '89. Let's go to the last slide
25 of conclusions, please.

The conclusions of this preliminary analysis that number
one, we should be applying these current seismic hazard curves, and it's
appropriate to do that. Number two, based upon my review, most plants
are projected to see a reduction in the spent fuel pool failure
frequency by between about a factor of 5 to 10 when using the current

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1 1993 Livermore results, and greater than a factor of 10 when using the
2 EPRI results. For the four plants that we analyzed, the spent fuel pool
3 failure frequency was on the order of 10⁻⁶ when the 1997 -- excuse me,
4 1993 Livermore results were applied, and on the order of 10⁻⁷ when the
5 EPRI were applied. This is a significant reduction to what it was in
6 the past and again, this is just simply showing the effect of the
7 seismic hazard. These are the current seismic hazard results.

8 And that's the end of my presentation.

9 MR. RUBIN: Before you go on, this is Mark Rubin from the
10 NRR PSA group. You revisited, reexamined the '89 Brookhaven seismic
11 hazard analysis to recast the --

12 MR. O'HARA: That was the '87 Brookhaven. Is that what
13 you're talking about?

14 MR. RUBIN: Wasn't it the '89 study?

15 MR. O'HARA: The '89 was the Livermore and '87 was -- and
16 should have been -- '87 should be the Brookhaven study.

17 MR. RUBIN: 4982?

18 MR. O'HARA: That's correct.

19 MR. RUBIN: Okay. Thank you. I was wondering if you read
20 this, the other potential scenarios that could result in zirc fire loss
21 of force cooling, loss of off site power, inadvertent draindown, other
22 potential errors, especially in light of system differences, human
23 performance differences that might be applicable in a decommissioning
24 facility.

25 MR. O'HARA: Well, the answer is that I focused specifically
on the seismic because it was such a dominant contributor to the overall
spent fuel pool failure frequency. I believe that we're open to any
suggestions.

MR. MEISNER: Yeah. Mark, one of the reasons we didn't, and
you don't really ever come home till you come out to see these plants,

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1 is that there's very little opportunity, for instance, for human error.
2 These aren't active operated systems that we have out there. We don't
3 open and shut valves. In fact, we, more often than not, weld them shut.
4 There's virtually no moving parts except for some minor cooling system
5 parts, and it's almost an entirely passive system. So the kind of
6 events that you see, and if you'd all turn to back to page 17, table
7 4.7.1, we think those events were pretty well analyzed. We -- I know,
8 for instance at Maine Yankee, the notion of a pneumatic seal failure is
9 not even an issue, and the idea of inadvertent drainage, we've looked at
10 both from a human factors point of view and a mechanical failure point
11 of view how that occurs, and you really couldn't get it in these kinds
12 of systems that we're left with in decommissioning.

13 So those we felt were all appropriate numbers. And I guess
14 to segue from Tom's discussion, if you look at the sum of all those
15 lesser contributors here in the order of 10^{-7} , that's where we think we
16 are, at least now with updating to the more modern seismic hazard
17 curves, and that's what John was referring to when he said we're really
18 getting to a flat risk profile here. And something, that if you will go
19 back to one of my early overheads that's on page 5 where I propose this
20 risk informed decision-making framework, when you bounce it against the
21 beyond design basis portion of that chart, we're getting into
22 probabilities less than 10^{-6} , and in some cases, well less than 10^{-6} .

23 So I think as I said earlier, you may find this a useful
24 string to pull here, apply it to your calculations, and I think we'll
25 end up with some pretty positive results. That does leave us, though,
with the left hand side of this chart and those items within the license
basis, and if we now move ahead before --

MR. HANNON: Before you go on to the license basis issues, a
couple of questions on understanding the presentation so far, there
seems to be a presumption of spent fuel pool failure above 1 G

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1 acceleration. Is that the deterministic estimate or is there any basis
2 in -- technical basis for that?

3 MR. O'HARA: In NUREG 5176? That's this report here. This
4 was adopted in 1353, and in here, you look in my slides, that there was
5 an explicit evaluation of spent fuel pool failure of the fragilities
6 plus spent fuel pool failures. And the median fragility for a BWR was I
7 think 1.4 G, and the median fragility for a PBR was 2.0 G. Now in the
8 methodology, I can sort of keep track of when the hazards are starting
9 to kick in, and based upon my experience -- what I've seen is that it's
10 around 1 G. You start to see a bit of a contribution to these spent
11 fuel pool failure frequencies.

12 MR. HANNON: Now if you accept these new fragilities, our
13 seismic hazard curves, and you essentially levelize the risk, what is
14 the resulting contribution to the -- from the seismic initiator once you
15 levelized it? It was the 90 percent range, now does it go down to 10
16 percent or lower or do you have a feel for that?

17 MR. MEISNER: I think just eyeballing the figures on table
18 4.7.1, we're down in the 50 percent range approximately where the --

19 MR. O'HARA: It depends on the plant, you know.

20 MR. MEISNER: In general.

21 MR. O'HARA: It isn't 90 percent, okay? It's a lot less.

22 MR. RUBIN: Before you go on, Mike, a quick question. Do
23 you plan to document your technical evaluation vis a vis the reduced
24 seismic impacts when you complete the study with complete technical
25 report versus --

MR. MEISNER: Sure. And that's one of the things we need to
talk about, and I hope this isn't the only time we sit down and talk to
the staff team working on this. I hope we can use this as just the
first meeting to get together and share data. Whatever the appropriate
form is you're interested in, we give it to you informally, formal

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1 reports, something in between or discuss it back and forth, but I hope
2 we keep talking about it.

3 MS. HENDRICKS: To state it a different way too, it's almost
4 like we like some assurance if we go forward and do the study, that kind
5 of an RAI sort of thing that you do agree on on the methodology, so that
6 what you get -- what you ask for and what we give you is what you really
7 want. So if it need be, we might even want to formalize that
8 interaction a little so that after we do the report, there's not
9 necessarily another round of RAIs that would come in and cause us to
10 redo it.

11 MR. RICHARDS: Mr. Meisner, I'm trying to play catchup here,
12 having come kind of late to the issue, but if this data was available in
13 '93, are there plans to have used this study in the last five or six
14 years as part of their exemption request that, you know, try and get
15 exemptions from DP requirements?

16 MR. O'HARA: Well, if it's been around for that long,
17 somebody would have come forward and say hey, here it is.

18 MR. MEISNER: Yeah, I think at least a couple of plants have
19 thought about it, but if you go back and consider what the staff
20 position has been, it's that we don't consider probabilities. That's
21 what's new about this meeting today. Staff position has always been you
22 have to calculate that point in time beyond which a zirc fire event
23 can't possibly happen.

24 Now I think also in the Trojan docket, if you go back some
25 years, I think Trojan was successful in convincing the staff that the
likelihood of a seismic event that could lead to catastrophic drainage
was acceptably low, but I think they were the last plant that the staff
accepted that.

MR. RICHARDS: We'll look into that some more, but going
back and reading the paper that addresses the zirc fire, the Commission,

1 you know, I think the key point was that the probability listed in that
2 paper which granted it was not necessarily site specific to all plants
3 in the country, but they came up with the 2 times 10-6 number and said,
4 based on that number, we need to consider it, and the Commission said
5 well, we'll do that, and in the interim go forward and study the issue
6 more.

7 So saying that the criteria can't possibly happen, and I'll
8 go back and talk within the staff, but I don't think that's been our
9 criteria. I don't know, I'm learning.

10 MR. MEISNER: Well, I don't want to argue about it, but it
11 has clearly been that you have to demonstrate when a zirc fire can
12 happen. Once you're at that point, you get your exemptions, and there
13 have been several licensees like that recently.

14 MR. RICHARDS: Other questions?

15 MR. BAGCHI: This is Goutam Bagchi from the staff. We
16 understand where Duke Engineering is coming from. But I want to point
17 out that the numbers that they have used are based on best estimate and
18 median values, that's not what we base the numbers on. Big difference.

19 MR. RICHARDS: Goutam --

20 MR. MEISNER: I think we're just trying to be consistent
21 with the analyses.

22 MR. O'HARA: Let me explain this one, Mike. The BNL study
23 which we did not model used best estimates, et cetera. The NUREG 5176
24 methodology which we did model, which was adopted by 1353, based their
25 family of curves on data provided by Livermore, it was the 5th, 15th,
50th, 85th and 95th fractile, and then they made the assumption of a
lognominal distribution. And then they generated their family of
curves. That's how they did it. They did not use best estimates.

MR. BAGCHI: We fully understand what you did.
Nevertheless, you go back to NUREG 5176, you're going to find equal

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1 values used for fragility, and that gives you instead of 1.4 G and 2 G,
2 .5 G and .65 G. That's what the fragility is. And with respect to the
3 hazard itself, you have used a very large value of 1 G because that has
4 suited your numbers that you had used, which was the median value. And
5 then when you go down to levels 4 and 5, .65 G, then the differences are
6 going to be less remarkable. I do believe that there is some room for
7 reassessing what was done and is going to give us a slightly different
8 perspective, but it's not going to make it go away for all sites, based
9 on my limited review so far.

10 MR. O'HARA: Let me just counter what Goutam just said.
11 Number one, a HCLPF and a fragility aren't the same thing. HCLPF is a
12 high confidence, low probability of failure. Fragility curves, they are
13 generated in this report, 5176. Will there be some plants that are
14 relatively high? I think so. Maybe one, maybe two. But in general,
15 the population of plants will be -- they will look quite favorable using
16 this methodology. I'm not trying to develop any new methodology. I'm
17 only using what was accepted. Using that methodology, you'll get
18 reasonable results.

19 MR. MEISNER: Let me add, too, this is an interesting
20 discussion. It raises what I think is going to be the key challenge in
21 this effort going forward. There are any number of ways to maintain a
22 zero risk mindset. It doesn't have to be the final number. It didn't
23 have to be that the event can't happen. You can do that by manipulating
24 any single parameter putting it as far out as you can and skewing the
25 results as a result. The challenge is, I think, is to come up with some
reasonable best estimate approach that kind of sits in the middle of the
pack. I know that's what we do in PRA, right, Mark? Best estimate is
the catchword. We're talking about beyond design basis events here.
& We're not talking within the license basis. We're not talking within
OCI the seismic license basis. So we can take a single parameter and make
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1 this come out all wrong or we can, right from the beginning, agree on an
2 approach that serves everybody well.

3 MR. RUBIN: In that vein, Mike, let me point out that a risk
4 informed approach would certainly consider a somewhat wider range of
5 initiator's vulnerabilities. Your point of simpler systems is very
6 germane, of course. But that's not to say it still isn't warranted to
7 have a more structured, complete assessment to assure yourself that
8 you've identified, in your case, you still believe seismic is the
9 dominant contributor to pool draining and possible zirc fire. But
10 indeed, there is potential for wider range of initiators that would have
11 to, for completeness, be carefully assessed and risk informed approach.

12 MR. MEISNER: I completely agree. We just chose to focus on
13 the one that has been the center of focus for some time now. But of
14 course we have to convince ourselves that the others are acceptably low
15 as well.

16 MR. RICHARDS: Make sure I understand though, you're
17 pointing to our numbers. These are our numbers that you're pointing at,
18 so.

19 MS. JACKSON: Can I clarify something? Something that would
20 help us, instead of building on existing information to update it with
21 new information is a good thing. There are large uncertainties in past
22 reports. If we have new information that can say let's narrow our
23 uncertainties, what else do we know in the last 10, 15 years since your
24 report was done? Those are all good things. We also have to go back to
25 look at those reports and say so they apply to decommissioning reactors.
Those reports we're looking at, operating reactors and what they have
available to them. And decommissioning space, we might not have
everything that's available that was when they were operating and I'll
just make two examples.

Earlier in your presentation you looked at NUREG 1353 and

1 you gave two of the conclusions. One was the back fit criteria, it
2 worked. It said you cannot have add systems because it's not cost
3 beneficial. And you said that applies today. Well, it would. If we
4 did that analysis to say should we add systems, the answer would be no.
5 We're not looking to add systems. We're saying should we refuse EP,
6 that's a different question. This conclusion still applies but we're
7 asking a slightly different question now. So we want to make sure we
8 answer that question.

9 MR. MEISNER: Can I turn that around a bit though? If
10 you're going to take solely the view that we're going to compare this as
11 a plant relief against what was --

12 MS. JACKSON: No. We want to look at --

13 MR. MEISNER: What's the appropriate level of emergency
14 planning given the condition the plant is in? Evaluate it that way and
15 then determine how out of balance we are and use these criteria that we
16 suggested to determine how much should be spent to get us back in
17 balance.

18 MS. JACKSON: I understand the point, but this is -- I
19 understand. One other point was you were looking at the seismic
20 frequencies and they were in the reports, the old Brookhaven or the
21 original Brookhaven report, they made assumptions -- they used what was
22 current for operating reactors at the time. What was their operating
23 cycle, what was their burn-up levels, what were their storage
24 configurations? And those things have changed from then till now. We
25 need to make sure we're looking at what our plants -- what are their
configurations going into decommissioning today, and do we need to
update those reports or can we even use those reports, the values of
them, or do we need to change some of the numbers in there to make them
more realistic for today.

MR. MEISNER: Okay. I think you'll find that's real

1 responsive if there's some information you need like that, just let us
2 know, we've got all the decommissioning plants on the working group.
3 Which reminds me, I was remiss in not introducing Art Rone. Art is a
4 key member of the group and he's the vice president for engineering for
5 GPU.

6 MR. RICHARDS: Is there any other questions on the seismic
7 portion of the presentation before we move on?

8 MR. MEISNER: Could I go to my next overhead then?

9 MR. RICHARDS: Hang on for a second. We have a question and
10 answer session for the public after their presentations is complete.
11 Can we wait until then? All right. What slide number are we on?

12 MR. MEISNER: Number 40. I don't expect anybody to buy in
13 wholeheartedly what we just presented to you, but I'd ask you for the
14 moment to suspend any disbelief that you have. Consider that maybe zirc
15 fire isn't the answer and ask yourself if it's not zirc fire, what do we
16 use to determine what the regulatory framework should be? I have no
17 idea if this is the answer, but I think it's a fruitful approach and
18 it's something that's already based and precedent with the regulators.
19 Let me explain it. I think what you do now is you go back to the
20 license basis analyses.

21 If I look at, for instance, a fuel handling accident, and
22 I'll use Maine Yankee numbers. When the plant was operating fuel
23 handling -- off site dose -- accident off site dose consequences were
24 about 17-some rem. Clearly we didn't meet the EPA, PAG, of 1 rem. Nor
25 would we have met that after we have shut down to go into
decommissioning. It's going to take some finite period of time before
we can drop below that, just base for a fuel handling act in itself.

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And of course, what drives that event or the offset consequences of that
event is iodine, half life of seven, eight days, so that over a
reasonable period of time, say in the order of 60 days, you get a great

1 reduction in your dose consequences. And it's easy to calculate where
2 that point is after your shutdown and offloaded the fuel. Now I point
3 out that this approach is already being used. Maine Yankee, when it was
4 operating, had a fuel building ventilation textback that allowed us
5 after 60 days, to not require fuel building ventilation. In other
6 words, we can open up the fuel building because the off site dose
7 consequences of the fuel handling accident had dropped below an
8 acceptable level, somewhere below one rem.

9 I can tell you similarly there are some plants and I don't
10 know how many. I can tell you for sure, Maine Yankee and Grand Gulf
11 where I used to be who have, in their security plan, the ability to
12 devitalize their spent fuel pool area after 60 days. And it follows a
13 similar line of reasoning that after a certain period, the types of
14 events you can have, in this case, security related, will all have off
15 site dose consequences less than some value.

16 Now in this case, I don't think it's the one rem. Maybe
17 somebody can help me, but I thought the security criteria was less than
18 part 100 limits. But the thought process is I think what's important
19 here, that you got actual things within the license basis that prevent
20 you from being able to get rid of things willy nilly right after your
21 shutdown. There are still a license and design basis process you have
22 to go through to determine when you could get relief from various areas.
23 And I'd suggest that as maybe a reasonable starting point to think about
24 because clearly these are credible events within our design basis that
25 we have to be concerned with.

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Next overhead, please. It's not just emergency planning.
It's a wide range of things in part 50 that would be worthwhile risk
informing. I wanted to give a few thoughts in a couple of different
areas. Talk about insurance. I think as Ray Shadis said, boy, why
don't we get the insurance industry in here. If there's anything that's

1 risk informed, it's insurance, and the idea that we can drop from an
2 operating plant total risk core damage frequency of 10⁻⁴ to 10⁻⁵ down
3 into the 10⁻⁷ range in decommissioning with no concomitant reduction in
4 insurance just doesn't make sense, and I think we really need to
5 recognize the two to three order of magnitude reduction in risk here and
6 take that into account in insurance rather than dropping back again to
7 the zirc fire impossibilities in our area.

8 Security, I think, is going to be a little more problematic,
9 and I wonder if sometime we can't have a session that may be, by
10 necessity, would have to get into safeguards information. But I know
11 there's a straightforward way to evaluate security risks, and the one
12 thing I think is clear is it's somewhat of a function of your fuel pool
13 location. If you got a pool imbedded in bedrock below grade level like
14 we have at Maine Yankee, it's an entirely a different proposition than
15 one that's up in the air and has more exposure for drainage from a
16 security event.

17 In that case you may need to add some additional
18 requirements or controls for a water make-up capability and the like.
19 But we can work through all those things and I think they're tractable.
20 We can get arms around them and truly risk inform them.

21 MR. RICHARDS: Is all your fuel below grade then?

22 MR. MEISNER: Yes. Now that's not the case with everybody.

23 MR. RICHARDS: Right. I understand.

24 MR. MEISNER: Which makes it okay, by the way, to drive a
25 vehicle right up to your spent fuel walls which, while we remove the
vehicle barriers, the old ones, what we did was relocate them to the
fuel wall based on analysis. So we have vehicle barriers there.

They're just something different than they were in the past.

Page 42. There are areas to risk inform like emergency
planing and security and the like, and I think we all know too there are

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1 cleanup areas. It sure would be nice to do those all at once. They
2 really don't involve much of a risk informing nature to it, but take,
3 for instance, station blackout. You know, it's still up in the air, the
4 relationship of station blackout to decommissioning plants. I know I've
5 got an outstanding submittal. That should be fairly straightforward on
6 a deterministic basis to walk through and say yes, that shouldn't be
7 applicable to decommissioning plants. Let's say I had a sentence in
8 there when we put this rulemaking package together.

9 In that spirit, we've attached to your handout about what,
10 three to four pages of areas in the regulations, some which we kind of
11 point to as risk informing and some which we point to as might be
12 helpful to clean up. I think that's to everybody's advantage, and while
13 the notes may be cryptic, we'd be happy to follow up with you in many of
14 these areas and at least give you our point of view of what would be a
15 reasonable change.

16 So I'd like to finish with page 43. I think risk informing
17 part 50 as does the NEI working group is very achievable, and it's not
18 only achievable, but it's straightforward. When we really talk risk, we
19 circle around the zirc fire. If we can resolve that, then we have
20 resolved most of the risk issues associated with decommissioning, and we
21 really have the opportunity here to lead the way, and maybe serve as a
22 guide or a template for operating facilities. It's the sincere wish of
23 the working group that the staff not do this in a vacuum. Let us
24 participate the next two months. Let's kick ideas back and forth, and I
25 think that a good target is to have a consensus, decommissioning
rulemaking package to present to the Commission in June. Thank you.

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MR. RICHARDS: I appreciate your comments. To make sure I
understood, at this point, NEI doesn't intend to submit anything to us,
but you're open to that.

MR. MEISNER: Let's talk, however you want to do it, yeah.

1 MR. RICHARDS: So you're open to that kind of discussion?

2 MR. MEISNER: Sure.

3 MS. ORDAZ: What is the time frame for your working group
4 effort?

5 MR. MEISNER: Well, if you think it's useful, then we'll go
6 ahead and finish it. We think it's promising. We'd like some feedback.
7 I don't want -- or none of us want to kick off a major study and then
8 find that it's not used or useful.

9 MS. HENDRICKS: Yeah, I want to go back to my earlier
10 comment that it's very doable and we can meet any time frame to complete
11 the work, but we don't want to do it, then have people look at it and
12 say what about this and that. So if we -- we'd like some sort of a
13 sense that there's consensus among the staff on the methodology and what
14 it means and what we're going for before we embark on that effort to
15 finish it.

16 MR. RICHARDS: Other questions? No. That's it.

17 MR. DUDLEY: Okay. Now we'll get into at least a 15 minute
18 period of questions from anyone who has questions of any eye on this
19 presentation. If you would, please go to the podium. Go ahead, Paul,
20 and state your name for the transcriber.

21 MR. GUNTER: Yes, this is Paul Gunter, Nuclear Information
22 Resource Service. I guess I'd like to direct my questions to the
23 seismological review for this risk informed process. And first of all,
24 did any of the NUREGs that you look at take into account new information
25 coming out of the Cobay and Northfield events? I think that what we
need to be concerned with is dated information. Particularly as we are
learning more about risks associated with those two particular
seismological events that were never even considered when plants were
cited, particularly though I can't frame it in the seismological
language, from a lay understanding, it's clear that new information was

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1 gained out of the Cobay and Northfield events suggesting that you can
2 have seismological effects of greater consequence farther afield than at
3 the epicenter of the event.

4 And I know that NRC did some studies with regard to the
5 Cobay events, and certainly that study should be folded into any review
6 that NRC's going with regard to risk informing this process. I'm
7 particularly troubled though, that NEI asks the staff for guarantees
8 before they enter into the process. It's, you know -- and that part of
9 what we didn't go over in terms of the re-evaluating NEI submitting
10 comments from October 18th, 1995, appears to me to be that NEI intends
11 to try to eliminate public participation altogether in the process, and
12 you know, we would strenuously object to that.

13 MR. MEISNER: I'd like to respond to that. At least the
14 last part. I don't think NEI's trying to eliminate public participation
15 at all. In fact, I think NEI's trying to foster it. It was our
16 suggestion, I believe, that has you here today.

17 MR. GUNTER: Perhaps you could suggest to me, explain to me,
18 on slide 47, what's intended there by -- with regard to public
19 participation as exchange of information only. Just -- maybe I'm
20 jumping to conclusions here, but my previous experience suggest that is
21 this is what we're going the encounter. Do you see what I'm referencing
22 in number 3?

23 MR. MEISNER: Uh-huh.

24 MR. GUNTER: Okay. Just explain that to me.

25 MR. MEISNER: I don't know the citation off the top of my
head. Do you know what it is, Lynette? 82-A-42?

MS. HENDRICKS: Unfortunately it's a -- somewhat of a
mischaracterization. NEI supported the rule in the sense that the NRC
went the way they did which was to have a public meeting 90 days after
the PSDAR was held and to have a public meeting. I mean the concept of

1 the adjudicatory hearing didn't seem appropriate because essentially, to
2 some extent, you're doing the same types of things you were doing when
3 you were operating. So the hearing and the opportunity for the public
4 to come in and comment on the basic approach to decommissioning and a
5 hold on major activities that would lead to an approach being
6 irreversible, if you will, but we believe to be appropriate.

7 MR. RICHARDS: Mr. Gunter, if I could just comment for the
8 NRC. We intend to have all the meetings that we have on all these
9 issues to be public. Our chairman has told us to make sure that our
10 stakeholders are well informed about what's going on, and we intend to
11 do that. We even intend to make this a very public and open process.
12 And of course, anything that NEI or any other interested parties submits
13 to the NRC is going to be available through the normal process.

14 MR. GUNTER: I understand, but just in closing, I'm sure you
15 can understand our concern. When we start talking money on
16 decommissioning, that in terms of the -- from our perception, we have to
17 deal in terms of that this is going to be an adversarial process on a
18 scrimmage line over economic savings to guaranteeing public -- adequate
19 public safety margins. And that's a scrimmage line that we believe is
20 only defended through the process of cross-examination and discovery.
21 And to eliminate that from the field of play, is to weight the whole
22 process to the economic advantage of the industry and we don't believe
23 that that's your mandate as an agency for protecting public health and
24 safety.

25 MR. RICHARDS: Thank you for the comments. Appreciate it.

MR. HANNON: Stu, let me comment on NEI's request and how we
carry on from this point on the process. I think we would be certainly
interested in taking your proposal under consideration along with the
comments we've gotten from the public, and hopefully we can -- it's a
little bit different way of looking at it than we have contemplated.

1 Certainly we would want a chance to have digest it and then get back
2 with you, and perhaps we'll need to schedule another meeting as we move
3 forward, if we want to approach this alternative.

4 MR. RICHARDS: Mr. Blanch.

5 MR. BLANCH: Thank you. Again, my name is Paul Blanch.
6 Just a few comments. I'm in full agreement that the risk associated
7 with decommissioning and long term storage of spent fuel is
8 significantly reduced over that of an operating plant. Some of the
9 things that bothered me in the presentation are NUREG 1353. I've made
10 comments to the staff about some of the shortcomings of NUREG 1353. For
11 instance, 1353 is not the absolute worse worst case. It only considers
12 90 days after core offload, and the property damage estimates are
13 underestimated by many orders of magnitude.

14 Another document that for some reason wasn't mentioned by
15 this group is another NUREG that was discussed and is NUREG 6451,
16 Federal Safety and Regulatory Assessment of Generic Shutdown Nuclear
17 Power Plants. Brookhaven report, 1997, wasn't mentioned. This has some
18 good information in it, I think needs to be considered also. Again,
19 concentration on sabotage as the primary initiating, or seismic as the
20 primary initiating event, I didn't hear any consideration with respect
21 to sabotage either for wet storage or for dry storage. And as I stated
22 before, I believe that part 72, everyone will be going to the part 72
23 license eventually, whether they go wet storage or dry storage. And a
24 lot of these questions that are coming up this afternoon could be
25 answered in the application for a part 72 license which does require a
safety analysis report, and at that time, the staff should consider
those particular questions related to risk. Thank you.

MR. RICHARDS: Thank you. Mr. Shadis.

MR. SHADIS: Thank you, Raymond Shadis. I heard an
exchange, a question and answer. Question is, is the fuel at Maine

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1 Yankee below grade? Answer, yes. And I wonder when you ask a question
2 like that, and take the answer, are you considering the fact that the
3 fuel transfer tube is below the level of the top of the fuel itself and
4 that the spent fuel pool shares a long wall with the primary auxiliary
5 building basement? And in fact, that wall is not backfilled with rock
6 or bedrock or earth or anything else, but is simply a naked wall sharing
7 that primary auxiliary building basement space and at the elevation --
8 there is about 11 foot, so you would be getting down to the top of the
9 fuel if you had to drain down into that space?

10 MR. RICHARDS: I think those are good observations.

11 MR. SHADIS: What I'm saying, sir, is that it pains us,
12 public members, not to hear a full answer when it comes to the question
13 is your fuel below grade. Yes, the fuel is below grade on three sides,
14 but where is grade if you're talking about one wall being shared with
15 the primary auxiliary building basement? So I think those things need
16 to be brought forward. In addition, in reviewing the seismic
17 vulnerability or fragility of this structure, if it's not considered,
18 then we really need to consider that solitary wall shared with the
19 primary auxiliary building basement. We also need to consider the
20 dislocation in a seismic event of the spent fuel transfer tunnel itself,
21 and I just would like to offer those observations.

22 MR. RICHARDS: Thank you.

23 MR. DUDLEY: Are there any more questions? Yes. Please go
24 to the podium and give us your name.

25 MR. LOCHBAUM: I'm David Lochbaum with the Union of
Concerned Scientists. I heard some things today that were troubling.
Particularly the selected look at seismic events. Mr. Rubin pointed out
there are increased possibilities of other accidents that weren't
considered. There's a NUREG, I forgot the number. I think it's 1421,
but I don't remember the exact number. It showed the chances of a

1 potential draindown is 20 -- a factor of 20 higher than was previously
2 considered. The seismic numbers that were considered were shown a
3 reduction of 5 to 10, a factor of 5 or 10. So these other events which
4 were more recently discovered to increase by a larger factor has been
5 conveniently not included in this study. It's this kind of selective
6 use of numbers or magic -- mathematical magic that we are very skeptical
7 about.

8 And I guess the question, a long-winded way to get a
9 question into the question session was what is the staff's plans on
10 public comment period for any risk informed regulation in the
11 decommissioning area? I guess the concern is that it not be an
12 expedited process in public comment period, abbreviated or discontinue
13 in order to meet some schedule. Are there any plans for expedited
14 rulemaking or --

15 MR. RICHARDS: I can't give you an answer to that right now.
16 The state of the purpose of this meeting is to sit down and try and get
17 any insights from the public or from the industry as far as additional
18 information on considering risk associated with shutdown plants. So
19 where we're going down the road, I can't tell you. We need to get an
20 answer out of our technical group and an answer out of the people who
21 are looking at the way the regulations are packaged. And we'll probably
22 be going back to the Commission and tell them how we want to proceed.

23 MR. LOCHBAUM: Just insights, if you go to expedited
24 rulemaking or exclude public comment, that won't build public
25 confidence. Those are not complementary, so just an advice.

 MR. RICHARDS: I appreciate your comments. Thank you.

 MR. DUDLEY: Other questions?

 MR. ATHERTON: Good afternoon, gentlemen. My name is Peter
& James Atherton, and I'm speaking as a member of the public. I have
several points I'd like to make, the first of which I like to take off

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1 where Mr. Gunter left off concerning public participation. I used to
2 work for Nuclear Regulatory Commission in the 1970s, and I raised some
3 issues then, safety issues in the fire protection arena which were never
4 addressed then. And 20 years later they haven't been fully addressed
5 either. As a result of that experience, and after the issues which
6 actually were involved in Maine Yankee Nuclear Power Plant, after the
7 issue surfaced several years ago, and the issues were voluntarily made
8 into allegation review process at NRC, I personally offered to both Jean
9 Lee and Mr. Zwolinski to participate in the resolution of these issues
10 since I raised them 20 years ago.

11 I was denied that opportunity. So with regard to public
12 participation, I did not like the treatment I received then, and I did
13 not like the way the issues were written off later. I haven't had the
14 opportunity to delve in to the response -- to respond to that response
15 yet, but I wanted to raise the concern that public participation appears
16 to be more in line with suppression than evolving into a change of
17 permitting it to happen.

18 With regard to the spent fuel pool issues, I'd like to ask a
19 couple of questions on -- I missed the first few minutes of the program
20 so some of these might have been answered. With regard to the zircaloy
21 fire, could somebody explain to me how that fire would initiate as a
22 result of a seismic event?

23 MR. RICHARDS: Just briefly, and I think it's contained in
24 some of literature which we can make available to you. But you're
25 assumed to drain the spent fuel pool so there's no water cooling. And
then if the fuel has enough heat in it, over a period of time it heats
up to the point at which the so called zircaloy fire occurs. So you
pretty much have to get to a situation which there is no water in the
pool. And the fuel is fresh enough out of the core that it can reach
those temperatures.

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1 MR. ATHERTON: Is any consideration being given to what
2 holds the fuel rods, the clusters together in the spent fuel pool and
3 the possibility of damage to those mechanisms in such a way that there
4 would be an initiating criticality event? And what would happen as a
5 result of that in the perspective of the spent fuel pool.

6 MR. RICHARDS: I can't really answer that question and part
7 of premise of this meeting is that we are in the receive mode to try and
8 get input as far as information to better our studies in those areas.
9 So --

10 MR. ATHERTON: Are we talking about positive activity
11 coefficient, worst case, ultimately an explosion if the activity --

12 MR. RICHARDS: I haven't read anything in any of the
13 literature that indicates that that's going to happen.

14 MR. ATHERTON: I realize that the fuel rods have been used
15 up, and that's why I'm asking this question because I don't know the
16 answer, but I do know there are spacing. You have water in between them
17 as a moderator. And in some cases, to have more spacing, you put some
18 sort of a neutron absorber in there, and I'm curious as to what happens
19 if there should be a degradation into a failure in this area and whether
20 or not the zirc fire is really the only event that should be considered
21 in this scenario as opposed to the possibility that fuel rods could get
22 unacceptably close to one another if that's a possibility.

23 MR. MEISNER: That's a standard part of the license basis
24 for all plants, whether they're in decommissioning or operating, is to
25 have analyses reviewed and approved by the commission that licenses your
racks, the offset distance, the poison material and everything else
meeting very stringent criteria and criticality.

MR. RICHARDS: We appreciate the question. I was just
pointed out that if you drain this spent fuel pool, now you no longer
have a moderator. But you know, I'm not prepared to answer your

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1 question right now. I don't remember reading about that potential in
2 the literature. But why don't we just take it on the record.

3 MR. ATHERTON: I don't either, that's why I'm asking the
4 question. It has not been addressed essentially to my knowledge, but I
5 haven't read everything either.

6 Continuing, I'm somewhat awed by the ability to go to
7 consider a seismic event and increase the probability that you're not
8 going to have a seismic event of a magnitude which has been undefined so
9 far that would cause a problem with the spent fuel pool. Generally
10 speaking as -- in our world, as things age, they don't become better as
11 they age, they deteriorate and become worse; they degrade; they fail;
12 and the ability to cause a failure as they age with less force than when
13 they were new becomes a concern, at least to me. And I don't see
14 anybody taking into account aging factors in development of any seismic
15 criteria, whether or not rather than increase the magnitude of the
16 seismic safety margin, you should be decreasing it because of the aging
17 factor.

18 For instance, I happen to know that there's one spent fuel
19 pool, at least in this country, which is leaking. That's not a good
20 sign to me from a safety perspective working as a consulting safety
21 engineer when you want to use that spent fuel pool to store spent fuel
22 rods. And I don't see this coming into play, and I'm curious as to how
23 this is being accounted for in the math that's taking place, and how
24 this is going to be accounted for through the risk informed process.
25 This is spent fuel pool integrity not being what it was originally
designed to be. We're talking about criticality problems between the
fuel rods themselves, we're talking about what would cause a zirc fire,
I presume when you say "fire," you mean something that burns rather than
& explodes. It's a relative process here. You know, explosion is
essentially rapid oxidation. A fire, in layman's terms is a slower

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1 oxidation process. Nowhere has anybody attempted in your presentation
2 to design -- define what failure is. What is failure as opposed to
3 degradation?

4 MR. RICHARDS: Mr. Atherton, let me go back. I know you
5 weren't here at the beginning of the meeting, but the stated purpose of
6 the meeting was to try and get input as far as questions or observations
7 or point of studies from the public and the industry for which we can go
8 back with our study group and take a look at what we know about the
9 decommissioning process, the risks involved. Your making statements
10 that we're not answering these questions, we're not here to answer the
11 questions today. We appreciate your comments. These are areas we should
12 make sure are considered. I want to make sure you understand that we're
13 not here today to answer all these questions. We're here to try to
14 determine what the list of questions are.

15 MR. ATHERTON: I appreciate that. I was wondering
16 eventually is there going to be an answer to these questions? For
17 instance, I've been to at least two public meetings within the last six
18 months or so, public hearings and meetings. And I've made comments in
19 both meetings. In one case I was sent the transcript and in the other
20 case they didn't send me a transcript of what was said.

21 However, what I said in those meetings and I continued at
22 every forum I've had the opportunity to do so at, to raise these same
23 issues in a different perspective perhaps, until I get an answer, and I
24 was wondering how are these concerns that I'm raising going to be
25 answered one way or another?

MR. RICHARDS: Well, our intent from today's session was to
go through the comments that were made from various participants. You
might note that it's being transcribed, and captured the issues that
were brought up and then consider them internally. We're still in the
information gathering mode. I don't know what our product is going to

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1 look like in the end. But one of the purposes of having basically the
2 public here and the industry is to try and get it on the table so we
3 appreciate your observations and your questions. Again, I don't think I
4 can answer it today. One thing that we did hear from a number of the
5 speakers was the importance of the NRC considering comments from the
6 public and trying to provide a timely response. I heard that and --

7 MR. ATHERTON: It's one thing to listen with a deaf ear, so
8 to speak, and another thing to listen here and respond properly. I'm
9 not seeing that second aspect.

10 MR. RICHARDS: Well, are you asking me to respond to your
11 questions today?

12 MR. ATHERTON: No, sir. I'm asking you to respond perhaps
13 eventually, meaning that indefinite.

14 MR. RICHARDS: All right. Thank you.

15 MR. ATHERTON: I'll give you my address and my telephone
16 number if you wish to discuss this further.

17 MR. RICHARDS: Well, why don't we talk after the meeting and
18 I'll share data with you there.

19 MR. DUDLEY: Are there any more questions of the NEI
20 presenters or of the NRC perhaps? Okay. Seeing that there are no more
21 questions --

22 MR. SHADIS: I would like to make a comment if I may.

23 MR. DUDLEY: Certainly, Ray.

24 MR. SHADIS: It will go round about the issues. But I do
25 want to simply comment from representing my organization that we do
appreciate the opportunity to participate in this forum. And I also
want to acknowledge that Maine Yankee and the NEI recognize the
importance of us participating in this forum. In fact, I'm here at
Maine Yankee's invitation. And I just want to tell you that it is
important to us. But I also would like to hold out, if you will, for

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1 that adjudicatory process where all of this information is tested, and we
2 don't wind up in a debate arrangement where we hear the industry
3 presenting information that we don't agree with, that we have to pop up,
4 disagree with it, don't get a full answer and we wind up with a process
5 that is, at best, a clumsy process because we don't want to be rude, and
6 we don't want to get, as I said, into that debate sort of format.

7 A more formal process at some point can eliminate that, can
8 provide an opportunity for rebuttal, test of truth. And so I just want
9 to finally advocate for that type of process. Thank you.

10 MR. HANNON: Let me respond to that because that raises an
11 issue to me, is what would be acceptable to you from a collaboration,
12 collaborative approach? If we could avoid the formal adjudicatory
13 process, what would be acceptable to you?

14 MR. SHADIS: Well, I think that anything short -- I mean,
15 you use the term avoid the adjudicatory process. I don't think that we
16 can, and I'm glad to share information, and that is acceptable. I'm
17 glad to participate in forums, with our meetings with NRC staff and to
18 write back and forth, e-mail, whatever, communicate, and I think that's
19 very valuable, and I don't want to dismiss the value of that. But it
20 does not take the place of that adjudicatory process where we can hammer
21 back and forth on these issues. Mr. Gunter raised the issue of the
22 Cobay data, for example, and if this staff doesn't use that data, if it
23 isn't incorporated into these seismic studies, then we have the option
24 of being out there somewhere in the wilderness complaining about it. It
25 may or may not get answered.

And I want you to understand, sir, I read those letters with
the dates ranging over a period of years trying to get answers from the
agency. That's been our experience, at least in terms of writing back
and forth. So whatever can be done to try to formalize, at least to
some degree, the way that this information is passed back and forth I

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1 think is essential.

2 MR. RICHARDS: I'd like to make a comment or two and then
3 John, do you want to close the meeting?

4 MR. ZWOLINSKI: Yeah, I have a number of comments.

5 MR. RICHARDS: Okay. First I'd like to remind people that
6 again, we're in the information gathering mode here today. We're not
7 here to endorse what NEI has presented nor are we here to necessarily
8 endorse what other people have presented. We're here to get the
9 questions on the table and take it back and consider it with our
10 technical working group. So I want to, again, remind people we are
11 looking for your inputs. We have provided Dick Dudley's e-mail address,
12 and I think his mail address for people who want to provide more
13 information, and anyone who wants to talk to me afterwards, I'll stick
14 around and feel free to come up and talk one on one. John.

15 MR. ZWOLINSKI: Before I go through some closing remarks,
16 I'm John Zwolinski, I'd like to introduce John Greeves of our Office of
17 Nuclear Materials, Safety and Safeguards.

18 MR. GREEVES: Yes. I'm John Greeves. I'm the director of
19 the division of waste management, and I attend a number of these types
20 of meetings. And I just want to try make clear that the process we've
21 been talking about today involves the reactor. Most of it has been
22 focusing on design accident issues. The program I'm responsible for
23 terminates these sites. Whether they be a reactor, or material sites.
24 So I'm responsible for a very large number of material sites and I would
25 be dealing with the reactor sites as they come through the process. We
separately have a number of workshop meetings that we've been
conducting, and they really address the issue of, all four of the
stakeholders mention the low dose calculations. We are addressing those
issues in public workshops. We've had three workshops, the latest of
which was last month. Some of the stakeholders in the room actively

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1 participate in those workshops. The next workshop is June 23rd and 24th
2 in the auditorium here in this building. And I would invite and
3 encourage the stakeholders to join us in this process so we can exchange
4 information and discuss these low dose issues, and how do you make those
5 calculations?

6 We also have an NRC web site with a lot of this information
7 up there. We get questions during the workshop, we put them up on the
8 web site. Not only the questioner can get the answer, but the broad
9 community can get an answer and we found this was a very good forum to
10 inform people, and actually learn something from the stakeholders in
11 terms of doing these dose calculations, which are very important in the
12 termination process. So I just wanted to take a moment and make sure
13 everybody was aware of that and invite and encourage you to attend our
14 next workshop, and there are a number of other venues that are
15 available, and the Commission I think does a good job of advertising the
16 meeting notices. I see a lot of people showing up at these meetings. I
17 just wanted to share that information with you. Thank you.

18 MR. ZWOLINSKI: Thank you, John. This is John Zwolinski. I
19 guess I heard a number of issues that arose today. I was taken with a
20 couple of specifics that I wanted to address more head on. When we
21 tried to articulate our four pillars, our four common goals. One of
22 those indeed is this public outreach, public confidence. And in
23 particular, Mr. Shadis, when you shared -- you sent a document in June
24 of '98 and you get a response in March of 99, that clearly does not meet
25 our management, senior management's expectations. So for that I
apologize.

I'm also somewhat taken aback that you've got correspondence
before the staff and we have not gotten back to you. I would like to
chat with you one on one and we could. Sounds as if that would be
appropriate, but fundamentally and to all stakeholders here, including

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1 the industry, the agency has expectations of itself to hold itself
2 responsible, to answer the mail in a prompt and timely way, and whether
3 it's members of the public or utilities or NEI or what have you, that
4 certainly is an area that we need to focus on and be much more sensitive
5 to.

6 So while I'm focusing my comment to Mr. Shadis and he had
7 certain examples, I'm also sensitive that the other gentlemen, such as
8 Mr. Lochbaum, Atherton and Blanch, also have alluded to this issue, and
9 for that I feel those are certainly data points in which we can attempt
10 to do better.

11 I certainly appreciate NEI's efforts, Duke, and your efforts
12 going into the NUREGs, conscientiously with your degree of
13 professionalism. Obviously we're going to want to understand what you
14 did undertake and playing off of what John said a few minutes ago. I
15 think it would be very beneficial to engage in an exchange of technical
16 information followed by meetings as appropriate. I think we ought to be
17 doing that on a fixed schedule and afford us the opportunity to take a
18 step back and just rack up what we heard today, and we'll get back to
19 you promptly to probably arrange another meeting. And what's the proper
20 context of information to come and go, I think we can structure that
21 appropriately such that it's all in the public forum. And I'd like to,
22 if possible, insure our stakeholders receive copies of our
23 correspondence. So it's meant to be very much an open activity.

24 So I do see further meetings. I see additional steps as far
25 as sharing of technical information. Mr. Shadis mentioned the
adjudicatory process. We still need to go to the Commission with a
variety of recommendations. My instincts would be along the lines that
whatever comes out of this risk informing part of the regulations
& associated with decommissioning, would more than likely go through a
normal process, not a one step, and in that context, there is always the

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1 adjudicatory process. So that's one way to get into it, Mr. Shadis, that
2 I'm aware of. But I think it's important our staff have the opportunity
3 to continue its analysis and evaluation of data. And it sounds like
4 it's appropriate for the NEI folks to continue with their efforts and
5 attempt to come to closure over the next couple of months. We have a
6 time line that we've laid out in the short term in which we need to go
7 back to our Commission by middle of June with the results of the panel's
8 work and any recommendations or comments that we've heard from industry
9 or stakeholders will want to insure those are factored into our paper.

10 All these papers will be open and available to the public.
11 So I just thought it was important so summarize in so many words, we're
12 attempting to maybe break a few paradigms that have occurred in the past
13 and insure everyone is certainly well-informed of the process and steps
14 we intend to take as we go forward. Thank you, Dick.

15 MR. DUDLEY: Okay. At this point we're about ready to
16 adjourn the meeting. I'd like to thank everyone for coming. I think we
17 had very good participation. As you leave, there will be copies of the
18 Xeroxed attendance sheet at either door. So if you want a copy of the
19 attendance sheet, you can pick it up as you leave. Thanks very much.

20 [Whereupon, the meeting was concluded.]
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