UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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PUBLIC SCOPING MEETING ON INTENT TO PREPARE DRAFT SUPPLEMENT TO GENERIC ENVIRONMENTAL IMPACT STATEMENT ON DECOMMISSIONING OF NUCLEAR FACILITIES

Ramada Inn

San Francisco, CA

Wednesday, June 21, 2000

The above-entitled meeting commenced, pursuant to notice, at 7:00 p.m.

P R O C E E D I N G S

[7:03 p.m.]

MR. RICHARDS: Okay. I'd like to thank everybody for coming tonight. My name is Stu Richards. I work for the Nuclear Regulatory Commission in Rockville, Maryland, and I'm a substitute moderator tonight. Chip Burton -- or Chip Cameron, rather, was scheduled to be our moderator. He's an attorney with our Office of the General Counsel. But, he fell ill and wasn't able to make it tonight, so I'm a substitute.

The purpose of tonight's meeting is the generic environmental impact statement for permanently shutdown plants. The NRC is presently working on performing an update to that document and the details of that will be part of the presentation to follow shortly. The purpose of the meeting is to inform the public about this process and, also, to seek the public's comments and input into the process.

The agenda for tonight, we plan to have two presentations: one by Dino Scaletti, with the Nuclear Regulatory Commission staff; and one by Eva Hickey, with Pacific Northwest National Labs, a contractor working with us on the generic environmental impact statement. Between those two presentations, we will take questions on the first presentation and then again after the second presentation

and we'll open the floor up for comments and questions.

We have a table out here to my right, where everybody came in. Etoy Hilton, with our staff, is at that table, to help anybody out that may need some help. We have handouts there from the meeting. We, also, have a couple of sign-up lists. We have one sign-up list for anybody who wishes to speak. We will have questions and answers, but if you want to be on the front end of the discussion, please sign up with Etoy. I believe we, also, have a sign-up list, if you want to get a transcript of tonight's meeting. The meeting is being transcribed, so I would ask that when you get up to speak, that you state your full name and spell your last name, so we can make sure we get that straight for the record.

For people, who may have a number of comments and questions, I would prefer that we break those up into segments, in the interest of allowing everybody to have a chance to speak at kind of the front end of the comment period. If anyone here has something that they want to read into the record, I would like to keep those to the end of the session, again, in the interest of allowing people, who have brief comments or questions to ask, to kind of get in on the front end, so that they don't have to stay to the end.

That's all I have. Dino, have I covered the main

topics here?

MR. SCALETTI: Yes.

MR. RICHARDS: And Eva, anything I missed?

MS. HICKEY: No.

MR. RICHARDS: Okay. With that, we'll start with Mr. Dino Scaletti.

MR. SCALETTI: Thank you, Stu. As stated, my name is Dino Scaletti. I'm with the U.S. Nuclear Regulatory Commission, Nuclear Reactor Regulation. I'd like to welcome you here tonight and, also, take a moment to introduce a couple of people, who are here, who will answer questions for us, for you, and that is, at our table, we have from the Office of General Counsel, a Mr. Steven Lewis, who is the legal contact on the generic environmental impact statement. We, also, have Mr. Carl Feldman, next to Steve. Carl was instrumental in the development of NUREG 0586, which is the 1988 generic environmental impact statement for decommissioning facilities and Carl is helping us with the update of this document -- or this supplement to 0586.

Given that, I'd just like to tell you that the U.S. Nuclear Regulatory Commission was formed as a result of the Atomic Energy Act of 1953 and the Energy Reorganization Act of 1974. The NRC's mission is to regulate the nation's civilian use of nuclear energy, to ensure adequate protection of the health and safety of the public and

workers, and to protect the environment and provide a common defense and security. The NRC accomplishes its mission through regulation, licensing, inspection, and enforcement. The NRC regulations are issued under Title 10 of the United States Code of Federal Regulations for commercial nuclear power reactors.

The NRC regulatory function includes licensing and inspection of these facilities, and nuclear plant license is based on a set of established regulatory requirements that ensure the design and proposed operation are performed based on radiological safety standards. The NRC conducts routine inspections, to ensure that the plant design and operations conform to the license requirements and enforcement actions are taken, in the event that we find that the license requirements are not being met.

The NRC's responsibility for a nuclear power reactor are for the entire life cycle of the facility, from construction through licensing -- license termination. The NRC maintains the license and continues to regulate the safety of the facility through the decommissioning process until the license is terminated.

The NRC is concerned with nuclear power plant safety. As a result, the NRC requires that licensees maintain technical specifications and a safety analysis report, known as a defuel safety analysis report, a DSAR,

through the decommissioning process; but, we are, also, concerned with the protection of the environment. It is the environmental protection associated with decommissioning process that is the focus of this meeting tonight.

The purpose of this meeting is to discuss the generic environmental impact statement, or GEIS, on the decommission of permanently shutdown nuclear power reactors that the NRC proposes to write. We'll explain what the GEIS is, how it is to be used, and when it is used. We are, also, going to provide you with some background information on nuclear reactor decommissioning. But, first, we will describe the process set forth by the National Environmental Policy Act, or NEPA, for developing this GEIS. However, most importantly, we are here to listen to your comments, statements regarding the development of the GEIS.

Today's meeting is not a formal hearing, but an opportunity for the NRC to gather information about you, the public's potential concern about the environmental impacts from decommissioning. Today's meeting, also, provides us with an opportunity to describe to you the steps that occur during the preparation of a generic environmental impact statement and to indicate to you the schedule that will be used in the development of this document.

Next, I want to talk about the NEPA process. The National Environmental Policy Act was enacted in 1969. NEPA

places the responsibility upon federal agencies to consider significant aspects of the environmental impact of a proposed action. It requires that all federal agencies use a systematic approach to consider environmental impacts during their decision making. The NEPA process, also, is structured to ensure that the federal agency will inform the public that it has indeed considered environmental concerns in its decision-making process and invite public participate to evaluate the process. This meeting is part of this process. This meeting is, also, required by 10 CFR Part 51 of our regulations.

What is NEPA? NEPA requires an environmental impact statement or assessment be prepared for all major federal actions. Supplement to draft or final EISs are required when there are significant new circumstances or information relevant to the environmental review -- concerns. This is a situation we're in now. With new regulations and the additional experiences from decommissioning facilities, it is appropriate at this time to supplement or revise the original GEIS on decommissioning. Generic EISs are allowed in cases where there is a need to address generic impacts that are common to a number of similar proposed actions or similar facilities. The actions we are looking at, as I mentioned previously, is the environmental impact related to

decommissioning of commercial nuclear power facilities.

What exactly is a generic environmental impact statement for decommissioning? A generic environmental impact statement identifies the environmental impacts that may be considered generic for all nuclear reactor facilities. It, also, identifies the environmental impacts that need to be considered in more detail as site-specific issues for each facility. The generic environmental impact statement will take into account the range of environmental impacts from different nuclear facility designs, decommissioning methods, and difference in location for the facilities.

The GEIS is used to focus the analysis of environmental impacts. It helps us determine which of the impacts are site specific and need to be considered separately for each nuclear power facility, this -- that is decommissioning, and which impacts are generic and can be evaluated as part of the GEIS and then not be reevaluated every time a plant undergoes decommissioning. This allows us to spend the time and resources that are required to focus on the impacts that are necessary for a -- at a particular site.

The GEIS does not preclude a site specific look at each facility. Some issues, like those related to the presence of endangered and threatened species, will always

be site specific and will need to be addressed separately from the GEIS. The GEIS just allows us more time to focus and focus better on the site-specific issues.

The GEIS, also, is used as a basis for determining if additional rulemaking is required, related to the environmental impacts of decommission -- of the decommissioning process. If it is determined that the additional rulemaking is required, the GEIS will serve as the basis for that rulemaking.

The GEIS is used throughout the entire decommissioning process. The NRC regulations require that no decommissioning activities be performed that would result in significant environmental impacts that have not been previously reviewed. This means that every time the licensee starts a new activity, they must determine if it would be -- if it would result in an environmental impact that was not reviewed in the GEIS or in the final environmental impact statement that was written at the start of operation for that facility, or any subsequent environmental analysis that were reviewed and approved by the NRC.

In addition, a hard look is taken at the environmental impacts at the stage that the post-shutdown decommissioning activities report is submitted, that is two years prior -- after the shutdown and before any major

decommissioning activities can occur, and at the license termination planned stage, which occurs two years before the end of decommissioning. Eva will talk more on this issue in her presentation.

Why are we supplementing the existing generic environmental impact statement on decommissioning? The original document for decommissioning was published in 1988; therefore, it is over 12 years old. Much of the data in that document is more than 12 years old. Since the original document was published, there has been new regulations related to decommissioning that were issued; for example, the regulation requiring submittal of a post-shutdown decommissioning activities report and a license termination plan. In addition, there have been regulations, such as the Environmental Justice, which relates to whether federal agencies -- federal actions disproportionately impact low income and minority populations. This regulation was not in place in 1988.

In addition, there has been an increase in the amount of decommissioning experience in the U.S. Currently, 21 commercial nuclear facilities have permanently ceased operation. As a result, there is over 300 years of decommissioning -- worth of decommissioning experience, resulting in a lot of new information available regarding the environmental impacts of decommissioning of commercial

nuclear power plants.

And, finally, there have several new issues that were considered -- that were not considered in the 1988 generic environmental impact statement. These include rubblization, which entails completing the decontamination and leaving the concrete structures rubblized and buried below grade at the site; partial site release, which involves releasing the cleaned portion of the site before decommissioning activities are complete. This is an issue that was brought up at a couple of previous meetings and we want to acknowledge it here tonight. And, finally, entombment, which, although was considered in the 1988 generic environmental impact statement, may need to be reconsidered in a somewhat different form in the supplement that we are preparing.

We are unaware of any other decommissioning methodology or techniques that may be -- maybe being considered by the industry that should be included in the GEIS. However, as part of the scoping process, we're hoping that there is -- there are additional -- hoping that if there are additional decommissioning methods and techniques, that people in the industry will acknowledge that at these scoping meetings.

The original generic environmental impact statement, as I said before, was published in 1988 as NUREG

0586. It looked at decommissioning at all sorts of facilities that hold licenses with the NRC. The revised GEIS, however, will only address permanently shutdown reactors and will not include decommissioning at fuel fabrication facilities or independent spent storage facilities. That will be published as a supplement to NUREG 0586, so that the information related to decommissioning of the other facilities will still be in the original document. The new information that we learned related to power reactor decommissioning will be in supplement one to NUREG 0586.

The NEPA process follows certain steps and the NRC is required to follow those steps, which provides consistency for all environmental impact statements prepared by all federal agencies. The first step in this process is a notice of intent, which is published in the Federal Register. The notice of intent for this public meeting was published in -- on March 14th and there was a public meeting published on May 1st, in addition to this meeting. The public meeting was held in ~~Tyles~~Lisle, Illinois, on April 27, 2000; in Boston, Massachusetts on May 17th of this year; and in Atlanta, Georgia on April 13th -- excuse me, June 13th of this year.

Scoping meetings are used early in the NEPA process, to help federal agencies describe what issues should be discussed in the environmental impact statement.

It helps us define the proposed action and determine any peripheral issues that may be associated with the proposed action.

The next step is the scoping process. Scoping is used early in the NEPA process to determine what issues should be discussed in the environmental impact statement or generic environmental impact statement. It helps us define the proposed action. Scoping, also, helps us determine any peripheral action issues associated with the proposed action, but are considered outside of the scope of the proposed actions realm. Scoping identifies other related actions, such as the environmental impacts or other EISs that are being performed by other state or federal agencies, or that may impact the decommissioning activities, which then allows us to coordinate with other state or federal agencies early in the process. Public comment on the scope of this GEIS must be submitted by July 15, 2000.

Once scoping is complete, NRC will perform an evaluation of the environmental impact associated with the reactor decommissioning. The environmental evaluation will address the impacts of the proposed action, which is decommissioning, in a generic manner; that is, impacts that may occur at all or most of decommissioning nuclear power plants. The alternative to the proposed action and the impacts that could result from those alternatives will,

also, be evaluated. Finally, we'll look at the mitigating measures, those measures that can be taken to decrease the environmental impact of a proposed action.

After the NRC has completed the environmental evaluation, we'll issue a draft environmental impact statement for public comment. In this case, it will be a draft GEIS and is scheduled to be published early in 2001. All federal agencies issue draft EISs for public comment. At that time, there will be more public meetings to gather comments. After we gather the comments and evaluate them, we will issue a final environmental impact statement, which is scheduled to be published in late 2001.

The NRC has previously published other environmental impact statements that are related to or have impacts on other aspects of the decommissioning process. We will look at the contents of these EISs, as part of the decision regarding the scope of decommissioning. If impacts are considered in other previously published GEISs, they will likely not be reconsidered in a decommissioning generic environmental impact statement.

A generic environmental impact statement completed in July of 1997 looked at the radiological criteria that we used in the rulemaking for the very small amount of radioactive material that can remain onsite when a license is terminated. As a result of this GEIS, the criteria of 25

millirem per year total effective dose equivalent was adopted. The GEIS provided the basis for what the impact to the public are after the license has been terminated. A final generic environmental impact statement completed in 1982 looked at the impacts of low-level radioactive waste in license disposal sites. The impacts of the waste that came from decommissioning plants was, also, considered in this generic environmental impact statement. Finally, a draft EIS has been written on the geological repository for spent nuclear fuel in Yucca Mountain in Nevada. We highlight these EISs, because these areas will not be considered in the decommissioning GEIS, since they were covered in other environmental impact statements.

Now, that concludes my portion of the presentation, and if we have any questions --

MR. RICHARDS: All right. Thank you, very much, Dino. We next have a presentation by Eva Hickey. But before we move on to that, if there are any questions or comments specifically about Dino's presentation, we can take some of those now. Would anyone like to ask any questions of Mr. Dino Scaletti?

[No response.]

MR. RICHARDS: Seeing no volunteers, we'll move on. Eva?

MS. HICKEY: Thank you. I'd like to say thank you

to all of you for coming tonight. We look forward to hearing your comments and questions on our supplement to the generic environmental impact statement. My name is Eva Eckert Hickey. I'm the task leader for the Pacific Northwest National Laboratory ~~multidisciplinary~~multi disciplinary team that is supporting the development of this supplement to the generic environmental impact statement. I have one of our team leaders here tonight, Kathleen Rhoads. She will be doing the radiological environmental impact assessment for us.

For the next few minutes, I will be discussing decommissioning. First, I'll talk a little bit about -- I'll give you some background on decommissioning. Then, I'll discuss the process of decommissioning, how some of the NRC regulations are related to the decommissioning process. I will talk very briefly about the methods of decommissioning; the activities that occur during decommissioning; and, finally, just briefly, I want to discuss some of the environmental impacts that we currently are looking at and that are historically considered in environmental impact statements.

But, first, before I get into that, let me give you the definition, as in the NRC requirements, of decommissioning, and it's simply the process of safely removing a facility from service, followed by reducing

residual radioactivity to a level that permits termination of the NRC license. I'd like you to keep that definition in mind, as we discuss decommissioning tonight, because it is what is the basis for our scoping of this environmental impact statement. Just as an example, we're looking at removal of radioactivity or any activities that are required for that removal. So, if a licensee has to remove a piece of equipment that has asbestos and they have to do the removal of the asbestos to take out a radiologically contaminated piece of equipment, then we will be looking at those impacts from that asbestos removal, also.

Okay. A little bit of background on decommissioning. When the -- the regulations that were in place in 1988, when the original GEIS was published, required that at the end of the life cycle of a nuclear reactor, the licensee had to submit a decommissioning plan. This plan was fairly prescriptive and very comprehensive. By the mid 1990s, when NRC was beginning to have more experience with decommissioning, they felt that the detailed decommissioning plan was not necessarily the best tool and with some changing regulations, they no longer required the decommissioning plan. Part of the reason was it was considered that the activities that occurred during decommissioning could be accomplished in a similar manner that happens during operations. For example, if you remove

a pipe or replace a pump, that's done in the same manner, whether it's for a plant that is still operating or a plant that is going through decommissioning.

Commercial nuclear reactors have a set of technical specifications that they must follow when they're operating and these technical specifications, although they may change after the plant ceases operations, there are still a set of specifications that the licensee must follow. These are part of the safety checks that are used and extended into the decommissioning process. If a licensee looks -- has an activity that is outside of the technical specifications, then they must go through a license amendment that must be followed and that calls for a detailed NRC review. That's not to say that NRC doesn't provide an overview related to environmental impacts that may occur during the decommissioning process. They do provide a significant review, but the major up-front type of review efforts for the environmental aspects of decommissioning occur at two stages, and I'm going to talk about those in a little more detail.

At the start of decommissioning, where there are concerns related to the safe storage of spent fuel and concerns that the licensee has appropriately thought through the decommissioning process, and at the end of decommissioning when there are concerns related to ensuring

that the radiological hazards have been removed, these are some of the important times when we're looking at the environmental impacts. I'll talk about these two stages in just a few minutes.

So, in the -- with the requirements changing, there is two specific things that happen early in the process of decommissioning. First, the licensee is required to make two certifications. The first certification is that operations have permanently ceased at a facility, and this means that the licensee does not plan to ever operate the reactor again. The second certification occurs after the licensee has removed the fuel from the reactor vessel. After this certification is made, the plant's license does not allow for either old or new fuel to be put back into the reactor vessel. Following these two certifications, within two years, the licensee must submit a post-shutdown decommissioning activities report, and I'm going to call that a PSDAR.

Before I go on discussing the process for decommissioning, I'd like to talk about the PSDAR a little bit. The PSDAR has several parts of it. It first has a general description of the planned decommissioning activities. Secondly, it provides a schedule for the accomplishment of the significant milestones that the licensee has identified. It provides an estimate of the

expected costs for decommissioning and this estimate is used to compare against the amount of funds that the licensee has in its special account for decommissioning. And, finally, the PSDAR has a discussion of the environmental impacts and, specifically, it contains the reasons that the licensee concludes that the environmental impacts are bounded by the previously issued environmental impacts for that statement -- for that licensee and that site, or that the environmental impacts are within the original GEIS.

As Dino mentioned earlier, the generic environmental impact statement will be used by the NRC and the licensee throughout the entire decommissioning process and it will be used to ensure that the environmental impacts that may result during the activities that are performed during the decommissioning process are -- have been previously considered. A specific hard look is given at the time the ~~PSAR --~~ PSDAR is developed. The details are not provided in this report; however, the licensee must maintain records of what they have done, to make sure that the environmental impacts have been considered, and the NRC will look and make sure that there's no new and significant information related to the site that would invalidate the generic -- considerations for the generic environmental impact statement. The PSDAR is a summary document and the NRC does not require an extensive analysis of the

environmental impacts in the PSDAR.

So what is the purpose of the PSDAR? Well, first and foremost, it provides a general overview of the facility decommissioning to the public and to the NRC. It allows for the NRC to appropriately plan for its safety inspections prior to and perhaps during major decommissioning activities, and it allows the NRC to allocate the appropriate resources to conduct the safety inspections. The PSDAR requires -- gives the licensee the opportunity to examine their financial resources prior to starting any major decommissioning activities and it ensures that decommissioning does not result in environmental impacts that are not previously considered.

A meeting is held with the public soon after the PSDAR is submitted. This is not an opportunity for a hearing at this stage, since the submittal of the PSDAR is not considered a major federal action that results in change to the facility's license. However, questions may be asked and comments given at the public meetings that are held by the NRC near the location of the plant. For example, last night, there was a PSDAR meeting for the Rancho Seco plant.

If a licensee does not plan an activity that is outside the parameters of the environmental impacts previously considered or if they request a change to the license, then there is an additional review process. It may

result in a license amendment and, at that point in time, it would provide an opportunity for public intervention.

Okay. Let's go back and talk a little more about the decommissioning process. At the same time that the PSDAR must be submitted, there must, also, be a submittal of a specific -- site-specific cost estimate. This provides a more detailed look at the costs than as required in the PSDAR. Once again, it's used to compare against the amount of funds that the licensee has been required to save for the decommissioning process and it provides a mechanism to determine if adequate funding is available to complete the decommissioning process; and if it's determined that it is not, then the licensee must take appropriate actions to make sure that their decommissioning funds are increased.

Following the submittal of the PSDAR, the licensee is then able to begin major decommissioning activities, and this could include immediate decontamination and dismantlement or, perhaps, placing the facility in long-term storage with dismantlement to be completed later. And I'll talk a little more about these methods for decommissioning just a little bit.

Now, within two years of reaching the completion of decommissioning, the licensee must submit another document, and this is called the license termination plan. This license termination plan provides a characterization of

the site and of the residual amounts of decontamination that are in the site. It identifies the final activities that the licensee will be conducting to complete decontamination and dismantlement activities. It describes plans for site remediation; and it describes the detailed plans for the final survey of residual contamination that must be completed. And, finally, it, also, has a description of the end use of the site and a final site-specific cost estimate. After the NRC reviews the license termination plan and after the final survey of residual contamination has been completed, then the licensee will -- the license will be terminated and the site will no longer be under NRC purview.

Next, let me talk a little bit about the methods of decommissioning and there are four of them. Originally, NRC had envisioned three distinct methods: DECON, SAFSTOR, and ENTOMB. But over the years, it has been recognized that actually several sites have been using a combination of SAFSTOR and DECON.

First, I'd like to talk about ENTOMB for just a minute. ENTOMB is a method where the radioactive structures, systems, and components are encased in a structurally long-live substance, such as concrete. The ENTOMB structure is appropriately maintained and there's continued surveillance, which is carried out until the radioactivity decays to levels that permit termination of

the license. Currently, the NRC's regulations allow for a 60-year period for completing the decommissioning process. So, in the 1988 GEIS, it was concluded that ENTOMB probably was not a viable option for decommissioning. We will be reconsidering the ENTOMB method in our supplement to the GEIS.

Yes?

MS. PORTER: Was it because of -- are you going to talk about why --

MR. RICHARDS: Before -- let me get a microphone to you for a minute. Could you identify yourself for the transcript, please?

MS. PORTER: Sure. Rebecca Porter and I'm here with Green Action. My question was just why entombing has been set aside as something that probably isn't viable? Is it just because of the amount of time that it takes and why the license would have to be held for 60 years? Or what is the other -- what's the reason?

MS. HICKEY: That was the -- the primary reason that the GEIS that was published in 1988 did not look at ENTOMB, because the license would not be able to be terminated within 60 years. The amount of radioactivity that would still remain in the plant would not allow for -- it would not meet the criteria for release.

MR. RICHARDS: Just a minute, please. Because

we're being transcribed, we'd like to make sure that we get your name on the record.

MR. YOUNG: My name is Ward Young and from the Bay Area Nuclear Waste Coalition. And I'm curious why the NRC would have conceived of entombment, if they knew from the beginning that the residual levels of radioactivity would be such that entombment wasn't a viable way of going about it.

MS. HICKEY: Okay. I'm going to let NRC answer that question.

MR. FELDMAN: Yeah. Carl Feldman, NRC. Basically, we wanted to give an objective type of evaluation to the various ways -- alternatives for decommissioning and, obviously, there's prompt dismantlement, there is deferred dismantlement, and there's entombment. We, also, looked at cost --

MR. YOUNG: Are you speaking in the microphone?

MR. FELDMAN: Probably not.

MR. RICHARDS: Is it on?

MR. FELDMAN: Yeah, it's on. Is that better? So, we, also, looked at the cost benefits. And at the time we were doing the EIS evaluations, we had data -- we started doing the evaluations in 1976 and we probably finished the data in about 1981, and then we played some little bits of updates and so on. So by 1988, we really didn't update to any great degree, other than some inflationary aspects.

When we first started doing it, it didn't seem to be much of a problem with waste disposal. And so, if you look at the alternatives for decommissioning, the only people that get dosed and insignificantly -- relatively insignificantly for prompt dismantlement or deferred dismantlement were the occupational workers. There was insignificant dose to the public. When you deal with entombment, you have some potential for dosing the public.

So, we -- rather than have each time an alternative was brought up, a cost benefit analysis done to look at it in a generic way, we picked the 60 years on the basis of the decay of the dominant radioactivity, which was cobalt 60. And it turned out that roughly in 30 years, most of the dose would have dropped from decay, to about a third of what it was, if you started a prompt dismantlement. And the waste volumes that were generated at that time decayed to about a factor of 10 in about 50 years. So, there was still further decay, but it was very slow.

And so, we, basically, said, all right, we didn't want to rule out entombment, because we recognized it can be instances where somebody might seriously consider that. But, we, basically, said, okay, it takes 50 years to get the maximum benefit out of that thing and it takes about 10 years, give or take a little bit, to complete the actual decommissioning, so if they can do it in 60 years, fine, let

them ENTOMB. If not, if they need a longer period of time for a lot of different reasons, even a delayed dismantlement, then they can still get it, if they come in and get a case specific exception from the Commission, but only for reasons of significant health and safety. And so that's what we put in our rule. And since that time, we have been reevaluating what we had done in the past, and so that's why entombment is now being reconsidered.

MR. LEWIS: Steve Lewis with the Office of General Counsel. Let me sort of put my spin on it, in addition to the things you've heard, which are, you know, much more knowledgeable in many areas than I -- what I can tell you. There are a lot of things happening in the world that are impacted licensees, that are impacting the nuclear business, that are impacting the ways in which the NRC may have to regulate. And so, I think that one of the reasons that the GEIS, in this case and other GEISs that we're undertaking, are so important is because we need to be up to date with things that are changing.

Now, one of the things that have changed, and this was in the slides, is that we now have a performance-based rule for license termination, and that's in Part 20, subpart (e). And so, we have to now go back and think, rethink some of the premises of the 1988 GEIS, in light of the changed regulations. Now, certainly when we do that, we're, also,

going to consider other things that may have changed, such as anything that might affect the cost benefit of doing different types of decommissioning. And as everyone here I'm sure knows, the situation and the assumptions regarding availability of low-level waste sites around the country, basically through compacts, is not necessarily the same assumption that existed in 1988. So, I mean, we want to be real world about what we do and I think ~~that~~ that's an important concept you should keep in mind as to what's driving this.

MS. HICKEY: Okay. Wait a minute, we need --

MR. RICHARDS: Again, please, before you make a comment, give me a chance -- get my attention and I'll bring you the microphone. We need your name for the transcript, you know, just so we get it all down.

MS. GEORGE: My name is Barbara George and I'd like a more clear definition of the performance-based rule that you mentioned and what do you mean by that.

MR. FELDMAN: What we did in the Part 20 license termination rule is we developed a dose, which we felt was a safe dose for unrestricted release, based on international standards, and considerations of multiple types of sites that would generate those. In addition, we talk about as low as is reasonably achievable to lower that amount when possible for leaving something, which needs to be

decommissioned, to leave it at a -- with some radioactivity that is -- has insignificant impact, in terms of health and safety. And so the standard is based in terms of dose. But, in order to evaluate something, you have to look -- you have to measure it, and you don't directly measure dose. What you need to measure is radioactive contamination, which then gives you a dose. And so what you do is you do modeling and all sorts of things to get that type of number.

Prior to that -- this rule, we had a reg guide that gave radioactive concentrations, but it wasn't dose specific. And we feel that this a much better way to do it, because it's directly health and safety related.

MR. LEWIS: Steve Lewis again. You'll find that, as a lawyer, I always will find something additional to add to whatever one of my technical colleagues says. I guess it's just part of my training.

Performance-based, in my mind, means that we are not prescribing a methodology, a technique of decommissioning that has to be undertaken. We are specifying a resulting dose to the average member of what we call the critical group, which is a whole methodology we've developed for assuring ourselves that we can end NRC's regulation of the site. So, that's what I mean by performance based.

The Commission has a definition, which I don't

have in front of me, which has about four things in it. I can't remember what they are. But, I think just to be responsive to what you are asking, the point I'm making is that now that we have a rule that says that the NRC will terminate its license and, hence, will no longer regulate the facility and the site, that is based upon a dose we derived from calculations we do; it puts a different spin on what types of activities a licensee -- and techniques a licensee may use. It really de-emphasizes the specific activity and focuses more on assuring that the method that's going to be used will not exceed that dose.

MR. RICHARDS: Barbara, did that answer your question?

MS. GEORGE: Yes.

MR. RICHARDS: All right, thank you. Eva?

MS. HICKEY: Okay.

MR. RICHARDS: One more question.

MS. MEINDL: Thank you. My name is Irmi Meindl, I-R-M-I, Meindl, and I had a question. Is there anybody overseeing these sites after the termination of the -- after the overseeing is completed?

MS. HICKEY: Once the license is terminated, then NRC has no more oversight on that facility. It's released for unrestricted use.

MR. RICHARDS: To make sure we're clear on the

question, that's once they are done decommissioning the facility?

MS. HICKEY: Right. Once the decommissioning process is complete, once the license termination plan has been submitted, the radiological survey has been completed, and NRC verifies that they meet the criteria for unrestricted release, the license is terminated and NRC no longer has any oversight of that facility. The licensee is free to use that facility for whatever they have planned.

MR. RICHARDS: All right. Other questions before we move on?

[No response.]

MR. RICHARDS: All right, Eva?

MS. HICKEY: Okay. I'm going to try to get through the rest of the slides quickly, so we can get into hearing your questions and comments. The next method of decommissioning is called DECON and that's when the facility goes through the decontamination, where they remove contaminations from systems and structures, and they may remove large radioactive components, like the steam generators and the reactor vessels. And then the next part is dismantlement, where they remove pipes and components and, in some cases, they may actually remove buildings; but, it depends on the approach that the licensee has. And, also, part of dismantlement is considered the transportation

of waste to a storage facility.

Okay. And then the next method I want to talk about is SAFSTOR. And SAFSTOR is a decommissioning method, where the facility is put in a safe and stable condition and it's maintained in that state until the facility is subsequently decontaminated and dismantled. To get the facility into SAFSTOR, there's a preparation stage, where there's deactivation of systems, draining of -- and flushing plant systems and some radiological assessments are usually performed before the plant goes into safe storage.

And then it -- when the plant is in SAFSTOR, the licensee conducts preventive and corrective maintenance and maintains that the structural integrity of the facility is adequate. After the SAFSTOR period, then that's followed by the decontamination and dismantlement of the facility. An example of the combination of SAFSTOR and DECON is the Rancho Seco plant. They have recently come out of the SAFSTOR phase and they are entering the DECON or the decontamination and dismantlement stage of decommissioning.

Okay. To finish the license --

MR. RICHARDS: Eva, I think we have one question on that.

MS. HICKEY: Oh, I'm sorry.

MS. CABASSO: I'm Jackie Cabasso from Western State Foundation. I just want to be -- I just want to be

completely clear that this SAFSTOR period at present cannot exceed 60 years. Is that right?

MS. HICKEY: That's correct. Well, okay, and let me further add, not only can SAFSTOR not exceed 60 years, but the decommissioning process has to have concluded.

MR. LEWIS: Could I add something? Steve Lewis. The regulation actually provides that 5082 -- 10 CFR 5082, that if there's a public health and safety reason, the Commission can authorize a period of decommissioning -- for the completion of decommissioning longer than 60 years. So, a plant could conceivably be in SAFSTOR more than 60 years. This is looking down the road a lot, so I don't know exactly what's going to play out in this regard. But, just to be totally accurate, that showing could be made to the Commission.

MR. FELDMAN: Could I just -- I would just like to add a little bit. In the rule, itself, we cite two examples or two situations to illustrate that and one is if there's no place to put the spent fuel, that would be a reason to allow for delay, because you could maintain the spent fuel within the reactor fuel pool. Another case is if you had interconnecting reactor systems, where you want to wait and do them both together, because there's some possibility of dosing people when you're doing one and running the other one. So, those are some kinds of examples where that type

of delayed storage or deferred dismantlement could occur.

MR. RICHARDS: Just to be clear on that second example, Carl, you're saying that in some cases, there's more than one operating reactor at the site --

MR. FELDMAN: Yes.

MR. RICHARDS: -- they're willing to defer the first one shutdown until the second one shuts down, do it all at once?

MR. FELDMAN: Yes.

MR. RICHARDS: Eva?

MS. HICKEY: Okay. To finish up on the decommissioning process, I'll talk about the end of the process, license termination. And I mentioned earlier that, at this point in time, a license termination plan will be submitted and, at that time -- this is a time when the site will provide a site-specific environmental report. And there is an opportunity for a hearing, at this point, because this is considered a major federal action.

Okay, Dino, I'm going to try to move on. Next. As we mentioned earlier, one of the reasons that we are revising or supplementing the generic environmental impact statement is because we do have a lot of information now. There are 21 reactors that have shut down between the years of 1963 and 1998; two of those have actually completed DECON and dismantlement and six are currently undergoing DECON and

dismantlement. There are nine plants that are in long-term storage and there are four plants that are planning a combination of long-term storage and DECON and dismantlement.

A quick look at the types of reactors that are going through decommissioning. There are eight boiling water reactors, 10 pressurized water reactors, three of the smaller plants that are other designs, and these are all from 23 megawatts to 3,111 megawatt thermal. The two plants that have completed decommissioning and their licenses have been terminated are Ft. St. Vrain in Colorado and ~~Shorum~~Shoreham in New York.

Okay. Well, all of that discussion, so that we can talk about what we're planning to do for revising this environmental impact statement. I'm not going to read all of these to you, but this is the list of environmental impacts that we will assess; as examples: land use; socioeconomic impacts; environmental justice, which is new from the previous GEIS. And what we're asking you tonight is if you have any comments to offer on the scope of this GEIS, other impacts that we need to be looking at. I'd like you recognize that we have not assessed these impacts yet. They are just the ones that we will be looking at.

Okay. There's a copy of the slides; if you don't have them, you can -- okay. I think you can go ahead, Dino.

Okay. To end my presentation, I'd just like to go over again what the schedule is to scoping. We're looking for comments and they'll be accepted until July 15th. Comments can be provided by mail, in person. They can sent to e-mail, to the address given above. And the NRC point of contact is Dino Scaletti and his phone number is here. And with that, I'd like to end my presentation, because we would like to hear what you have to say.

MR. RICHARDS: All right. Thank you, very much, Eva. We are here for, as I said before, a number of reasons. One is to provide these presentations, to try to inform and education the public about what the NRC is doing on the update of the generic environmental impact statement; but, secondly, we're here to receive your comments and questions. We have seven people from the audience, who have signed up to speak, so I'd like to go to those people. For anyone here who is not comfortable speaking, as Eva mentioned, we'll take e-mail comments; you can send us a letter; or the NRC staff has agreed to stay after the meeting tonight and we'll circle around and talk to people privately, one-on-one, until we can answer your questions.

So, with that, I'd like to go to Rebecca Porter, and we'll start.

MS. PORTER: Hi. My name is Rebecca Porter. I'm here representing Green Action. We're an environmental

justice organization, based in San Francisco, but we work all over the west coast and the western area of the U.S. And we'd just like to start off by saying the priority should be not the speeding of the decommission sites or to accommodate the nuclear industry at all, but explicitly to protect public health and the environment.

We've seen Midway Village, which is right in our city, and that's a government housing project that was built just on a former electrical power plant and the results are unbelievable -- the cancers, all things like that -- and that was 50 years ago. I'd hate to think about a government housing project or any project built on top of a nuclear waste facility or a former nuclear waste facility.

It's our sense that out of most environmental and health organizations in this area, that the waste be kept onsite and above ground, because in no case should it ever be buried on the reckless practice of burying waste in an offsite dump. An offsite dump has been disastrous. Until the NRC rules for the waste and site treatment, it should remain in this facility and former sites. I don't care if it takes 300 years, I don't think 60 years is long enough for it to be unmonitored adequately. I, personally, feel and I feel that a lot of people should feel that no matter how long it takes, I wouldn't urge to build anything on top of it. And we know, as an environmental justice

organization, that is it primarily lower income people, people of color, who end up living in the areas of these kind of facilities and through the industry and things like that. And we don't want to -- we can't continue that trend.

Also -- let's see what else -- so, we do -- we do implore the NRC to uphold its proclamation in its mission to protect the health and safety of people and the environment. And -- let's see -- we feel that there is no acceptable dose, as you put it, and no effect -- and because there is no effective means of treatment of disposal, we would like to see the waste remain onsite at the nuclear facility and make sure that it is not shipped or buried anywhere, because we put people's health and humanity far above redistributing and reducing this land for public use, that is unrestricted by the NRC or by any other regulatory agency. Thank you.

MR. RICHARDS: All right, thank you, Rebecca. I read that to mean that you would support the entombment option that was discussed. That's basically --

MS. PORTER: Yes, as long as it did not harm any human being or anything like that. I'm not completely familiar with it and the results of it and how it does expose people in any way. But, as far as being a viable option, I think we should keep it in mind. If it is onsite and it doesn't involve sending the waste off, I would probably support that; I'm not sure.

MR. RICHARDS: All right. I just mentioned that, because it's an issue that the NRC is considering, at this time. And there have been a number of public meetings and there is information available. You might want to talk to Dr. Feldman afterwards, because he's been very much involved in that option.

I'd like to go next to Eric Goldin. Eric?

MR. GOLDIN: No comment.

MR. RICHARDS: Okay. Thank you, Eric. Ward Young?

MR. YOUNG: Thank you for your presentation today. First of all, I'd really like to object to putting words in the mouth of the first speaker, which, I'm sorry, I don't know your name -- Stu, you just did, and I don't think it's fair to imply that she was referring to entombment. She never used the word "entombment," so I think that is kind of tricky, to be trying -- you know, to be suggesting that that was the substance of her comments. I'd just like to make that comment right away.

We believe -- I am with the Bay Area Nuclear Waste Coalition. We work with a large coalition of groups and Native American tribes and have a proposed dump site at Ward Valley in California in the desert. And we oppose the shallow land burial of radioactive waste and think that the NRC should look at an addition option, which is a SAFSTOR

with an extended -- a potential for extending that period of time, to maintain flexibility, to look at other options in the future, such as continued storage, such as geological disposal for some of these wastes, such as mine rock repositories for some of these wastes. We oppose shallow land burial for these wastes.

I'd, also, like to suggest that NEPA should now require an environmental justice impact analysis for this process. An environmental justice impact analysis is a thorough going looking at all of the environmental justice -- potential environmental justice impacts and should have the same type of thoroughness that an environmental impact statement would have.

We are very concerned about the residual levels of radioactivity left at these sites and the allowable doses, up as high as 500 millirem per year. We are very opposed to allowing that type of exposure to occur. And we're not -- we don't completely trust all of the modeling that the NRC does. We believe, also, that it's important to adopt the precautionary principle when looking at these options and this whole process of decommissioning. And that can be -- it has been defined as not reducing risk, but eliminating risk in activities as much as possible.

We are, also, concerned that the entire dose of radiation needs to be examined under each of these

alternatives, in addition to our proposed alternative, which is extended SAFSTOR. We believe that that should include the type of dose that workers in the metal recycling industry receive from this type of decommissioning. We believe that SAFSTOR has advantages, in terms of exposures to workers and the public. And the immediate decommissioning, as stated in the documents that you handed out, the disadvantages of that are higher dose than SAFSTOR to the occupational force and higher doses to the general public through transportation of all of these materials to dump sites.

We, also, believe that it's important at the same time to recognize that although costs are one element in the equation, that total dose and reducing that as low as it -- as reasonably achievable; and, in fact, reducing it should be the -- should be a very high -- very, very highly placed value on the type of process that is chosen.

And I am aware -- another -- I think another thing that would be excellent information for this type of process to bring out to the public would be successes and failures in the decommissioning that has happened so far. I am aware that 41 facial contaminations and the release of high particles occurred during the cutting up of the Yankee Row reactor vessel and that concerns me greatly. That does not seem like the type of success, but is rather a failure that

has occurred already in this effort.

We, also, think that it is not a reasonable assumption to make that Yucca Mountain will be open or any other geologic repository within the next 10, 20, 30 years. We think that allowances should be made for the continued use of these sites -- nuclear power plant sites for extended spent fuel storage, as well as extended storage in the containment of -- as much of the equipment in the containment that can be left there as possible. Containments, we believe, are excellent resources to be used for extended storage of nuclear power plants.

Also, we believe that the idea that the cost of the immediate decommissioning and the availability of waste sites -- low-level waste sites should be looked at and to the extent that -- by using -- setting aside a fund for deferring decommissioning for SAFSTOR, setting aside a fund, which can gather compound interest, may allow the ability to overcome any type of increase in costs that has been experienced at low-level waste sites.

Now, I'd like to say, also, that at the B~~u~~arnwell site, we have charges for -- charges that are actually probably going to be greater than the next site that it seems to be ramping up, which is the Envirocare site. Costs actually seem to be going down to some extent, in that case. So, we really need to look at the costs variables very

carefully and not assume that we know what's going to happen. We should look at all the various possibilities. Barnwell is ramping down for the next eight years and -- so there will be availability. And, again, Envirocare seems to be ramping up, but what if -- what if Envirocare is, also, shut off. We think that's another reason why SAFSTOR is -- has advantages.

I'm going to stop there. I can continue, but I'm going to submit some written comments, as well.

MR. RICHARDS: All right. Thank you, Ward. If we run out of questions, we'll come back to you, if you'd like. And I'd like to respond to what you said originally. You know, if I put you on the spot or put words in your mouth, I apologize. My intent was to question whether you were talking about entombment. So, you know, if it's inappropriate --

MS. PORTER: Now that you've spoken about SAFSTOR, I think that's actually what I was referring to. I don't really know the actual -- I'm not very familiar with the actual specifics of it, but he seems to have hit on more of what I was talking about than entombment.

MR. RICHARDS: All right. Well, again, thank you, Ward. For the panel members, I think there was quite a number of issues that were brought up there, a lot of it in the form of a statement. Is there anyone who wants to

respond or ask questions about any of the comments by Ward Young?

MR. FELDMAN: One of the comments you made was there is a fund over that 60-year period; that is, they have to reassess their actual decommissioning fund at various times during the process of operating and closing down. And there is some allotment now, I think it's two or three percent, or something, to allow them to collect some kind of interest. So, there are some provisions like that going on.

Just to clarify this difference between entombment and safe storage. Entombment is kind of like a hardened safe storage, where you put the contaminants in something like a concrete type of containment and you assure yourself that they're isolated from the environment for such a period of time that they can adequately decay down to a level that's acceptable to release it. So, for instance, if 25 millirem was the level, then you would have to wait a certain number of years. If cobalt 60, for instance, was the type of dose, it might be 100, 130 years typically, as a conservative estimate of how long you would have to wait. But, there are other things in reactors besides cobalt. There's cesium and that takes longer; then there are some very long lived types of materials.

But, nevertheless, the definition of entombment is that once you isolate, then solely through the process of

decay -- you don't want to go back in and rip up the thing, because you've hardened it; you made it difficult to take apart -- so solely through the process of decay would the dose go down and it be released at that point in time.

MR. RICHARDS: All right. Any other questions or comments we need to clarify from the NRC staff? Again, Ward, for some of your comments, if you want, we'll come back to you and we'll, also, stick around after the meeting. You made comments about not trusting the modeling. We have members of our Nuclear Materials Safety and Safeguards office here tonight. Bob Nelson in the back, you may want to talk with him separately after the meeting.

You talked about the 500 millirem per year. I'm assuming that's at waste sites, because that's far above the criteria that -- Carl?

MR. FELDMAN: Well, legal counsel here wanted me to mention restricted release, which I didn't mention earlier. There is -- there are two types of releases that are allowed in 20 -- Part 20, subpart (e). One is unrestricted release, which is 25 millirem; and the other one is restricted release, where, again, we terminate the license in both cases. In all cases, the individuals, who are at the site, are not supposed to get more than 25 millirem ALARA. However, in the case of restricted release, one of the conditions is that if the restrictions ever

should fail, it cannot exceed 100 millirem plus ALARA and in some rare instances or special instances, it could go to 500 millirem ALARA. But, in those cases, there would have to be periodic relooking, capital relooking, by whoever had the obligation to do that every five years, something like that.

Well, there's structure set up in the rule for that. For the various degrees of restricted release, there are more complex, more difficult criteria to satisfy. So, it's a tiered type of rule for those situations.

MR. RICHARDS: Any other questions or comments before we move on to our next listed speaker? Yes, ma'am?

MS. KOSSEFF: Hi. My name is Robin Kosseff. I'm with the Western States Legal Foundation and I actually -- I'm, also, going to speak; but, I, actually, also, want to make a comment about the modeling. So, if our modeler is here and could respond to what Ward said in public now, I would appreciate that.

MR. RICHARDS: I think it depends on the question. I don't think we want to get into a long dialogue about modeling, because it can be complex. But, if it's a straightforward question, perhaps Bob Nelson could respond. So, what is the question about modeling?

MS. KOSSEFF: Ward, do you want to repeat what you said?

MR. RICHARDS: I think what Ward said is that he

didn't -- his organization didn't trust the modeling that the NRC was using. I don't remember him going beyond that and describing that. So my comment to Ward was, you know, we'll be glad to talk with him after the meeting to get the details.

MS. KOSSEFF: Well, I think what I'm asking is if we can have a response to that now, I would appreciate that.

MR. RICHARDS: I think we need more of a comment than -- well, do you understand what I'm asking? I mean, the question so far is we don't trust the modeling. It's hard to respond to that kind of question without some detail.

MS. KOSSEFF: I'm going to ask a question that's more specific --

MR. RICHARDS: All right. Why don't we move on to Barbara George.

MS. GEORGE: Hi. My name is Barbara George. I'm the director of the Women's Energy Matters and I'd like to first thank you for coming out and giving your presentation. And I just wanted to tell you that I'm celebrating with solstice today and so I greet you with the utmost concern for mother Earth, because I would hardly ever choose to be indoors on the night of the solstice in the summer when it's beautiful outside. But, I am really happy that we're talking about nuclear power plants being shut down. That's

the good news. Oh, we have light in here, too; great.

I think that we're on the right track to be talking about closing nuclear power plants. It's been a pretty sad story up to now and my major concern is that it doesn't become a truly horrendous disaster story from here on out. And I've always been amazed that people can speak about closing down and dismantling nuclear power plants when we know that the things inside them are so incredibly lethal for so many, many, many generations long, long after we're gone. And, you know, we're talking about the 60 years, that is the maximum of time that you want to allow the process to take. And I realize that that's about, you know, a person's life time, if they're not fortunate enough to live a little couple of more decades.

And it seems like there's this sense of hurry to everything about nuclear issues. I work a lot with people over in Berkeley, dealing with Lawrence Berkeley National Lab, which is a place where a lot of this materials were developed along with medical materials, so there's a lot of rational that it somehow is healthy and good for us. But, it's really not very good for us, in general, a lot of it. You know, in the large power plants, there is such an incredible amount of danger involved with them.

And I recognize that you folks have a tremendous responsibility to make day-to-day decisions about how these

things are operating and I could imagine that that's wearing after a while, to be so responsible for such incredibly dangerous things. And it must be very difficult to have that be your job, and to be able to go home and leave it. I can't imagine what that is like, except that it's become my job over the last 20 years, to look at this from another side.

And I recognize that we, in the anti-nuclear movement, have a lot of friendships and feelings for each other involved in the work we do. And I recognize that you have a lot of the same things going on, that you have colleagues that you've been working with for many, many years and you have a long history of knowing each other and, you know, the families and issues like that. And I think that's something that I try to remember when I get angry and when I feel like you're not doing enough or you're not doing what I want you to do.

And I hope that you can see your way to thinking about our -- you know, our point of view, also, and the fact that we have -- you know, we're trying to be responsible in our way for what is left out of this process oftentimes. And I know over the years that there have been many -- many things that were brought to your attention by the, you know, folks on this side of the table that probably didn't feel so good at the time and, you know, probably improved things

overall. I don't know how we're all going to get through, you know, the next hundred generations or however many thousand generations until that stuff is really less dangerous.

Anyway, I have specific comments. I don't have them very well laid out, because I only found out about this on Monday. And I don't know whether there was a lack of notice to the groups or whether we just sort of dropped the ball on our end, but I hope that there's better notice next time.

I'm extremely concerned about the financial liability of the organizations that are undertaking the decommissioning. First of all, I want to say, decommissioning seems like a military term. I just -- you know, there is something that bothers me about that. In any case, the financial issues in the nuclear power business are becoming really major and I know that there's been an incredible issue. Do you folks read the Nuclear Information and Research Service Monitor by any chance? It's a wonderful publication and I know you do talk to them. They're in Washington.

In any case, they have run a number of articles on the changing ownership of nuclear power plants. And in one case, the Oyster Creek nuclear reactor, which is almost at the end of its license, was recently sold for only $10

million, although it had $100 million worth of fuel on hand. In other words, the sale price was minus $90 million. And the issue comes up, well, why would anybody want to buy an old nuclear power plant anyway? And the answer, I believe, is emerging that there's a great big pot of gold in the utility office and that's -- the name on that pot of gold is decommissioning. They've had to collect money over the years from rate payers for this process that we're discussing here and the companies, which have been buying up reactors -- apparently, they've bought 10 in the U.S. and a number of reactors in Canada -- it's a partnership between a British company that owns the reactors there and one of our sleaziest reactor owners in the U.S., the Philadelphia Electric Company, and their partnership is called AMERGIN.

So, anyway, they're out there buying up reactors and it appears that what they're looking for is this pot of gold. They're planning to run the reactors into the ground. They're, you know, hiring temp workers instead of -- and laying off their regular staffs. And they're, basically, taking a chance that the decommissioning process will cost a whole lot less than they had initially believed. And my understanding is that this process that we're here discussing is partly involved in smoothing the path for industry to make it cheaper to close down nuclear facilities and clean them up.

And I just want to say that, you know, we're talking, you know, to save a few bucks for some carpetbagging British company and leave a tremendous amount of radioactive damage, I find that really horrifying. And I just want to say on the record that if there is anything in this process, which is doing that, I'd like you to think about it twice. And I would, also, like to say that as part of this supplemental environmental impact statement, I would like to see you put a clause in whatever it needs to be in, that the decommissioning funds, whatever is unused of the decommissioning funds will not ever, ever be part -- be -- that the companies will have no access to those monies and whatever is left over will go into a fund, some kind of a nationally owned federal fund for cleaning up stuff that doesn't get cleaned up, because I know there are so many places that are -- that need to be cleaned up now and there's nobody out there, who is responsible for cleaning them up, and so the taxpayers end up footing that bill. So, I know that this money will be used very well.

And I think that removing the incentive for companies to buy nuclear power plants in order to get this money would be the most important thing that you could do with the supplemental environmental impact statement; and that the issue has -- you know, it's not looking good, based on the Sequoia fuels decommissioning, which is not a nuclear

power plant, but it is a facility and apparently they put that facility under a shell ownership, which had no assets, and so there's no money now to clean up the mess that they left behind.

And I have another major concern that I'd like to go into and I'm sorry if I'm going on too long. I'm hoping that the meeting is small enough, so that we can do this.

MR. RICHARDS: We've only got seven people lined up.

MS. GEORGE: Okay, great.

MR. RICHARDS: If you're going to go on for much longer, I'd like to make sure we get to the other speakers; then, we can come back to you, if that's all right.

MS. GEORGE: That would be all right.

MR. RICHARDS: All right. So, okay, do we want to respond? Is there anybody on the panel that wants to discuss the decommissioning fund issue?

MR. SCALETTI: While Steve is collecting his thoughts on decommissioning funds, I'd like to just stress the notice of this meeting. You said you only heard about it Monday. We put out the first notice of this meeting March 14th. It identified the meeting would be held in San Francisco on the 21st. We issued a subsequent notice specifically for this meeting and the Atlanta meeting earlier this month, either towards the end of May or early

June it went out. It was published in the Federal Register.

We are opening to -- perhaps maybe -- to facilitate information disbursal, we are opening a Website, which will be specifically dedicated to this development of the decommissioning generic environmental impact statement. And as soon as that gets done, and it should be relatively soon, I will send out a notice to all the people that have signed up of what the Website is, so that you can get the information there. Transcripts will be included. Some of the older documentation related to -- at least portions of NUREG 0586, which relate to power reactors, will be put on this Website. So, this information will be there. And, hopefully, when we get to developing the -- once we've developed the draft of this document, it will be there and notices will be there when meetings are. So, it will be a better coordination.

MR. RICHARDS: On the topic of the decommissioning fund, Steve, do you think you could speak to the access of that fund and then perhaps, Dino, if you could talk to actions the NRC takes, to ensure that the site meets the cleanup criteria before we terminate the license?

MR. LEWIS: Just give me one moment.

(Pause.)

MR. LEWIS: I'm going to say something and then Carl will say something more knowledgeable than me. The

regulations, and I don't have them right in front of me, do not contemplate that if, in fact, the amounts of money that have been set aside, basically from rate payers, if they prove to be in excess of what is needed, my understanding is that it would be returned -- it would revert, basically, to the public utility commission or the public service commission, to basically oversee the disposition of that.

What we are basically doing and our regulation is focused on assuring, to the best of our current understanding, that there will be adequate amounts of money in there. But, since many of these things overlap very, very strongly with continuing regulation by state public utility or state public service commissions and since these types of charges are basically coming from the rate payer, the more pervasive long-term oversight and actions with respect to that money are going to be by the appropriate state regulators, particularly since we'll no longer have a license and the NRC will be out of the picture. So, that's the best I can tell you from my general understanding on it.

MR. FELDMAN: I think one of the things we have to explain is the role of the NRC and our mandate. We're not in the business of collecting funds for decommissioning directly. Our purpose is health and safety and the intent is that a sufficient or bulk of funds be there in situations where health and safety is a problem. That's why we have

initial requirements for collection of funds. There -- and mainly we try to stay out of it, because we don't want to get into equity problems and all sorts of other problems that go on with rate collectors and so on in the states and the PUCs. And so the way we approach is we have a minimum amount that has to be set aside, because that's what our consideration for health and safety is. And they can collect more than that; they can't collect less.

However, there are other factors that come into this and one of them has to do with the tax of the monies. And Internal Revenue Service has made some rulings way back, if it's an external reserve fund for utilities, they don't have to pay taxes on it. They do some kind of thing called net negative salvage and it's a complicated thing and I'm not quite familiar with it, because that's not my area. There are people here, who are not here today, who do that kind of stuff. But, basically, the types of things they do where they don't pay taxes, they have to somehow deal with those monies, because they're saying that money is for decommissioning purpose. That collection was done specifically for -- through a federal regulation for health and safety, so I don't know what happens if they collect more than that. My feeling is they would have an obligation to return that portion of the money.

MR. RICHARDS: Thank you, Carl. I've been

reminded to let people know that we are taking written comments, if you need more time to think through these issues, until July 15th. Is that right, Dino?

MR. SCALETTI: Right.

MR. RICHARDS: Okay. And, you know, part of the comment I heard from Ms. George was that these utilities may desire not to properly clean up the site. I think it was covered in part of -- one of the bullets on the slide, but the topic of the confirmatory surveys by the NRC and I'd like to have somebody speak to that, if you could.

MR. SCALETTI: Well, I'll speak to it briefly. The comment -- one comment I'd like to address is the intent of these companies buying these sites up and going to run them into the ground. I'd like to just say that we -- you know, we still have regulations. These sites are constantly inspected. Dr. Blair Spitzberg is here; he can address this in more detail. Even for the decommissioning process, our regional inspectors are onsite; not constantly, but when a major activity goes on, they are there to watch, to observe, to inspect, and this goes on through the process of decommissioning. Surveys are constantly done. And so, there is a great deal of scrutiny with regard to a nuclear power plant. It is ongoing from issuance of a license, to license termination.

And we do have, obviously, the criteria of 25

millirem per year that must be met before the license can be terminated. The licensee is required to perform a site survey, which -- first, they have to do a site characterization, which identifies -- where there are any problem areas, they have to do a site survey. The NRC will do a confirmatory survey, to ensure that they are within the 25 millirem criteria. Now, that's -- it was discussed previously. If Dr. Spitzberg has anything he'd like to add with regard to the inspection process and the oversight that goes on --

MR. RICHARDS: Why don't we take one quick comment from Dr. Spitzberg, from our regional office, then we'll move on.

DR. SPITZBERG: Thank you. Yes, I think to echo what Dino said, we do conduct active routine and reactive inspections throughout the operating life of all facilities and once they're in a shutdown and decommissioning mode, we, also, continue that process until license termination. Part of that inspection is to ensure that they are complying the all of the safety requirements, the technical specifications. Part of the decommissioning inspections that we perform are confirmatory measurements, to make sure that the measurements that the licensees are taking to establish the final status of the site are, in fact, valid and that we confirm that.

The other comment I would make, in terms of change of ownership, is that when licensees do change ownership, they are required to notify the NRC of that and we do a review of that change. And it's not -- a change of ownership does not equate to a reduction in the safe operation of the facility and we verify that through our inspection program.

MR. RICHARDS: Okay, thank you, Blair. Why don't we now go to Irmi Meindl. Is that correct?

MS. MEINDL: Thank you. I'm very concerned that there is no independent oversight over the decommissioning process that is going on. And there should be some kind of regulation about after the 60 years, what will happen to the site, because there could be somebody coming by and just finding a way to make a lot of money just by buying the site in a cheaper way than you usually get sites like that. So, I don't think it should be just left by itself, because there is still some radioactivity going on, even if it's very minute.

But, you know, not to underestimate, how many reactors are considered to be decommissioned and, also, if there are a maximum per year? I mainly have a lot of questions. Are there any plans for new nuclear reactors or is the trend to go away from nuclear power and go more into alternative energy, like solar and wind and so forth? What

do you do with the radioactive materials in the process of decommissioning, as well as after?

And those for you to say the decommission process is completed and, you know, termination is finished, meaning -- it sounded a little vague, you know. It was like kind of a worldwide standard of what is considered safe radioactive level, to leave it by itself and have no oversight, so it would be great if there could be some kind of more specific number for -- the differences in the reactors, maybe you need the numbers; but, in general, have a more specific number for when the decommissioned process is completed.

And I was wondering if you could explain drain and flush plant systems. It was under the SAFSTOR. There was this one part, the preparation for SAFSTOR, drain and flush plant system, if you could just explain that a little bit more, if water gets flushed, too, and how that goes. Thank you, very much.

~~MS. HICKEY: SAFSTOR drain and flush plant systems, if you could explain that a little bit more, where it gets flushed to, and, you know, how that goes. Thank you very much.~~

MR. RICHARDS: All right. Thank you. That last one was slide 23, Eva. If you could take a look at that. As far as new nuclear power plants, you know, that is a decision made by utilities. I don't think we have any

applications in for new nuclear power plants. But, on the other hand, I don't think anybody here can speak to what utilities across the country intend.

Would somebody on our panel like to speak to, in kind of general terms, what happens to the radioactive material?

Carl, make sure you get the microphone there so we get a transcript.

MR. FELDMAN: The -- well, you mentioned the standards we have, this license termination standard of 25 millirem ALARA. Those are basically, when you talk about the ALARA aspect of it, we look at cost benefit, or how much dose are you saving, and what are you spend for it. Because there are alternatives to spend money where, you know, you might want to put a traffic light in or something else, or there are other -- you have to do a total balance. There is lots of ways of saving lives, not just through nuclear. So we do that type of thing.

There are numbers floating around for doing cost estimates. Typical numbers are something like $3 million per fatality averted is an example of some of these numbers that the government uses to look at cost benefits.

But, in any rate, we look at those things. But you can't do an ALARA unless you are safe, you have to start at a safe level, and then you do ALARA to adjust down. So

that is why the 25 millirem is picked as a number that is considered safe.

Now, the ALARA, an example of that would be if you had something where you had a concrete structure and you were decontaminating it, you could down further in how much you removed because of costing. The way the radioactivity gets on to the concrete, et cetera, when you remove it and it is sent to, let's say, a low level waste facility, or is removed from the site, that is a certain costing involved in that, and that is not as expensive as removing soil from a site. So when the soil gets contaminated, it is much more difficult to remove because you have to remove lots of it, and it is heavy and it is very low concentrations of activity.

And so normally you would, in an ALARA concept, you would go down lower in concentration on a structure than you would on soil, but you would still have to go down below 25 millirem. So that is -- and the ambiguity comes about because there is a translation that is involved and there is no way to avoid it. When you look at radioactivity, you have some kind of activity per unit volume, per unit area, that has to be translated to an exposure to individuals, and you need to do modeling, there is no other way to get there. And so there are some assumptions made and, generally, we try to make them realistic but somewhat conservative.

MR. RICHARDS: Well, why don't we go to Eva Hickey on the question about the drain and flush and then you got the slide up was referred to.

MS. HICKEY: Right. In the reactor, there is a lot of systems, piping and components that have liquids in them. And to prepare for SAFSTOR, what they will do is drain those liquids out of the systems and pipes, so -- and because a lot of times those have radioactive materials in them, and that way those materials will no longer be in the reactor, or in the plant.

SPEAKER: Where do they go?

MS. HICKEY: Okay. I was --

MR. MEINDL: The question for the record is, where do they go? And I think that is a question, Carl, you didn't answer. Where does the radioactive material go?

MS. HICKEY: Right. Okay. There is -- for the liquids, they go through a process to try to remove the radioactive materials from the liquid, and then the liquid that does not have the materials in it can be released, or is dealt with. There is a variety of ways that that is done.

But all of the radioactive materials that leave the site will go to some sort of a licensed storage facility. Before they get there, they may be further compacted. They may go to another, to a facility in between

which will reduce the volume before they go to a storage site, but all the materials, one way or another, will go to a licensed facility for storage.

MR. RICHARDS: And just to be clear, and I think Ward Young touched on this, but for most low level waste, it goes to a waste burial site, I mean it is buried in the ground.

The high level waste, the nuclear fuel is presently under discussion. I think most people here have heard Yucca Mountain mentioned. But the federal government, the Department of Energy is still looking for, you know, how we are going to proceed as far as the disposal of high level waste, which is primarily the spent nuclear fuel.

Am I correct on that? Is there anyone here who wants to add to that?

[No response.]

MR. RICHARDS: Okay. A quick question from Barbara George.

MS. GEORGE: Well, it isn't a very quick question. It kind of leads into what I wanted to talk about later, but I will make it as quick as I can right now. There is a project going on right now in Tennessee to grind off the surface contamination of machinery at Oak Ridge fuel facilities, but they are also planning to take a reactor vessel, I believe it is, from Michigan and do the same thing

with it, grind off the surface radioactive contamination, leaving a certain amount, an unknown certain amount of contamination behind, and then chop it up and send it out to the scrap metal industry. So that says to me that it does not go to a low level storage facility. And I think this is the future that we are heading into with our eyes tightly shut.

And I understand that the NRC is waiting for the BEIR dose. I mean this whole question of the dose is another issue, because a dose is a calculated hypothetical number, rather than an actual description of the radiation in a particular piece of machinery, what elements it is, what kind of -- you know, what exactly is there, what the hot spots are, et cetera. You get into dose-based modeling and you average everything out and it basically becomes not, you know, not a real world tangible thing anymore. It becomes a hypothetical, theoretical discussion without the realities of hot spots and bad calibration equipment.

I think this is a very big issue. My understanding is it is very hard to measure down to very small numbers of millirems. And so the question of how they are actually going to determine whether they are below that, and what, you know, what goes into the scrap metal business, I think the steel industry is very up in arms because they have all these expensive monitors that they have put in

which basically say if there is any radioactivity, and now they are going to be getting a whole lot of stuff which has a very low level supposedly, most of it, and their -- so their equipment will be useless.

And I think this is an incredibly important issue because what is going on in Tennessee, thanks partly with the blessing of our possible future President, it is really alarming, that they are -- everything, you know, your slide projector could be radioactive, these chairs could be radioactive, you know, my ring, my glasses, my belt buckle, IUD, my teeth fillings. I mean this is what the future holds, and this is where -- I mean the whole question that I really appreciate Irmi raising of, where do these radioactive materials go? I mean this is the question.

And I think what Ward was saying about how what we would like to see is to store those things on site while they are cooling down, keep the companies responsible, keep the NRC involved for hundreds of years, however long it takes. But what is going on instead of that is the Yankee Rowe reactor was dismantled immediately. It was trucked down to Barnwell radiating everybody along the way. And now in Tennessee, they are -- you know, this is this pilot project, and I understand that the NRC is looking at the possibility of legalizing this type of dismantling and recycling of radioactive materials.

And I think that, you know, whatever you are doing in this process here, if you are making it easier to make that our future, I think we can just kiss this earth good-bye. There won't be very many more generations. So, I just really want that question addressed very carefully.

MR. RICHARDS: All right. Thank you, Barbara.

Blair Spitzberg is going to have a comment on some of your statements, and then I would like to move. We have two more speakers who have signed up tonight and I would like to get to them, and then we can come back to others who have spoken and, you know, continue the dialogue.

Blair.

DR. SPITZBERG: First of all, let me -- I know there has been a lot of news stores that you may be referring to concerning the recycling of metals from DOE facilities, but I am not aware of any proposal to recycle reactor vessel materials. For one thing, the reactor vessels have more than just surface contamination, they have contamination throughout the metal matrix because of the activation products in the metal. So there would be no practical way that you could purify that metal and recycle it. So I would be interested if you have any specific information concerning that. Please pass that along so that we could look at that, because I am unfamiliar with it.

Let me address the modeling, and Bob Nelson back

there, his group is involved in a lot of the dose modeling that we do for decommissioning purposes. But let me see if I can demystify some of that a little bit. It is not correct to say that we don't know what the activity levels are within a facility that is being decommissioned. In fact, one of the activities that licensees have to perform is what is called a characterization survey, which is a vast series of sometimes tens of thousands of independent -- of individual measurements throughout the facility for the purpose of characterizing the amount radioactivity in systems and components, and on materials and inside of materials. And we do a detailed review of that and we also do some independent measurements along those same lines to verify that that information is accurate.

Once that information is obtained and the licensees and the NRC does modeling of that activity to determine the doses that would be incurred by population groups likely to incur any dose from that, based on all pathways, in other words, if there is contamination in groundwater, for example, we have to make assumptions on how much water from the ground would come in contact in the biosphere and be drunk, drank, or how much would get into any vegetation and ingested, or how much would be breathed.

Those kind of model parameters are part of the modeling that we do. We have very good information on that.

And as Carl said, it is generally considered to be conservative.

But we welcome any comments that you have concerning our modeling methodology. This is -- models continue to be refined, but we think our models are very conservative and they are based on actual measured kinetic data.

Let me ~~method~~ mention something about your concern about belt buckles and teeth and other radioactive materials. You are quite correct that there is radioactive material in virtually everything that we come in contact with. There is naturally occurring radioisotopes. There is -- if you ate vegetables today, you probably ingested some potassium-40. If you breathe the air, you are inhaling radioactive materials that are produced in the atmosphere by cosmic ray interactions with the chemicals that are in the atmosphere.

So, you are quite correct that we live in a radioactive environment. What we are trying to do is not add to that as a result of the decommissioning activities. We are trying to reduce the level of radioactivity at these facilities very close to background levels. In fact, in many cases what we are trying to avoid is having licensees incur the added expenses of trying to clean up background radiation. And so, what we are trying to do is regulate

them down to an all pathways dose-based level that is very close to background, and at levels of which there is no scientific evidence that there are any health impacts as a result of those doses.

MR. RICHARDS: Okay. Thank you, Blair.

I would like to go to Robin Kosseff, is that correct? And then to Jackie Cabasso, if we could. Good. Robin.

MS. KOSSEFF: Hello again, my name is Robin Kosseff, I am with the Board of Western States Legal Foundation, although I am not speaking on behalf of Western States today.

I last winter had the privilege of being in Hungary at a seminar in which Lothar Han, your counterpart in Germany, the chairman of the Nuclear Regulatory -- Nuclear Safety Board in Germany, participated. And somebody asked him, you know, if he could name in Europe, Eastern or Western Europe, any reactor has been dealt with safely, and he said Swittendorf, which was a plant that Austria built and then was shut down by referendum before it ever went critical.

And so, the point I am trying to make is that I understand the NRC is concerned about health and human safety, but, unfortunately, we have already blown it because we are already here with many, many, many nuclear reactors,

both for civilian power and in the nuclear weapons industry and so forth.

So, what I think is happening here, unfortunately, I was not able to get NUREG-0586, although I have been aware of this hearing for about two months and have tried to get the document, so this was a problem. So, I didn't come as prepared as you all were able to come, because you have been able to read your documents. But I did pick up some other things off of your web site. And I really feel that you are going about this the wrong way. I mean I think that -- I think that what you are doing is saying, we are going to decommission and this is your charge as the Nuclear Regulatory Commission, to come up with your regulatory requirements of how decommissioning will proceed.

But how decommissioning can proceed is based is based on how we are going to handle nuclear waste. But the NRC is not really taking on nuclear waste, and even in your GEIS here make it very clear that you are not even going to talk about decommissioning of the nuclear waste facilities.

So, I think what our waste options are very, very much impact what the decommissioning processes are going to be. Okay. So that is the first point that I really want to make very strongly.

I think that you need to take charge of the situation here. I understand, historically, that what the

NRC has done is work with the utilities to make it possible for them to build and operate nuclear power plants. And I think now we are at the point where dealing with the waste from these plants is extraordinarily expensive, incredibly dangerous to us and to the environment.

And not just us, I mean even we are talking 60 years, that is not us, you know. To a certain extent we can say, you know, who cares, 60 years? We are not going to be here, right? But I know there is somewhat of a moral imperative which I personally, you know, feel in this. And I think that what you have to do is be responsible and take charge of what we are doing with these materials instead of how you are going to regulate the industry, the power companies at these individual plants to help them decommission in a way that they think suits their needs the best. Okay.

For example, in this document, it has a very nice, fancy name, this is NUREG-1628, I am reading here, what activities can take place prior to submitting the PSDAR? And so, we have examples of major activities which have to approved by the NRC and minor decommissioning activities, such as the shipment of reactor fuel off site. And this is a classic, this is high level waste, and this is considered a minor activity. Well, it might be minor for a utility that is having -- that has their fuel rods reracked and

reracked and reracked, and if they put any more fuel rods in there, they are going to be really in jeopardy, at risk of a criticality accident, so they are going to move them some night to some other place, this does not have to be -- this is, you know, considered a minor decommissioning activity?

I mean I think that you really need to reevaluate what it is that you are trying to achieve here. Because human health and safety, if that is your goal, that is not what these kinds of allowables are going to achieve. And, certainly, there is a degree of opacity, as opposed to transparency. You know, spent fuel, spent fuel rods, in Germany, again, you know, this is not a minor activity. We saw at Goerlaben, you know, this is not a minor activity. The casks that these materials have to be moved in are, I think they cost like $2 million apiece or something like this. They are enormous, they have to move them with, you know, military guard.

So does the NRC not want to make sure that there is some regulatory approval involved in that from their perspective? I mean I don't understand why you would want to disempower yourselves from being able to regulate something that is so crucial as that.

I want to say, also, regarding the modeling, that I don't really want to -- I am not a health toxicologist, I am an environmental toxicologists, so I am not going to talk

about dose, respond to dose-based models, although I would echo what Barbara said about this. And it is interesting that although you are saying that the NRC is trying to follow international standards, we are still using millirems here when the rest of the world has moved on to sieverts.

But in your environmental impacts, what impacts will be assessed in the revised GEIS, I see land use, water use, air quality, ecology. Now, I am a plant physiologist, environmental plant physiologist, and I have looked at a number of environmental impact models dealing with radioactive materials, and what you see is that the people who are doing the aquatic study have one set of guidelines, they are using one set of measurements, one kind of thing that they are using, and then the plant studies, the plant and animal studies use a whole different kind of modeling, and everything is done in this very, very segmented way that does not really tell you how these materials are moving through the environment, which is really the question that your report needs -- that your study needs to answer, you know. Because if they are in the air and they are precipitating in the rain, you know, and you are not following the pattern there, it doesn't really matter when you look at these things in a segmented way, are using models that are not integratable with each other, looking at different parts of the environment.

So, really, if you are going to assess the environmental impacts of ecology, that needs to include land use, water use, air quality, animal life, human life. Okay.

And I want to echo what Ward said, also, about the precautionary principle, because I have seen nothing that even -- no mention of it, no inkling, inclination towards precautionary principle in any of the documents that I have been able to read in preparation for this hearing, and I think that is a real mistake. I think it is a real mistake. I think that I would doubt very much if there is anybody in this room, with all due respect to your experience with the Nuclear Regulatory Commission, who really feels that you could say absolutely you can control what is going to happen with these materials and guarantee everybody's safety.

I mean accidents so happen. Here in California we live in a major earthquake zone. So, you know, it is not even -- there is force majeure at work here, and I think that the precautionary principle is really mandated in looking at your EIS and evaluating how you are going to handle this. So, I think I have rattled on a lot now and I will talk, and thank you again for coming here.

MR. RICHARDS: Right. Thank you, Robin.

I think there is a number of points that Robin made that we may want to respond to. The first one has to do within the NRC involvement in, I guess, the regulation of

waste. Is that a fair way to characterize your comment?

MS. KOSSEFF: In addressing how we are going to deal with the waste? Because if you don't know what you are going to deal with the waste, how can you say, let's go for the DECON and encourage any utility to use the DECON decommissioning process, as opposed to a SAFSTOR process. And particularly in respect to the spent fuel, you know, I think that -- as well as the low level waste, which is also going to be a huge volume of material if it is shipped off to someplace. And where is that place going to be? And most of those places are now ~~SuperFund~~superfund sites.

So, you know, I think that the NRC really needs to think about and get very, very actively involved in nuclear waste and nuclear waste management questions. Thank you.

MR. RICHARDS: Blair or Bob, would you like to speak to our involvement in, you know, defining the waste options? And I think we ought to also discuss what our involvement is as far as the shipment of fuel off-site. And, finally, I would invite, Eva, if you would like to make a comment about the aquatic and plant study modeling. I don't know if that is something you want to address or not. But if we could take it in that order.

This is Bob Nelson, he is with our Office of Nuclear Materials Safety and Safeguards.

MR. NELSON: I am going to try to address your

questions regarding our involvement with radioactive waste. And, first of all, I will address low level waste. We do have a regulation for disposal of low level waste. We have found shallow land burial to be a safe alternative for disposal of low level waste. We have regulations governing disposal of low level waste. Low level waste is being disposed safely today, and we feel it can continue to do so.

The currently operating sites, Barnwell, Envirocare, and the Hanford site are receiving waste today, and are doing so in a safe manner. I can get into a lot more detail on low level waste disposal if you would like, but we believe that low level waste is being handled properly and being disposed of safely.

Regarding high level waste, the spent fuel is currently either stored in spent fuel pools at reactor sites, or is stored in dry storage pending a permanent disposal option. Those activities are closely regulated by NRC and will continue to be closely regulated by NRC, even after a Part 50 license may be terminated.

Regarding transportation of nuclear waste, that is not my specialty, so I am not going to try to address that. But I will be glad to answer any specific questions you have regarding high or low level waste, but, generally speaking, it is --

MR. RICHARDS: I would like to ask Blair Spitzberg

to respond, because I know that, for instance, we were up at Rancho Seco yesterday. Rancho Seco is preparing to move spent fuel from their pool just to something a half a mile away, and he can speak to our involvement in that activity.

DR. SPITZBERG: I understand there is a lot of public concern about the transportation of radioactive materials and spent nuclear fuel, however, it is not true to suggest that it is unregulated. We regulate it very stringently. We and the Department of Transportation, for spent nuclear fuel, we review and approve the transportation packages which have to be designed to withstand accident conditions. They have to be tested and analyzed against accident conditions.

We have a very good record in this country, safety record as far as transportation of radioactive materials is concerned. There is literally hundreds of thousands of shipments of radioactive material in this country. Most of them are lower activity packages, ~~radiopharmaceuticals~~radio pharmaceuticals, small amounts of radioactive material that are transported that are used in industry. But the overall safety record of the transportation of radioactive material is a very good record.

We do inspect that. We inspect the companies that fabricate and manufacture the transportation packages. We inspect the licensees at the time that they are preparing

the transportation packages. Sometimes we accompany the shipments. If it is a high activity spent fuel shipment, we have actually accompanied those shipments to the states that the spent fuel are transported in. The Governors' offices are notified of those shipments. The transportation routes for those shipments are reviewed, inspected and controlled.

So it is unfair to suggest that it is unregulated. I understand it is unpopular with some people, but it is regulated very stringently, and the overall safety record of transportation of radioactive materials is a very good one.

MR. SCALETTI: May I make a comment here, please?

MR. RICHARDS: Sure, go ahead, Dino.

MR. SCALETTI: Regarding -- there are three things that need to filed within two years after a licensee determines whether or not -- that he is going to decommission his facility. One is a PSDAR, one is a site-specific cost estimate, and the third thing that needs to be filed is a fuel management plan, knowing full well that the reactor fuel, the spent fuel is not going anyplace until the Department of Energy has provided a repository for this fuel. So, the fuel will stay on-site either in the form of an independent spent fuel -- an ISFISI, or it will be maintained in the spent fuel pool.

Now, this is -- either way they do it, certainly, it is the determination of the licensee how he wants to

handle his fuel, but he must file with us a fuel management plan. And so, the fuel, there are -- there could be shipments of fuel between sites, I suppose, but not unless the NRC knew about it and agreed to shipment of spent fuel.

Now, NUREG-1628, the way it is written, and it does not say spent fuel, I am sure it means unactivated fuel, because many utilities, when they shut down, still have new fuel on-site. And they can sell this fuel, and they do sell it, and they can ship it, because it is not activated and there is no concern of shipping it. I mean they receive it at the site, it can go out the same way. So, it is not spent fuel that is considered a minor decommissioning activity. We do not consider the fuel management as part of decommissioning because we know that it is going to stay on-site until the Department of Energy has taken this -- or does take this fuel.

MR. RICHARDS: Let's go briefly to Eva Hickey. There was a comment about the aquatic and plant study modeling, if you could. And then I would like to move on to Jackie Cabasso, please.

MS. HICKEY: Okay. I guess I would just like to say that I appreciate your comment and what we will be doing is looking at, to the best of our ability, an integrated approach to looking at the environmental impacts. I won't say that every one will be measured against one another, but

that is going to be part of our assessment, part of our process.

MR. RICHARDS: I would like to move on now to Jackie Cabasso.

MS. CABASSO: Thank you. My name is Jackie Cabasso, I am the executive director of the Western States Legal Foundation in Oakland. Western States is a nonprofit, public interest organization which advocates nuclear disarmament, responsible management of nuclear waste and democratization of science, meaning public participation in decision-making that directly affects people in their lives. That is really the core of environmental justice.

I want to make several types of comments. First, I want to talk about the process here, and then I will make some substantive comments. And I should also mention that our colleague organization, Tri-Valley Citizen -- Communities Against a Radioactive Environment in Livermore was unable to be here tonight, but they wanted to express their concurrence in the comments that I am going to make.

First of all, the public notice for this meeting was completely inadequate. It was not sufficient to post notices in the Federal Register. Even my legal foundation does not regularly peruse the Federal Register. Furthermore, we have, in the case of my organization, which was not ever directly notified about this hearing, we have a

long history with the Nuclear Regulatory Commission, going back in recent history only, at least nine or 10 years to the public meetings that were held in San Francisco on the question of -- How clean is clean?

As result of that, we had a representative on the Environmental Protection Agency Federal Advisory Committee which was involved in studying in that process until it came to a dead end. More recently, we were involved in the radioactive metal recycling question at the national level. At the local level, very involved in the GE ~~Valicotos~~Vallecitos public meetings that have been going on.

So, it is just not acceptable that we didn't get a notice. When we did hear about this meeting, we took it upon ourselves to notify several of the other organizations that are here tonight. But that is not our job, that is your job, and that goes to the very heart of the National Environmental Policy Act, whose purpose is to provide an opportunity for public comment at any early stage, before there has been any unretrievable commitment of resources to an action that will have potentially significant environmental impacts.

Secondly, having learned about the meeting, we were unable to find the underlying GEIS on the NRC website. And not only did we search the website, but several other organizations that we work with also searched the website

and were unable to find the document. So, therefore, the substantive comments that I am going to make are very preliminary and initial because we didn't have the underlying information.

Now, you made a reference to the establishment of a website to deal with this GEIS process in the future, and that is great. But, again, that is not sufficient in terms of providing access to the public and public participation, and that is an environmental justice issue, because a lot of the directly affected folks do not have computers and do not have regular access to websites.

At a minimum, there is no reason why the NRC cannot put together a mailing list, mail out notices of public meetings in this region in a timely manner, as well as putting together an electronic mail notice list to provide informal notice.

Finally, I want to revisit something that happened at the very beginning of the meeting, and I want to underscore Ward's objection to the intervention of the facilitator and the first commenter, I felt that that was approaching entrapment and is just not acceptable. And I feel so strongly about that that I felt I wanted to bring it up again so that it doesn't happen again.

Moving on to the substantive comments. Again, these are initial comments and we are hoping to submit

written comments. First of all, something that came up in the question -- the comments and answers was the question of background levels of radiation. And so, I think it is fundamentally important to include, as a baseline, a definition of what NRC means by background levels of radiation. Let's be clear whether we are talking about background before or after 1945. I always find it difficult to listen to officials from nuclear agencies talk about naturally occurring radiation without mentioning nuclear testing.

Now, the supplement to the final GEIS should include the following, and this is not going to be an exhaustive list:

A description and analysis of all waste streams that will be generated by decommissioning activities of all the various kinds that are being considered.

A description and analysis of what types of facilities will be needed for management and disposition of each waste stream. And I stress that I am using the word "disposition" rather than "disposal," because there is at present no way to dispose of many of these radionuclides that we are talking about.

A description and analysis of what specific facilities nationwide are envisioned for all of these decommissioning waste management and disposition activities.

A description and analysis of the cumulative impacts of each waste stream in the community of origin, along the transportation routes, in combination with other radioactive shipments, both NRC and DOE, at the proposed sites for waste management and at the proposed sites for waste storage and disposition.

This analysis should include cumulative routine operating impacts and cumulative accident risk analysis. And in all risk analysis, care should be taken to reevaluate software and risk assumptions underlying impact and risk analysis. This is required to ensure that neither risk analysis methods and software, nor assumptions about facility containment, either at power plants or waste management sites, rely on assumptions about containment software or analysis methods similar to those called into question in recent Defense facility Nuclear Safety Board critiques of Department of Energy practices.

And if anybody here has a specific comment on that point, I would like to hear about it.

Finally, we have -- a lot of terminology has been used tonight. We talk about acceptable dose, acceptable risk, residual radiation risks. The concept of As Low As Reasonably Achievable, cost benefit analysis, transportation safety. I want to underscore the importance of bringing the precautionary principle into this process.

Regarding acceptable dose, I think it is generally agreed that there has been a constant downward trend in defining what supposedly safe levels of exposure to radiation are. The precautionary principle does not require scientific certainty in terms of determining cause and effect. It shifts the burden of proof to the generator, in this case the licensee, rather than to the public, and it is a principle which is becoming increasingly accepted in the other arenas of environmental regulation. In Europe and in the United States it has been embedded in a number of environmental treaties over the last five years, and it is an idea whose time has come. So I will stop there. Thank you.

MR. RICHARDS: All right. Thank you very much, Jackie. I particularly appreciate your list of comments having to do with what we should consider in the GEIS. That is particularly why we are here tonight.

At this point we have had a chance for everybody who has signed up on the list to speak. So, let me ask, is there anyone here who has not spoken yet, who wishes to do so before we go back for a second round?

[No response.]

MR. RICHARDS: Not seeing --

MR. FELDMAN: Can I make a comment?

MR. RICHARDS: Sure.

MR. FELDMAN: Just a reference, NUREG-1496 is the GEIS on the license termination rule. And the supplementary information to the rule of Part 20, subpart E, have many of the topics and discussions, and explanations of what background radiation is and what residual radioactivity is, and what types of international dose methodologies are being used, and national dose methodologies. And associated with those are comments and responses to the whole rulemaking action which have lots of information into how we do things or how we try to resolve some of the comments.

So, I think that would be a worthwhile piece of information to get and look at. And that is incorporated indirectly into the GEIS that we are using now because we are using the license termination rule aspects to do our impacts.

MR. RICHARDS: Unless there is other people here who have not yet spoken, who wish to, going once, twice?

[No response.]

MR. RICHARDS: I would like to go back to, or at least offer the opportunity to go back to Ward Young. Ward, would you like to speak again?

MR. YOUNG: Yeah, I will speak. Thank you. We believe that in addition to the problem of not notifying this meeting adequately is perhaps a somewhat larger focused view on the whole issue of this process that the NRC

conducts with the utilities in decommissioning. And it is echoed by one of the comments by one of your spokespersons earlier, that there is a lot of new information in the world and we need to keep up-to-date. There is a lot of new things that are happening to the nuclear industry.

Well, that is the fundamental problem here is that we are the citizens and you are working on behalf of the industry. And, I am sorry, but that is exactly the way you put it, and that is exactly the way that citizens feel about this. It is completely objectionable and unacceptable to the environmental community that, in the process of decommissioning, the NRC is required to hold two public meetings. That is completely inadequate. There should be public hearings at every reactor site that is going to undergo this.

Now, we are talking about independent citizen oversight and monitoring with funds for independent monitoring and independent oversight by communities living around these facilities. We are talking about reaching agreements together between communities, the industry and the regulators. That is fundamentally different than holding a few informational meetings, which is simply unacceptable.

To put this into some perspective, the requirement that I am talking about for a true involvement of the

citizenry, I believe and it is my understanding that the single largest episode, if you can call it that, in the generation of low level radioactive waste is the decommissioning, both by volume and by radioactivity. This is a very significant activity. It is not just a continuation of operating, you know, operational mode. It is a completely separate and distinct history and procedure, and we think it should be treated that way.

Finally, a couple of other comments. You know, which model predicted that plutonium would migrate at Maxi Flats? Which model predicted that tritium would -- I'm sorry, plutonium at Maxi Flats and tritium at Beatty, Nevada? Until you can show me a model that predicted these types of migration of radioactive materials, then I am really doubtful about your commitment to shallow land burial, which has failed at every single site that it has been attempted.

The only reason that exposures have not been high at these sites is because of the millions of dollars that have been spent by, generally, by states, not by the responsible parties, the generators, but by the states particularly. They are spending millions of dollars per year at some of these facilities.

We are also concerned that there is a very large contribution to the waste stream from military reactors,

especially here in California. We want to know why it is that decommissioning of military reactors is not included in this review. I see nothing about it. And we do know that waste streams from these military reactors do go to the commercial low level waste sites.

Again, I will reiterate, the NRC should be looking at deep geologic disposal for some of these wastes, as well as a deep mine repository as a method of reducing potential exposures over the long-term.

We know that the Nuclear Regulatory Commission has allowed the Trojan operators, as well as some of the other reactors, I believe, specifically, I know about Trojan, to ship the entire reactor vessel, intact, to a low level waste dump, and the NRC itself admits that several rem per hour from the reactor vessel could be the exposure rate from particularly niobium-94, which has a very long half-life.

Another comment and whole area that needs to be reviewed again, there are at least three issues that should require the reopening of the EIS, and that is environmental justice, the history of decommissioning, and, also, since 1988, the clear indication from scientific studies that radiation is more harmful to human health than thought in 1988.

We know that in the United States, low level waste has been allowed to defined by what it is not. It is

unacceptable, other countries do not accept this waste for burial in shallow landfill. And under the NRC regulations, nickel-63, with a 100 year half-life, is considered short-lived. That is unacceptable. A 100 year half-life should never be considered short-lived.

Every single radionuclide allowed in high level waste -- there is no -- is allowed in low level waste level. There is no restrictions. You can tell me concentrations until you are blue in the face, but you allow greater than Class C waste into shallow land burial. So, there comes the trust issue again. Greater than Class C waste under the NRC regulations is considered not suitable for shallow land, near-surface disposal, and yet it is going in.

So, all of these things raise tremendous questions for us and we are just not convinced that the process is off to a good start. We hope to add some more comments in written comments. Thank you.

MR. RICHARDS: All right. Thank you, Ward.

A number of issues that were brought up, a couple I wrote down that I invite a response to. One was the comment that there should be hearings at each site. I think we talked briefly about the process before, but, Steve Lewis, would you like to speak to that?

MR. LEWIS: Yeah, I think that -- I mean I appreciate very much the comment. I think, Ward, that you

probably are aware what the regulation provides in that regard, which we promulgated in 1996. And, you know, after going through the rulemaking process and, so, the specific decommissioning process at a particular plant, under our regulations, can commence after the PSDAR, which we have described, has been submitted, 90 days after the PSDAR has been submitted.

And the NRC, when it promulgated its regulation in 1996, was motivated by a view that, from our regulatory perspective, as having the responsibility for, you know, regulating the safety of nuclear materials, the point that we felt was a federal action of great significance was the license termination stage, because, as a regulatory agency, the idea of determining when we can relinquish all regulatory authority over something is a very significant step. So that was where we decided, in our view, the formal hearing process should be provided.

So, I really -- I mean I appreciate your comment, I understand what you are saying, and the answer is the regulations that we did adopt did not follow that model.

MR. RICHARDS: One other legal question that I think Ward Young brought up, if you could probably respond to, Steve, is this issue of why we don't regulate military reactors and the waste they produce.

MR. LEWIS: Well, --

MR. RICHARDS: Is that --

MR. YOUNG: You have military, some 30 or 40 percent of all the low level radioactive waste that is shipped over the last five years from California is military in origin.

MR. RICHARDS: I am not disputing that, but I think the question you asked was, why is the NRC not involved in waste coming from military reactors? Did I mischaracterize that question?

MR. YOUNG: Are you involved in overseeing or reviewing licenses for Envirocare and Barnwell?

MR. LEWIS: I didn't get -- what was the last?

MR. YOUNG: Are you -- is the NRC involved in Envirocare and Barnwell in any way, shape or form?

MR. LEWIS: Yes. Yes, we are.

MR. YOUNG: Yes. And the military waste is going to Envirocare and Barnwell and being buried in shallow land burial now. And so you are involved in the issue of burial of military waste.

MR. RICHARDS: Just a minute, Blair, let's get the microphone here.

DR. SPITZBERG: I believe most radioactive waste from the military operations goes to the Department of Energy. If any goes to Envirocare, it does not go to the NRC license under Envirocare, which is only for source

material, 11(e).2 byproduct material.

Envirocare has two licenses and to my knowledge, I am not aware of any --

MR. YOUNG: There is a reactor out at one of the bases near Sacramento that has just shipped waste for disposal. But I have studied this issue --

MR. RICHARDS: We need to make sure you are on the record here.

MR. YOUNG: The NRC may not be aware of the contribution of military waste to the commercial low level waste stream. That doesn't surprise me. You know, probably someone within the NRC is aware of this.

I just was part of -- I was a consultant to the Atkinson Scientific Panel which Governor Davis appointed to look at alternatives to Ward Valley for low level radioactive waste disposal. We did a search -- research of the waste stream going to Envirocare and Barnwell from California. I can get you that information. Slightly over 50 percent of the curies over a five year recent period, to 1999, was from the commercial nuclear power plants. Somewhere around, I am forgetting, I don't have the figures right at the tip of my fingertip, but somewhere around I believe 35 percent or so came from military reactors, propulsion system waste, and also a reactor on a military base near Sacramento was also part of that picture.

So we want to know, although I understand it is claimed that decommissioned propulsion system nuclear reactors from the military, they will be decommissioned at the DOE sites, we know that operational waste from these facilities is now going to the commercial sites. And I would like to know why, if the operational waste and its characterization is allowed into the commercial sites, how we can be assured that the decommissioning waste as well will not also be allowed into the commercial sites. Thank you.

MR. RICHARDS: All right. Thank you.

I would like to go back to Barbara George. Barbara, do you still have additional comments?

MR. SCALETTI: Stu, may I make one quick comment?

MR. RICHARDS: Sure, go ahead.

MR. SCALETTI: This relates to -- everybody is opening up with -- I am being severely beaten about the head and shoulders about the notice of this meeting. And I just would like to state one brief thing. We issued two Federal Register Notices, one in March 14 and another one in late May. It has been on the NRC's electronic bulletin board since shortly after the second Federal Register Notice was issued.

There had been a press release issued by the Public Relations Office in headquarters. Chip Cameron has

contacted a number of people on the West Coast here regarding this meeting.

However, I will commit to you, if you sign your name to the sign-up list, when we have the next public meeting out here regarding the Draft Environmental Impact Statement, you will get notice in the mail ahead of time. Thank you.

MR. RICHARDS: Barbara George. Well, I think Jackie wants to respond to that.

MS. CABASSO: Thank you. I appreciate that offer, but this is not about me and my organization. It is a larger point. For the second time in history, I am going to say something positive about the Department of Energy. The Department of Energy manages, on a regular basis, to compile lists of interested organizations and to send notices in advance.

I get notices for Department of Energy hearings from all over the country. Whenever there is any kind of a public meeting at Livermore, there is some kind of an advance notice. It is usually inadequate. I am not going to go so far as to say they do a good job. But, by comparison, they do a good job. It is not -- it is a systematic change that has to happen within NRC to do better public notice so that the public is here. The public is not here tonight. There are a few selected people who are

working full-time or nearly full-time on nuclear related issues.

You need to get to a broader public, you need to develop a good outreach list which includes all the environmental organizations in the region and through them, other contacts that are developed over time. So, I appreciate being put on a list, but NRC can and must do better, that is my point.

MR. RICHARDS: All right. Thank you, Jackie.

Barbara George, do you have additional comments or questions?

MS. GEORGE: No.

MR. RICHARDS: No. All right. Are there others who have additional comments or questions?

[No response.]

MR. RICHARDS: Seeing no responses, again, we will take written comments until July the 15th. I think in the handout packet, there are e-mails and addresses that you contact us through.

I would like to again thank everybody for coming out tonight. We appreciate your comments, and we will stick around and talk one-on-one with anyone who feels they would like to talk over any issue with us. Thank you, again. Good-night.

[Whereupon, at 9:45 p.m., the meeting was

concluded.]