UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

***

PUBLIC MEETING ON PROPOSED REGULATIONS (10 PART 63) FOR A HIGH-LEVEL WASTE REPOSITORY AT YUCCA MOUNTAIN, NEVADA

Amargosa Valley Community Center

821 East Farm Road

Amargosa Valley, Nevada

Tuesday, June 15, 1999

The above-entitled meeting commenced, pursuant to notice, at 7:15 p.m.

PARTICIPANTS:

CHIP CAMERON, Facilitator

BILL REAMER

JANET KOTRA

TIM McCARTIN

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PROCEEDINGS

[7:15 p.m.]

CHIP CAMERON: Good evening, everybody. I'd like to welcome you to the Nuclear Regulatory Commission's public meeting on the NRC's regulatory responsibilities for a high-level waste repository, and we're going to try to keep the three-letter words to a minimum tonight, but I think that one acronym that people will be using is NRC, and that's Nuclear Regulatory Commission.

I'd like to thank the community here in Amargosa Valley for the hospitality in letting us use this nice meeting facility tonight.

My name is Chip Cameron. I'm going to serve as the facilitator for tonight's meeting, and my job is to try to assist all of you in having a good meeting tonight, and my goals for a good meeting are that the NRC staff provides you with clear information, understandable information on the NRC's responsibilities and that they understand your questions and comments.

Another goal is that all of you who wish to speak tonight get that opportunity to talk, to question, to comment.

I'd like to keep the discussion focused and relevant tonight. The main topic is NRC's responsibilities with regard to the high-level waste repository. However, we

know there are broader concerns than that, and we may be able to assist you with information on those concerns. But primarily, I'd like to keep the focus on NRC responsibilities.

And finally, another goal is to just be courteous to one another in terms of only one person talking at a time, so that we will listen to what that person has to say and not interrupting.

The ground rules are simple. We're going to go through our agenda, and I apologize, we brought everything, as you can see, back on that table, but we didn't bring the agenda. So, I'm going to go through that for you, so you know what that is.

But when we get to the audience discussion -- and we're going to have brief presentations from the NRC staff so that you have something to focus your discussion, but basically, we want to hear from you.

But if you do have a comment or a question, I'll call on you, and I'll either give you this talking stick or some up to the microphone here. Please state your name and your affiliation, as appropriate.

We are keeping a transcript of tonight's meeting, and that's to help us to make sure that we do capture -- we do want to make sure we hear what you have to say. So, we are taking names and a transcript.

I would just ask everybody, including the NRC staff and including myself, to try to be concise so that we can get everybody tonight.

Now, the agenda -- I'm just going to quickly run through this, so you know what to expect.

We're going to start with Bill Reamer, who is over here at the main table.

Bill is the person who has the lead management responsibility for NRC's efforts in regard to the repository, and he's going to open up tonight talking about NRC's roles and responsibilities but also what opportunities are there for the public to influence how NRC does its work through this whole process.

After Bill is done, we're going to go to all of you for comment.

The next segment is going to be a panel of sorts. Dr. Janet Kotra and Tim McCartin from the NRC staff -- and I'll introduce you to them when they come -- are going to talk about the NRC's proposed rules that the Department of Energy has to meet if the Department wants to get a license for a repository, if, indeed, they do come forward with a license application.

Janet and Tim are going to go through that proposed rule, and then we'll go to you for questions.

If you remember from the last time we were out,

which was in March, one of the comments we heard from people was give us some more time to evaluate and comment on the proposed rule.

The NRC did listen. They extended the comment period. That comment period closes at the end of the month of June, and we're here to hear more comments from you, and these comments will be treated the same way we treat written comments.

We will evaluate them and revise the rule accordingly, and Janet will talk a little bit more about that process.

After we discuss the proposed rule with you, we're going to go to two special issues of concern that we heard last time, and Aby Mohseni from the NRC staff is going to discuss how the rules -- NRC rules protect infants and children, and Keith McConnell, who is over here, is going to talk about how the rule establishes a system of multiple barriers to provide protection to the public. Those two presentations will be made, and then we'll go for question and comment.

Our last segment tonight is going to be on transportation. We also heard a lot of questions and comments last time on transportation.

So, we're going to have Rob Lewis, who's right over here, from the NRC staff that's going to talk about

high-level waste and spent fuel packaging and transportation, and Bill Reamer is also going to say a few words about another rule that the NRC did on something called license renewal. This is license renewal for nuclear power plants.

We had some material in it on -- that was developed relevant to transportation to Yucca Mountain. Bill's going to say a few words on what the implications of that rule are for the repository, and then we'll wrap up with anything that we didn't have time to cover from the previous session.

So, let's get started with Bill Reamer's presentation.

As I mentioned, Bill has the lead management responsibility for carrying out NRC's responsibilities in the high-level waste area. He's chief of the high-level waste branch in the Office of Nuclear Materials Safety and Safeguards at the NRC.

He's a lawyer by training and has substantial experience with the high-level waste process.

Bill, I'm going to turn it over to you for our presentation, and then we'll have audience discussion after that, okay?

BILL REAMER: Thank you, Chip.

Welcome. Thank you for coming. I know that there

are a lot of things going on and other ways you could spend your time, but we think it's an important topic to talk about tonight, and we're glad that you're here and that you agree.

I think, as Chip mentioned, when we were here in March, actually in Beatty, we heard a number of concerns, and we're back to tell you what our thinking is on that, to continue the dialogue and hopefully to hear more from you.

One of the items that we realize we hadn't covered in March the way we should have is who are we? Who is the NRC?

We're not part of the Department of Energy. We're an independent regulatory agency.

Our job is, first and foremost, to protect the public health and safety. It's not to support the project at Yucca Mountain; it's not to oppose the project at Yucca Mountain. It is to bring a thorough and objective evaluation to the facts as they are brought forward.

We regulate a number of various lines of atomic energy activities. We have a lot of experience in regulating nuclear activities. It ranges from nuclear power plants to facilities that make fuel for nuclear power plants to the medical uses of radioactive material.

We have experience in licensing and regulation and in people being required to comply with our rules, and

that's what we bring to this project, and by law, we are the regulator of the Department of Energy, if there is a Yucca Mountain project, and our job is to assure public health and safety, and that's our sole job.

Now, we -- just to set a context, before we say more about how we're going to do that, what we expect the DOE will do is that they will first, as they are doing now, evaluate the Yucca Mountain site, that they will prepare an environmental impact statement, and that they'll then make a decision whether or not to recommend the site for a repository, and if and only if that recommendation is approved by the President and the Congress will they come to us and apply for a license, and only if we, after reviewing that, decide that a license should be issued will we authorize and will DOE begin to build and operate a repository, and DOE and we, too, will be there in our regulatory role for the long term.

Now let's talk about our role. As I said, it's to assure, in this case, safe waste disposal. How are we going to do that?

First by setting the rules that DOE must meet, and that's what we're going to talk about tonight, our proposed rules. We'll be also providing comments on the Department of Energy's draft environmental impact statement, which we understand will be published the end of July.

Our hope, our thinking now is that, as part of our providing comments, we will hold a public meeting in the local area.

We'll be interested in what your reaction is to the Department of Energy's draft environmental impact statement, and we'll want to think about those comments that you think are important.

In addition, if the site is approved by the President and the Congress, it will be up to us to decide whether, first, to permit construction of the repository and then only later whether to license the possession of waste at the repository, and of course, we will perform our role, if there is a license and if there is a repository, by ensuring that our rules that we're talking about tonight are complied with by the Department of Energy throughout.

Now, how we intend to carry out our role, as I mentioned earlier, is to fairly and objectively review all of the information and to make decisions that are open decisions. There are no deals. There are no political deals here.

We will evaluate all of the information. If that justifies the issuance of a license, we will take that step. If the information does not justify the issuance of a license, we won't issue a license, and we will not be disappointed by the fact that we cannot issue a license,

because the facts won't be there to justify it. The facts won't permit us to conclude that the public is protected.

Now, we have a step-wise process that I want to mention, as well, that will allow new information to be considered and accommodated along the way.

The first step will only be to consider whether to authorize construction, and only after that construction goes forward will we then, some years later, consider whether to permit waste to be possessed at the site, and then there are additional steps that we will require DOE to go through and provide additional information.

For example, before the repository can be closed to any waste, to any additional waste, we will again evaluate DOE's showing to consider whether the facts justify closure, and yet even a fourth occasion, when DOE applies to terminate our license, we will again look at the information.

Each step is an incremental step. Each step depends upon the Department of Energy to prove that the action it wants is justified, and each step is going to involve new information for us to consider, and throughout our process, the public's going to be involved.

It's going to be involved right now, through our informal dialogue with you, and we have a commitment to you not to appear here just tonight but to appear here

throughout the process.

As I said, we're here for the long term. You're here for the long term. We are, too. Our role is to protect you.

We can only do that by coming out, not just once, not just twice, but regularly, holding meetings, telling you what we're doing, letting you comment on what our proposed actions are, hearing your comments, taking them into account, and doing something about it, something that you can see.

I mean we want to be accountable, and we will show that your comments mean something to us by acting on them.

Later, if there is a license application, the process will become more formal, there will be lawyer-type litigation, but that's down the road. What we're talking about tonight is this dialogue that we're committed to holding with you.

Tonight, our goals in this meeting are to explain to, again, why we think that new issues -- new rules -- that the issuance of the rules are justified now; secondly, how we believe our rules will be protective of the public; and third, is our proposal protective enough? We want to continue discussion on that issue with you. Fourth, how does our proposal ensure multiple barriers that protect you against the release of radioactive materials from a

repository, and last, how will people be protected from the risks of transportation?

So, in any event, I'm happy to be here tonight. I'm happy we can continue the dialogue. I'm going to stop talking now and let things go forward.

CHIP CAMERON: Okay. Thank you very much, Bill.

What we'd like to do is turn to those of you in the audience now to see if you have any questions or comments about Bill's presentation. In other words, what is the NRC role?

Sally?

SALLY DEDLIN: Sally Dedlin. Thank you so much, Bill and everybody, for coming to Amargosa.

I am here basically because we were told this was going to be the explanation on the biosphere, and I brought you three pages from book three on the biosphere which is totally incomprehensible. I think this biosphere is the main thing.

Transportation is not even thought of, and there are other things that don't seem to be addressed, and one of them is we certainly don't understand the biosphere, and one of the things I got out after reading the five books is that Mr. Barrett uses the term which I called Washington on, and I said what in the world does this mean, assigned uncertainty, and that is questions that have to be answered

given the context of the moment.

Do you want me to say that again? Assigned uncertainty. That's Mr. Barrett, the head of this, that wrote the five books.

Questions that have be answered in the context of the moment, and this is what terrifies me, is that phrase, not only assigned uncertainty but context of the moment, because I know the dates that you have for finishing this, and they are awfully fast, and it's not enough time for anybody to digest the multitude of information and especially -- and I'm going to bring this up later -- information that is wrong.

CHIP CAMERON: Okay. Thank you.

SALLY DEDLIN: So, we're here about the biosphere. That's why we're here.

CHIP CAMERON: Thank you, Sally.

Bill, do you have an idea of what Sally is talking about when she mentions the biosphere and the five books?

BILL REAMER: Well, I know what she's talking about when she talks about the context of the issue of the moment, and we are here for the long term. We're not here just for the moment. We're here for the duration of this proposal, through all the steps of it.

Tonight, we've tried to arrange our program to respond in more detail to what we heard in March. If we are

unsuccessful in answering the questions that you have, I'm sure that you will make that apparent as we go along, and we'll come back and we'll make sure that we respond to those questions, if we don't do so satisfactorily tonight.

CHIP CAMERON: Okay. And I think that, when we get to Janet and Tim's presentation, I think that may get us more into what you're calling the biosphere, Sally, and we'll see where we are there.

Are there other questions about the NRC's role in this particular process, what the difference is between the NRC and the Department of Energy?

Grant, do you want to come up and make a statement?

GRANT HALLE: I'm Grant Halle.

My question is how can you reasonably have expectations that you mentioned of what the DOE will do? This is a very specialized field, and the basic fundamentals are not there.

There's nobody in the DOE who has demonstrated they understand the basic fundamentals of what we're supposed to do.

I have yet to hear anybody from the NRC that understands those basic fundamentals, and a couple of months ago, I would have asked how you can regulate a highly-technical process without having highly-technical

experts on your staff, and I have applied for a permit in Nebraska to build a chemical plant.

Basically, what we do is we dissolve garbage and turn it into plastics and sell it. So, the garbage dump is no longer needed.

In Nebraska, the regulators sent four chemical engineers over. They didn't understand the chemistry, because all of us learned chemistry when we were in high school, and we promptly forgot it.

They went through the details of what we were doing, asked some tough questions, made some brilliant observations, because they have a different mind than we do, and I thought that's what regulators do.

I've been since to some other states and applied for the same license, and when I started talking chemistry, everybody in the room got angry. There was nobody in the room that had a technical degree, chemical engineering degree.

One guy told me, said what you did is you sounded like a mad scientist who could make anything out of anything, and I said that's what we do. It's an exciting time to be alive. It's wonderful.

We are going to have multiple layers of protection and so forth, absolutely meaningless because the guy that I have hired does not know the fundamentals, the regulators

don't know the fundamentals. The whole thing is nonsense. And that's what I see here.

I want you to address that.

CHIP CAMERON: Okay.

Grant, I think you bring up an interesting point. As the NRC presenters come up, we are going to share their credentials with you, but I think this may be a good time for Bill to perhaps talk about the types of skills that we bring to bear in the NRC staff for this project and also the type of support that we get, perhaps, from the center.

GRANT HALLE: Bill has great skills. I have no doubt about that at all.

CHIP CAMERON: I want him to address his staff's skills, and then we'll go on to the next question.

Go ahead, Bill.

Thank you, Grant.

BILL REAMER: Let me just mention one other thing, Grant. The projects, the Department of Energy projects that you referenced -- Idaho, Hanford, Savannah River -- one thing that's important, I think, for you to understand is that we were not a regulator in those situations.

The one thing that is different about this project is that the Department of Energy will be under our regulation. So, that's point number one, and that's important, I think.

And in terms of skills, we do have technical skills in, really, all the relevant areas, both at the -- we don't have the skills, perhaps, that the Department of Energy has in terms of depth and number, but we have enough to rigorously review this project.

We're going to need your support. If we don't have your support, our job is going to be a lot harder, but I think, in the end, it's not just technical skills, but it's people who share, it's people who come, it's people who listen.

I spent the afternoon -- I wish that she had been here -- Lavonne Sovac took us around and showed us really a number of the activities in the valley. It was a very pleasant afternoon.

And this is the way we get to know you and get to understand what potentially is impacted here, and I think it's going to help us do our job, and we're ready to stand and be accountable for the way we do our job.

CHIP CAMERON: Grant, let me see if we have other questions out there, and then we'll get back to you.

GRANT HALLE: All right.

CHIP CAMERON: Thank you.

Do we have some other questions on NRC's roles and responsibilities?

Yes, sir. Do you want to make a comment or ask a

question?

EARL McGEE: My name is Earl McGee.

Yucca Mountain is a farce. It's a joke. It could be handled properly. In 1995, I said what is your alternative if Yucca Mountain is found not to be suitable? He said we have none. You go ahead and process it, break it down, or whatever, but you don't just bury that in the earth.

We have been burying our waste and poisons in the earth too long, and with the population growth on the planet, we keep doing this, and it's wrong. It should be processed in some manner, and it would not cost anymore money than we're wasting up on Yucca Mountain.

You have three faults out there. That is sheer insanity. You say, well, everything is fine. It can stand a 6.5 earthquake. I asked what happens to the underground resource if we have a 6.5 tremor? That resource comes up. The water comes up.

To me, it's all Mickey Mouse and associated with Disneyland.

Thank you very much. Those are my concerns. It can be done better if you people work hard, all of you, even Department of Energy. I thank you for letting me speak. I am concerned. It's sheer insanity.

CHIP CAMERON: Okay. Thank you for sharing those

concerns, and you raised a number of issues, one of which is what's called the retrievability issue, instead of burying the waste forever, providing for some future use, and some of those will be addressed in later talks.

Bill, do you want to focus in on any of the gentleman's concerns?

BILL REAMER: Well, I think Congress said in the law, in the statute, that there will be deep geological disposal, but there's an important qualification on that that I think was being made in the comment, and that is if it is safe, and it's our job to make sure that it is safe, and you are counting on us to do that, and I understand that.

CHIP CAMERON: Okay. Thank you.

Anymore questions on what the NRC's responsibilities are or how you can participate in influencing NRC decisions over this repository process?

Hold on one second. I want to see if someone who hasn't spoken yet has a question.

Yes, sir. Would you like to ask a question?

CORBET HARNEY: My name is Corbet Harney.

Since 1953, the DOE has destroyed everything on this earth and continue to destroy. When are we ever going to wake up to the problem that we're causing? We're already running out of water. We're running out of air. Our mother

soil is suffering.

Everything began to be diseased throughout the country. We're running out of fish. We all know that. Why is the DOE doing something doing something that's destroying life?

I think each one of you people have to look at DOE. Everyone who is working for the DOE should understand that we are the people, the life that's born. Before we see that, we know nothing. Why are we keeping this up?

Now the DOE say to us we are going to be transporting this stuff from one end of this country to the other. Are they going to pay more money? What is this for? So far, this is what we all see, each and every one of us. There's more death and cancer today than ever before.

Why are we keeping this up? Why can't we talk about it and say leave it where it's at, not to bring it here, on the highway, on the railroad, that's more dangerous. What if a accident ever happens? Are you prepared?

Is the DOE prepared how to clean the mess, or are they going to rely on somebody else? And today, you people better think about it.

We're already beginning to suffer throughout the world. It's not going to help us at all.

Scientists today can come up with a different

power than what we've done, instead of this nuclear power. We can have solar power, water power, air power, cleaner, unless somebody is trying to make a million dollars. That's what it looks to me like today.

I wish you guys would tell me how we're going to continue to take more lives than what you have done so far. Is this what you're trying to do? Are you working with the hospitals? Are you working with doctors? Who are you working with?

Maybe this is what's taking place, because you know as well as I do, each and every one of us, there's more sickness today than ever before. Since 1953 at the Nevada test site, nobody paid attention.

This water flows from here to my area. It's going to damage more land. None of you can see that. Let's not let it happen. Let's not bury this stuff at Yucca Mountain. That's part of Shoshone land. Why aren't you feeling worry for the Indian people?

Maybe you want to eliminate the Indian people, like you did. Is this what you guys are after? Eliminate the life? This is our land, you know. The DOE has never paid us, never. We still own the land, under the treaty.

If there is a law, like the white man says, there's a law behind that treaty. Where is the law? Let's do something. I want you guys to answer me that question

that I'm asking.

CHIP CAMERON: Okay. Thank you. It's Corbet Harney? Okay. Thank you, Mr. Harney.

I think that, Bill, you may want to re-emphasize what our role is with NRC, and there is one thing I think we can say about the land ownership issue before we go on, but go ahead, Bill.

BILL REAMER: Okay.

Well, as I described in my initial go-around, I'm not a supporter of this project, the NRC is not a supporter of the project, it's not an opponent of the project. It is an evaluator of it, and our time will come to evaluate, and the decision will be made based on all of the evidence, all the facts, and it's not going to be some kind of deal or some political pressure or something like that that is going to decide this, at least at the NRC.

Now, in terms of the Shoshone claims to the land, there is a requirement in our regulation that the Department of Energy must demonstrate that it owns or controls the property that is for a proposed repository.

That's part of our requirement, and so, in that sense, it will have to demonstrate that it owns or controls the land in question.

CHIP CAMERON: Okay. Thank you very much, Bill, and we'll be back to you later on.

One quick question, and I think we'll move on to the rule.

SALLY DEDLIN: Thank you, Bill. I am concerned about the rules. There have recently been many articles in the paper, and I have asked -- I've never gotten an answer -- on the role of EPA in this mess.

In the six years, EPA has been noticeably absent, and yet, they are the ones who the law says must specify what the risk is, and I'm talking about the radioactive risk that we're exposed to.

Now, why aren't they here? Why haven't they been present for six years? I think that question has never been asked, and it should be, and it should be answered, because if you have a problem with EPA, imagine what we have.

CHIP CAMERON: Okay. I think that's a legitimate question that we can offer some information on.

Bill?

BILL REAMER: The U.S. Environmental Protection Agency does have a statutory -- a role by law to establish a standard for a potential Yucca Mountain repository.

They are aware of the public meetings that we have had, both in March -- and they did attend the meetings in March. I don't believe that they're attending the meeting tonight.

Other than to keep them aware of what we're doing,

I really am not able to provide much more information other than that they are working on their standard -- this is what we understand -- and that, if there is a proposal, then there will be an opportunity for you here tonight -- in fact, all of the people potentially impacted by a repository -- to provide comments to the EPA.

CHIP CAMERON: Okay. And of course, on any of these points, we are staying after the meeting is over, so we can provide more information at that time.

We do have one final question on this segment, and we're going to have to move on to the rule, but let's go to this gentleman right here.

If you could just state your name for us, and we'll take it from there.

WILLY FERGOSA: My name is Willy Fergosa. I'm a concerned citizen. I just don't feel like we're being protected by anybody. I don't feel any security. I don't feel like you're really doing anything for us. I mean we should have put a stop to that madness long ago.

All we're doing is putting more money into it that we pay for with our taxes. You just start adding it up; that's where all the billions go. Billions. I mean we have people starving. Protect us from that. It's your job. You're getting paid very well.

Listen to what I'm saying. Protect the people.

Don't protect the organizations. You all know what it is. You're responsible. You took that job. There's a responsibility to the public. I'm part of the public. I don't feel protected. I don't.

CHIP CAMERON: Thank you. I think I can speak for all of the NRC staff that we do take that responsibility to protect the public very seriously.

Bill, do you have anything to offer on this?

BILL REAMER: Well, I think, you know, we -- as I said, we want your support. Our job will be more difficult -- I'm not saying it can't be done, but our job will be more difficult without your support, but we -- if we want your support, we need to earn your support.

We need to not just speak but to do, and I understand that, and I expect to be held accountable for that, and I expect to do my job, and I have a family and I have children and my job is important to me, and I'm not going to be happy if I don't do it correctly, and I commit to you to do it that way.

CHIP CAMERON: Okay. Thank you, Bill, and thank all the questioners and commenters on that segment.

Let's go to -- let's bring Janet Kotra and Tim McCartin up to the table.

Our next two presentations are going to deal with the NRC's proposed rule, and this is one speaking to some of

the concerns, one of the ways that the NRC is going to try to protect the public through these rules, and Janet Kotra is going to talk about why the proposed rules are being developed now, why do they differ from the standards used by EPA at the Waste Isolation Pilot Plant in New Mexico, and by way of introduction, I would just say that Janet has been with the NRC for about 15 years now.

She works for Bill Reamer in the high-level waste branch, and Janet also has a Ph.D., a doctorate, in environmental and nuclear chemistry, and she's one of the principal authors of the proposed rule, and I'll turn it over to Janet now.

JANET KOTRA: Thank you, Chip.

We've heard a number of questions that have touched on the relative role of the Nuclear Regulatory Commission, and I'm going to hopefully try and address what the law requires of our agency and why we feel that it's incumbent upon us at this time to put this proposal out and seek your input on what we're considering in developing criteria for evaluating Yucca Mountain.

One of the questions that Bill mentioned that we heard at the meeting we held at Beatty in March is why is NRC appearing to step out in front of the Environmental Protection Agency?

I think Sally addressed their presence or their

lack of presence, and we're, hopefully, going to explain why we feel that we are consistent with what's required in law, and we wanted to put our proposal out to give it the greatest possible opportunity for public input, and we developed a very complex and important set of criteria that, if it comes to that, will support a fair and dispassionate and just evaluation of the facts that will come before the NRC as the principle regulator of the facility.

Our responsibility is, first and foremost, to protect public health and safety, and to echo what Jim has said, we take that responsibility very seriously.

We also take very seriously our responsibility to comply with the law of the nation and the direction that Congress has given us.

In 1982, there was the Nuclear Waste Policy Act, and that gave specific instruction to our agency, the Nuclear Regulatory Commission, on what these criteria for a repository should look like, and what Congress told us was that those criteria had to provide for the use of a system of multiple barriers, that the safety of the system should not rely on one single element, that this should be a combination of overlapping levels of protection, and my colleague, Keith McConnell, is going to be talking a little bit later this evening about how we intend to implement that through the proposed rule that we're seeking comment on.

In addition, the Congress has asked us to provide in our criteria a period of time during which the waste must be retrievable, must be able to -- the Department of Energy must demonstrate that it can go in and take this material out for some specified period of time, and our proposed regulation, as well as the generic regulations that we've had in place for many years, addresses that very question. We're also seeking comment in the proposal on that. Is that the right amount of time?

Lastly, the Congress has asked us to conform to generally-applicable in the past environmental standards, and in this case, we conform to specific Environmental Protection Agency standards for the repository at Yucca Mountain.

Ten years later, in 1992, the Congress gave additional direction and spoke, first and foremost, to the Environmental Protection Agency, and they directed the Environmental Protection Agency to develop new standards for Yucca Mountain that would be health-based. The old standards spoke about a release or the amount of material but did not tie -- were not tied directly to the protection of health in an explicit and transparent way. The law now, under the Energy Policy Act of 1992, requires EPA to develop health-based standards.

Those standards are to be based on and consistent

with a report that has been issued by the National Academy of Sciences. That report, which is the report of the study that the Congress directed the National Academy of Sciences to do, to advise the Environmental Protection Agency on what these standards should look like technically, was issued in 1995.

And lastly, these new standards that EPA has proposed to issue are to be the only standards for Yucca Mountain.

Now, what's especially important for us and one of the reasons why we have worked as hard as we have to get this proposal out for public review as soon as possible is that the law gives us only one year for our implementing regulations to this environmental standard.

This environmental standard is, as Sally has indicated, to set a level of risk or a level of protection for people.

There's a lot of detail in implementing such a standard.

Things that relate to review of the design and maintaining security at the facility and testing and monitoring and all those other aspects that are part of the proposal that we have put together are voluminous, and we want the public to have as much opportunity to give us feedback and help, the kind of help and support that Bill

was asking for earlier, to make this the best proposal that we can make it.

Because we only have one year, we felt that it was very important to get our thinking out in the public domain so that you could evaluate it, be critical of it, to get your feedback to us on how we can improve it.

I wanted to add -- I'll discuss this in just a few minutes.

As Chip indicated, I'm also going to respond to another question that we received in Beatty and in Las Vegas when we were here in March, which is why are we doing something different than was done for the Waste Isolation Pilot Plant in New Mexico.

Some of you may be aware of that facility for trans-uranic waste. It is not a repository for spent nuclear fuel, but it is a deep geologic disposal facility, and it has been certified by the Environmental Protection Agency not that long ago.

In 1992, the Congress also passed another law called the Land Withdrawal Act, and that law stated that the older standards that EPA had used or has used since to certify the Waste Isolation Pilot Plant are not to apply to Yucca Mountain.

So, why now? Some of what I just said -- the law requires us to conform very quickly. It's a very aggressive

schedule.

We know that the EPA standards are in preparation. When they reach a point where they can issue a proposal, I understand it is their intent to have public meetings and to seek public comment, as well.

The recommendations from the National Academy of Sciences upon which these standards are to be based have been available since 1995.

So, we have a general sense of the direction with which EPA must participate, and we've known that now for coming on four years.

So, we felt fairly confident that we had a good idea of, in general, what those EPA standards would look like, and not to say it too many times, but we wanted to have the most timely and meaningful public involvement and our own fairly detailed criteria, and so, we felt it was important to get that proposal out there.

With regard to why there are different standards for Yucca Mountain than for WIPP, the law has directed the Environmental Protection Agency to employ a different strategy, to look at a strategy that more clearly and transparently tracks to the protection of the individual.

The National Academy of Sciences issued a fairly thick report. I have it with me tonight if you'd like to -- are not familiar with that report. It is available through

a number of different avenues, and I'll be more than happy to discuss with any of you how you can get a copy of it.

But in essence, one of the most important points the National Academy of Sciences report made in 1995 was that the overall performance of the repository is protecting public health and safety and that environmental standards for it and implementing regulations issued by the Nuclear Regulatory Commission should focus and be clearly tied to meeting that safety objective.

We believe that we have put forward a proposal that protects people from all sorts of exposure from the facility and that no single path, including ground water, should result in an unacceptable risk, and we believe that that is consistent with what -- that our proposal is consistent with that, and again, as Bill has said and as all of us here tonight are here to tell you, protecting people near a repository is the primary objective of NRC's health and safety program for disposal of high-level waste. That is our job, that is our responsibility, and we take it very seriously.

What have we done to prepare ourselves to issue this set of criteria for public comment?

We have supported and interacted -- the staff of our agency, individuals here tonight have worked with the staff of EPA and have encouraged their development of

protective, practical, and scientifically demonstrable standards.

We have proposed new regulations that we believe focus on what is most important for safety, that are protective, that are generally consistent with the recommendations of the National Academy of Sciences, as Congress has directed, and are scientifically sound and demonstrable.

The last thought I want to leave you with is we want your input. We want to know that you believe that our proposed regulations provide a sound basis for making the kind of judgement of safety that Bill has talked about at length in his remarks.

And with that, I guess I would conclude and turn it over to my colleague, Tim McCartin.

CHIP CAMERON: Okay. And while Tim is going over to take his seat, one question, perhaps, for later on, Janet, is perhaps is there a simple explanation of the difference between the trans-uranic, I think you said, waste that's supposed to go into WIPP versus the high-level waste, spent fuel, that's supposed to go into the repository? It might be useful later on, during the discussion, to address that.

Next we have Tim McCartin from the NRC staff on the issue of how will NRC regulation protect people and

ground water near Yucca Mountain, and Tim has a Master's degree in physics.

He also works in the high-level waste branch for Bill Reamer, and Tim has 20 years experience in what's called performance assessment of high-level repositories, and I would just want Tim to try to give us a simple explanation of perhaps what performance assessment is. It sounds like something really fancy, but I think it comes down to something very simple.

But Tim, I'll let you get you on with your presentation.

TIM McCARTIN: Okay.

Briefly, performance assessment is the evaluation of the behavior of the repository over time, with the eventual performance that we're looking at is dose to individuals, and so, we're examining how the waste package will change over time, how the fuel will eventually leak in limited amounts, how it will be transported in the geosphere, in the water, out to where it potentially can be exposed by individuals, and performance assessment involves that integration of all those attributes of the behavior of a repository.

Today, I'd like to talk to the approach in our regulation for protecting the public and ground water, really with respect to three particular areas.

One, DOE is required to do an evaluation of safety; two, DOE is required to have plans and procedures for safety; and three, DOE is required to have continued oversight of the repository.

Generally, to date, because the evaluation of safety involves estimating doses to individuals, a lot of the focus and attention has been on those dose estimates. However, if DOE eventually gets a license from the NRC, there's additional requirements to ensure protection of safety.

The plans and procedures are required to ensure that the repository is operated safely, and the monitoring and continued oversight of the repository are there to ensure that future generations are also protected in the Yucca Mountain area, and I'd like to talk to each one of those areas in a little more detail.

In terms of the evaluation of safety, we're talking about estimating doses to individuals, and Sally, I think this is where the biosphere comes in.

When we're calculating these doses, we're anticipating these doses to be far off in the future, we need to make some assumptions with regards to not only the people that are there but also the environment that they live in, what types of plants, animals, crops are being grown, and we would classify the biosphere is that

environment that the people that we're estimating these doses for live in, and when we looked at the Yucca Mountain area -- and I did bring a map of vegetation of the region over there that you are welcome to go up and look at afterwards -- certainly when we look at how ground water might be used in the area, in the Amargosa Farms area, there are farming activities.

Farming is important in estimating doses because of all the pathways, is what we refer to them, ways that people can receive exposures of radiation. There's drinking water, there's crops that could be contaminated, there's animal products such as milk, eggs, etcetera, that can also be contaminated.

In assessing the performance of the repository, we want to make sure and take -- cast the broadest net so that we're evaluating all the different possibilities that exposures could occur.

In our regulation, we specify a farming community. The reason for that is we expect the Department of Energy to evaluate doses that could result from water, crops, animal products. So, we're looking at a wide range of potential exposures.

Additionally, if you look at that map later, you'll see that the concentration of farms are really on the order of 20 to 25 miles away from the site. However, in

evaluating soil conditions, depth to water, we thought it was reasonable to assume that a farming community could be, in the future, closer to Yucca Mountain than is currently there today.

So, we specified a location approximately 12 miles from Yucca Mountain. That was done. We feel the soil conditions are still appropriate for farming. The depth to water is still reasonable that people could farm at that location.

So, the biosphere -- we've also specified we believe, over the future, that the conditions at Yucca Mountain would still remain the same, arid to semi-arid conditions.

So, the types of crops that you see growing here today -- there's fruit, there's alfalfa, there's cows, there's chickens, etcetera, there's a wide range of things. We're asking the DOE to conduct a survey of the area to see all the things that are grown, and we would expect them to factor that in to the dose assessments.

Secondly, these performance assessments not only look at what they expect, but we require DOE to look at what might go wrong.

In terms of the operation of facility, DOE is required to look at potential applicants and evaluate the consequences of that while a repository, if a license is

granted, is being operated.

Afterwards, we require in the performance assessment for DOE to look at what we call disruptive events. Disruptive events are things such as seismic events, fault movement, igneous activity -- volcanoes, in other words. How will that impact the long-term behavior of the site? All that's factored into the safety assessments.

Obviously, all these assessments are built upon assumptions, and they're only as good as the information we have to date. That's very important. NRC recognizes that. We require the DOE to update these evaluations.

Once a license is granted, they need to construct the site. They'll learn more things about Yucca Mountain during that construction. During waste emplacement, they'll learn other things. Site investigations are continuing. The DOE is required to continually update these evaluations to make sure we're using the best available knowledge that we have.

And finally, they need to monitor. We expect the DOE to have a monitoring program to ensure that all these assumptions we're making are still true; the repository is behaving as we have expected. Monitoring is a very important part of that program.

All of those things rolled together in that safety evaluation ensures that we use the best available

information and the site is monitored, including ground water.

Next is safety evaluation by itself is not sufficient. DOE must be prepared for what could happen. There will be plans and procedures, once DOE is granted an authorization to construct.

There will be requirements for the training, certifying, and re-qualifying the workers to ensure that the workers have safety as the number one priority in what they're doing at the site.

Additionally, we do not expect to have accidents. However, we require DOE to be prepared. We have emergency plans in place for the unexpected. These plans would be there in the event of a radiological release.

And finally, as Janet noted, waste retrieval. If at any time in this process something comes to NRC's attention that says waste cannot be safely disposed of at Yucca Mountain, we have the option for retrievability, to remove the waste from Yucca Mountain.

Finally, continued oversight of the repository. Future generations need to be protected.

Once again, NRC has requirements for land use control. We need to control the area around Yucca Mountain. We need to provide permanent markers, preserve records so that future generations know what's disposed of at Yucca

Mountain.

Additionally, there's long-term repository monitoring to further ensure that the safety of the people near Yucca Mountain is protected.

And finally, what we place in our rule today we believe is appropriate. However, once again, over the next years, during the construction, if that's granted, waste is emplaced, we will learn more and more.

NRC has a process. We call them licensing conditions, to put additional requirements on the DOE to ensure safety beyond what is already in the regulation today.

Going back to all of this, we believe that the requirements ask for DOE to evaluate safety, have plans and procedures, and to have continued oversight. DOE is required to do that. The question is what will NRC do?

NRC's function is one of review, inspection, and enforcement. How will we review things? As the gentleman said there, for the calculational part of the evaluation, we fully expect to do our own evaluation.

We have a number of scientists and engineers at NRC who have been working on this problem for 10-plus years, evaluating performance of Yucca Mountain. We will do our own independent calculations to help us verify that the DOE analyses are correct.

Once again, that's not enough. The plans and procedures -- what will we do there?

We will not just review their plans and procedures. We will come up and inspect, and the inspection is done to determine that DOE's plans are appropriate and they are ready, and we will enforce all the regulatory requirements.

How can the public help? As you've heard from Bill and Janet, we've come up here to hear your opinions, your comments, your suggestions. We have put in the regulation what we think are a number of ways that we can ensure safety of the public in the Yucca Mountain area.

We may not have thought of everything. We may not have worded it as clear as we should. Maybe these requirements aren't clear that DOE has to do these things.

We're interested in your comments, your suggestions for additional requirements, different ways we can word things in a more clear fashion, etcetera, and so, any comments you can give us to improve our regulation will be appreciated, and as Bill indicated, continue to participate.

This is not the last meeting that we're going to be here in this gym. We will be out here again. As we learn more about Yucca Mountain, as the EPA standard comes out, we want to hear your comments.

With that --

CHIP CAMERON: Okay. Thank you very much, Tim.

You've just heard two presentations, one from Tim, one from Janet, on the NRC's proposed rules, and as Tim very well said, we want to make sure that people understand these rules, that they're as good as they can be, and I wonder if anybody in the audience has any comments or questions about these proposed rules.

Let me start back here with Ralph McCracken, and then we'll come up to this front row.

Ralph?

RALPH McCRACKEN: Ralph McCracken, Amargosa Valley.

Tim, I recognize you from the last meeting, and I've got a plus for you and a minus for you.

This evening, I'm sitting here listening to you, and I'm saying this guy is a mouthpiece for the NRC and he's saying disposal in Yucca Mountain, disposal, disposal, disposal.

I understood this was supposed to be a storage situation where it was retrievable, not just disposed of in Yucca Mountain and walk away from it, which is what you kind of make it sound like.

I understood that retrieval was very important in this whole project, that if some kind of technology came

along years or centuries or whatever later, that we could -- we, the world, could do something a little more prudent with this stuff and get it out and do something with it.

But when I hear you saying dispose at Yucca Mountain, dispose at the mountain, it makes me go wait a minute, what's actually going on in this guy's mind when he's making these rules and regulations?

That's that one.

TIM McCARTIN: Could I respond to that?

RALPH McCRACKEN: Sure.

TIM McCARTIN: The term, you're correct, is geological disposal. We are not storing the waste in Yucca Mountain. It is for disposal. Retrievability is a big part of that in that, if we are wrong, we need to be able to go in and remove the waste, but storage is a -- is not the term that's used for the project.

JANET KOTRA: Ralph, good to see you again. Thanks for coming down.

I think we need to be perfectly honest here. What the Congress has asked us to do and has asked EPA and the NRC to do is to, the EPA, develop standards for disposal, NRC to develop implementing regulations for disposal.

The NRC -- the law requires NRC to provide for a period of retrievability, which currently right now is about 100 years, but once that 100 years is over, the concept --

and we've laid this out in the concept section of the rule -- is that there would be a closure and a disposal.

The law requires for permanent oversight on the part of the Department, but the retrievability period is -- to be perfectly frank with you -- is a 100-year period, and the goal there is that we are requiring the Department to allow for complete retrievability for that period, but after that period is over -- and there are these steps that Bill has laid out, where we may need successive regulatory decisions, once -- if we get to that point and the collective wisdom of the Congress and the nation and the national program is yes, disposal is -- continues to be the national policy, as it is right now, then it will be closed, and that period of retrievability would be over, but there's so many steps of review and licensing that we have to get through to get that point -- but please, I don't want you to get the mis-impression that this is going to be retrievable forever.

No engineer or scientist could honestly guarantee that.

CHIP CAMERON: Janet, perhaps it would help to explain what the purpose of the retrievability period is. It's not, as the gentleman earlier said, to decide whether we can do something, ultimately, different with this waste.

JANET KOTRA: Actually, it is to allow for that

possibility. It allows for, during that period, if the national policy were to change, that that option of taking the material out and doing something else with it is preserved.

There's also reasons of retrievability for safety, if you're finding, for example, in your monitoring that the models and assumptions that you use about the biosphere, about the performance of the facility, about the performance of the geology that we have been studying for a long time, but our knowledge is not perfect, if any of those things would suggest that we have based previous decisions on incorrect or incomplete information, then we would also want to retrieve.

But this is a finite theory. We're not saying that it is permanently retrievable. Then you're right that disposal would be a misnomer, but the law requires us to develop criteria for disposal. That's the national policy, and that's the law under which we are doing this.

RALPH McCRACKEN: Okay. I got a good answer.

JANET KOTRA: Thank you for the question.

RALPH McCRACKEN: Thank you.

Now, don't go away.

JANET KOTRA: Okay.

RALPH McCRACKEN: You spoke, as Tim did, of security of the area. There's a broader issue of security,

of human egress, human intervention, human whatever. You're close to a military installation. Also, who would be responsible for, in the long haul, making sure that this doesn't become a real problem?

JANET KOTRA: Okay.

First and foremost, in terms of responsibility, the Department, under the law, under the Energy Policy Act of 1992, is requires to provide for permanent oversight to provide assurance that there's no intrusion into the site. You talked about the security aspects of that.

So, already under the law, DOE is required -- and then, obviously, in order for us to have a complete set of regulations, we would have to provide, in our regulations, some oversight to ensure that DOE does, indeed, provide for that kind of oversight.

Tim mentioned specifically requirements in our proposal for an emergency plan, and the requirements for an emergency plan have been very well worked out for a variety of different facilities -- fuel cycle facilities, nuclear power plants.

We have fairly elaborate and detailed requirements elsewhere in our regulations that are referenced in this proposal for how does a licensee of the Nuclear Regulatory Commission develop an adequate emergency plan, and those would take into account all of the things that are special

about a given site, and in this case, many of the issues that you've mentioned are the types of things in the license application we would expect DOE to provide complete and competent and credible information to support their assertion that they have a plan in place that takes account of all of those factors, and we would evaluate that as part of the license application.

RALPH McCRACKEN: Do I hear you saying that these comments in this direction are inappropriate at this time, that they should be brought up during the licensing procedure?

JANET KOTRA: Absolutely not. We would like you to take a look at what we have now in the proposal that addresses the content of the emergency plan, and I realize that, for those who are not familiar with the way we license and oversee facilities, it's a tough read.

We're trying to work on plain English in our regulations.

We have a long way to go, and we certainly want to make these regulations as clear and as understandable as possible, and if you want to talk to me afterwards, I would be happy to show you where in the proposal specifically we talk about an emergency plan, and it references another part of our regulations, which I could send those to you, as well, but they are not going to talk specifically about

Yucca Mountain, because each licensee is obligated to provide an emergency plan that is tailored to that particular facility.

So, obviously, rather than have individual requirements throughout all of our regulations for every licensee, we have to say, okay, we have to address these types of threats.

RALPH McCRACKEN: That's a pretty general approach.

TIM McCARTIN: However, in the assessment on the operation of the facility, they will have to evaluate things. Being close to an Air Force base, they have to evaluate the likelihood of problems with air crashes.

CHIP CAMERON: I think the comment is perhaps that there should be something more specific in there on that.

Thank you, Ralph.

Yes, ma'am.

GLYNN HAZLETT: My name is Glynn Hazlett.

If you look at the geology reports on Yucca Mountain, you'll see it's totally unsuitable because of the type of rock, and why was there never any other site except Yucca Mountain considered?

You can talk about safety, talk about what if, but the geologist's report states it's a totally unacceptable place to store nuclear waste of any kind.

Look at the earthquake activity. It's very active out there, and there is no way that they can assure that an earthquake above 6.2 is not going to occur.

CHIP CAMERON: Janet or Tim, can you talk generally about how the proposed rules -- how we would look at the geology of the area?

TIM McCARTIN: Well, certainly, I think, as Bill pointed out, we are not a proponent for the site. Right now, all the information is not in. We will make our decision on safety after all the information is in that DOE is collecting.

Certainly, seismic events are a fact at the site. We fully expect DOE has to evaluate the behavior of the repository over time, the seismic events.

The ground water pathway is the most likely pathway for radio-nuclides to leave the repository. The evaluation of that pathway will be looked on extremely closely in all of NRC's evaluations.

In addition, that's the pathway that we expect to be monitored for continued evaluation of the behavior of the repository.

JANET KOTRA: I think I also heard the question or talk about how Yucca Mountain got to be the only site that was under consideration, and I think that's a fair question.

I didn't have time in my presentation to go into

more detail on the legal history, but there was -- under the Nuclear Waste Policy Act, there were three sites that were originally looked at by the Department.

In 1987, the Congress passed another law that told the Department of Energy to only study Yucca Mountain at that time, and it is that process of studying -- they call it site characterization -- that is going on right now, and we have responsibilities to provide input to the Department of Energy on their studies of the geology and where we feel they could get more information before they're even ready to provide, present a recommendation of the site, and we've been doing that, under the law, but the Congress was the decision-making body who said we will spend the national resources to study one site at a time, and right now, that site is Yucca Mountain, and until such time as that site is found not suitable, the Department is given the responsibility to continue characterizing it.

We've been given the responsibility to continually interact with them and provide additional recommendations and suggestions, because they're not licensed yet. They will be, if they do submit a license application.

CHIP CAMERON: Okay. Thank you, Tim. Thank you, Janet.

Corbet, did you have something you wanted to say?

CORBET HARNEY: Are you forcing this down our

throat whether we like it or not? I still ask that question.

Where is your paper saying you own the land? Under the treaty of 1863, the Shoshone people still own the land. Where is the law, or is there a law? When it gets contaminated, then what do we then?

Ask those questions that I'm asking you. Ask Congress, where is their piece of paper that took our land, under the law? They haven't showed us a document yet today. Let's look at the law, if there is such thing as the law.

CHIP CAMERON: Okay. Thanks, Corbet. I think we talked about the land issue earlier in terms of what the rules require.

Tim, do you want to say anything to Corbet's point about the release of radioactivity to the ground water? Do you want to talk about how our -- or reiterate, I guess, how our rules take that into account and try to protect against that?

TIM McCARTIN: Well, certainly, the evaluation of safety would include the releases to ground water and evaluating that over the entire 10,000-year time period to ensure that the releases are sufficiently below the regulation to ensure public health and safety.

That being said, there's monitoring requirements, and the monitoring requirements would be to understand the

behavior of the repository before there's a problem.

CHIP CAMERON: Okay. Thank you.

Let's go to Willy, and then we're going to go Earl, and then we're going to go to this lady in the back.

All right.

WILLY FERGOSA: Thanks, Chip.

Well, I've been sitting here again listening to everyone. I'm, once again, really impressed. You folks are really intelligent.

Yucca Mountain isn't just a test to see how it is. You've already made the tunnel. It's already in there. It's not just like we tested a part of something to see how it is. You've gone in there and made a whole tunnel, so that we don't have a choice.

It's already done, and all you're doing is allowing that to happen, as I see it, and you're pretty smart people, and I'm sure you can get it done. If that's really your job, then I feel like our trust has been abridged, because we have this thing over here, and that's the only thing we have.

So, what are you going to do to protect us? Are you going to just allow it to happen? That's all I see. I mean I'm trying to think of, well, how are they doing all this?

All I can see is you're allowing it to take place.

You know, with your intelligence, can't you help us? You know, does that mean you have to go against your supervisors, against people above you, because you're actually going to do something to help us out?

I'm just still pretty confused by this whole thing. It just seems like we don't have anybody really helping the people.

CHIP CAMERON: Maybe it would be helpful if we just underlined the statement again between DOE and NRC.

Bill, do you want to say anything at all about Willy's comment?

BILL REAMER: Well, I hear the concern, and I can tell you it's not a done deal, from my standpoint. I have not even seen a demonstration by the Department of Energy that waste can be safely disposed of.

The Department has many steps to go through before waste will ever be brought to this site. They have to complete their evaluation of the site.

They have a recommendation to make, a recommendation that the President of the United States has to approve, a recommendation that the Congress has to approve, and if those steps are cleared and if the Department accomplishes that, if there is a recommendation that is approved, only then will there be a license application, and that license application will be given to

the NRC, and the decision will not be a done deal.

The decision will be made on the facts, and that's my commitment. I've said that, and that's true.

CHIP CAMERON: Okay.

Let's go to Earl, and then we're going to go to the woman in the back. Earl has a question on retrievability again.

Go ahead.

EARL McGEE: You're looking at this as a repository?

JANET KOTRA: No, I want to make that clear, that we have a requirement in our regulations that the Department maintain retrievability of the waste for up to 100 years, longer -- we can consider a longer period of time, and that's one of the aspects of the proposed rule that could be changed, based upon public comment.

EARL McGEE: We can keep it at the site safely for 100 years.

JANET KOTRA: That's what we expect them to do. We expect them to keep it retrievable for at least 100 years.

EARL McGEE: Keep it at the site.

JANET KOTRA: Oh, you mean at the individual power plant site.

EARL McGEE: Yes. We ought to get rid of EPA,

because you've got to be concerned with people. You've got to have some independence, the concern of people.

JANET KOTRA: And that's our concern, too. That's our primary concern in fulfilling our mission.

EARL McGEE: I think you're doing a good job, but I think that human values is out the door. It's like we have a crystal ball. This is a problem. We have to be more concerned.

We haven't had an earthquake over there for 100 or 200 or what have you years, but you're talking about 10,000 years when you put that stuff in the ground. That's a problem. You can't tell what's going to happen tomorrow, next week, a month, a year, or 100 years or 1,000 years. The responsibility is to the people and the land that they occupy.

CHIP CAMERON: Okay. Thank you, Earl, and I think that the staff has the gist of the retrievability comment.

Yes, ma'am.

MARY EASTON: My name is Mary Easton. I live in Amargosa Valley.

I'm simply going to ask you to think about the fact, would you like to have this right out your window? Right out my kitchen window is Yucca Mountain. Just think about that. I'm not asking you for an answer. I don't even want an answer. But think about it.

You don't live out here. You live elsewhere. Just think about it.

JANET KOTRA: One part of the decision -- and as Bill has said many times, that decision is a long ways away from being made, and it's by no means a done deal, but if I am part of a decision that says yes, this is protective of public health and safety, then, yes, if it were outside my kitchen window and my children and my husband were exposed to it --

MARY EASTON: And grandchildren.

JANET KOTRA: -- and my grandchildren and their grandchildren, I would feel they would be protected, but that would be only after that decision was taken in view of all of the facts that will come before us.

We're not there yet, but if we were -- and I'm part of this issue that says yes to that question -- then I couldn't make that answer any different than if I did live outside the site.

MARY EASTON: I read a book about it.

JANET KOTRA: Is this the viability assessment document that the Department has put forward? Yes. Okay. One of the five books that Sally was referring to earlier.

MARY EASTON: It's hard to understand.

JANET KOTRA: Right.

MARY EASTON: I read through, and nine-tenths of

it I didn't understand. With all of the figures that they had, approximately 20 people in this valley would be over-exposed. Twenty people is too many.

Essentially, when you think of it, I'm probably one of those first 20 people, because I'm one of the closest ones to it. So, it really upsets me, and my grandchildren live right next door.

So, if it isn't me, it's going to be them. Just think about it when you're making your decisions. I realize there's not very many of us out there, you know, compared to Las Vegas or even Beatty, but we're the closest. We're the very closest, and our ground water is going to be most affected.

CHIP CAMERON: Okay. Thank you, Mary, and I'd like to thank Tim and Janet.

We're going to bring up our next panel, and we will get to you, Grant, but let's get our next panel up.

PAM RODRIGUEZ: Excuse me. I have a question for this panel.

CHIP CAMERON: Okay.

PAM RODRIGUEZ: Pam Rodriguez. And I'd like to know what exactly and specifically are the evacuation procedures set up and in place for the surrounding community in the event of a radioactive release at the site, and if there is a paper on this, I'd like to see it.

I'm also wondering, will you be answering the question for the DOE, or should I wait for the answer, or will they answer this question for me separately? Are you speaking for them now, or will you suggest how they might answer in the future?

TIM McCARTIN: I'm going to respond to your question, but I'm not answering for the DOE. What the regulation requires is that, when they submit a license application, a part of that license application is an emergency plan.

The application has not been submitted. The Department of Energy would have to talk to how far along they are in preparing a license application, including the emergency plans.

CHIP CAMERON: Okay. Those were two good questions. I'm not sure that you got your answer, but perhaps we can get you some information from the Department of Energy. But Tim was speaking as an NRC employee.

Let's go to the next panel so that we have time to get everything in, and as I mentioned earlier, these were two specific issues that came up when we were out here the last time for public meetings, and first of all, we're going to have Aby Mohseni from the NRC staff address how the NRC regulations affect children and infants, and Aby has a Master's degree in nuclear engineering.

He's worked as a health physicist for the State of Washington, and now he works directly for the Director of the Office of Nuclear Material Safety and Safeguards.

Aby, are you all set? Are you ready?

ABY MOHSENI: I am, yes.

CHIP CAMERON: All right.

ABY MOHSENI: Thank you.

Good afternoon. It's a pleasure to be here, and I'm here because, in the last few meetings that my colleagues attended -- I was not there -- questions were raised about the standard that NRC uses, whether or not that standard is protective of children and infants, and that led to a lot of good discussions, and that's an example of open debates that we have, and I'm here to explain where -- what those standards mean in terms of public health and safety, specifically children and infants, and in the context of the proposed rule, Yucca Mountain, whether or not the standard will adequately protect children and infants.

Now, that is a specific standard relative to the overall that we have. I realize you cannot see that, and I'm not used to sitting behind the microphone either. We usually do our work in writing, and it's kind of interesting to have a first public interaction here.

The NRC standards -- the basic question was will NRC regulations protect infants as well as adults? There is

one and only one reason for the existence of NRC, and that's safety, and if that's not achieved, then there's no other reason for us to exist.

We are not DOE. We are not EPA. We are not Department of Transportation. The NRC is an independent agency, as Bill mentioned, with one and only one major concern, and that's safety, and if safety cannot be demonstrated, the NRC will not grant a license.

That's its mechanism of saying no, this activity will not occur, period, because you have not demonstrated that you can adequately protect public health and safety, and here's the authority that can stop you, and that's the NRC, and as part of that group, the whole process is open to the public.

It's one of the unique characteristics of this agency, to do everything open, in the public. You can look over our shoulder at everything we say or do or explain or assume, and we've made some assumptions.

Right now, the standard which has been generated not by the NRC -- we did not originate the standards for public health and safety. We are part of the Federal Government.

The standards were generated by non-governmental agencies, experts in the field, at the international and national levels. The NRC, when it determined that it could

adequately protect public health and safety, it adopted those standards.

So, those standards are uniform across the world, not just us, and the public dose that's allowed under our standards is a dose that is accepted across the countries, in Europe, everywhere. We're not the originators of those standards.

And are they protective of infants and children? The answer is absolutely yes. We would not be doing our job if there was a segment in our society, specifically the most vulnerable segment, that was not adequately protected.

I have no other reason to exist except to demonstrate what the standard -- how the standard protects public health and safety. So, we have no interest in seeing Yucca Mountain get licensed or, for the matter, any other facility that comes to NRC.

Our job is to see that those standards that protect public health and safety are met. If they're met, we have no ax to grind against anyone; we're not opposing anyone; we're not part of any interest group, nothing.

We're an independent agency. Independent we are, and that's different than DOE, that's different than EPA, that's different than any other Federal agency that's part of the -- you know, the President decides, and there's some political influence, if you will, but with NRC, there is no

such political influence.

NRC is an independent agency, and we're open to the scrutiny by you, the public, people most interested for this particular case at hand, and yes, we can show through various methods and techniques that, indeed, the NRC standards are adequately protective of all segments, age groups, everyone, the youngest to the oldest.

When we -- there's no reason for us to choose standards that do not adequately protect a segment and open us to criticism. Why? There's no interest in that, to not perform our jobs as we are entrusted by the public to do.

So, for the proposed 25-millirem standard, which is a fraction of the public dose, which is 100, and it wasn't -- did not originate with NRC, it was -- did not originate with any government, DOE has nothing to do with it, originated with national groups, independent of governments, the 100-millirem is adequately protective of all age groups, all genders, no discrimination against anyone in terms of protection, and to allow -- and it's based on a lifetime dose.

So, we broke it down into annual doses and therefore ensuring that no one over the course of their lifetime exceeds the standard.

The proposed 25-millirem that is in the -- now subject to public comments is a fraction of that. It is

consistent with every recommendation that has come out from every body, internationally and nationally, that this is a reasonable fraction to choose as a standard for such a facility.

It's no different than our other licensees, but one important aspect is that, if you say 25-millirem is a standard, a health standard, does that mean that anybody living around the area, on the borderline, will receive 25-millirem? The answer is no, categorically no, and let me demonstrate why.

We've had over the years, in the number of years that NRC has been a regulatory agency, there's been a lot of radioactive licensing going on, a lot of activity out there that dealt with radioactive material that NRC licensed.

Only less than 1 percent of all the regulatory activities that have taken place have contributed to the background dose that we have. The background dose -- 300 millirem is the average background dose.

If people lived -- licensees lived up to the level of standards, the dose would be much higher and still acceptable, but the fact that you set the standard, it doesn't mean people live by -- at that exact standard. The history of licensing shows that we are less than 1 percent of the standard that's out there.

People usually use all kinds of mechanisms not to

even get close to the standard.

So, the standard is used to demonstrate on paper and to assure everyone that, indeed, you will not even get close to a fraction of what the allowable dose is, and in practice, they are much lower, much lower, and in this particular situation, you will have decades, hundreds of years that you can always retrieve any potential source of leakage and put an end to it.

The retrievability aspect of this particular project allows that to occur.

In other cases, we do not have that luxury of being able to actually put an end to a leaking -- we live with the standard and we basically make decisions, but in here, the intervention is allowed up to 100 years, which is a good demonstration, allows us enough time to ensure that the standard is met and not even close. We won't even expect them to even get close to it.

But that's the kind of -- that's our job, one job, nothing else. That's why we're here, one job, and if you are not satisfied, we will go back. As you get comment and you provide comments, we will go back and revisit the numbers.

We revisit what our proposals are, and this is what Bill said, this is what the whole team said. This is our commitment, this is our accountability.

DOE has not been an NRC licensee with the Nevada test site or others, so there's no comparison to be made. NRC has a reputation with licensees. It has lived up to that reputation, and it will continue to do so.

Our commitment to you is basically we are a safety agency. We're not an agency that promotes any repository here or elsewhere.

I think I'm done.

CHIP CAMERON: Okay. Thanks, Aby, and I'm sure you're going to get some questions on that.

Let's get Keith McConnell on first, before we go back out to you in the audience, and Keith is going to talk about something called defense-in-depth and multiple barriers, I see that on the slides, and Keith has a Ph.D. in geology.

He's a section leader for Bill Reamer in the high-level waste branch, and his section is the performance assessment issue, as explained by Tim in terms of what performance assessment is.

Keith?

KEITH McCONNELL: Thanks, Chip.

As others have mentioned, the requirements for multiple barriers generated a number of comments when we met in Beatty in Las Vegas in March, and I'm here to help better explain what we mean by multiple barriers and answer three

questions, basically, what we mean when we use the term "multiple barriers"; two, why is it important to Yucca Mountain and DOE's program at Yucca Mountain; and three, how will the requirements for multiple barriers help protect public health and safety for the residents of Amargosa Valley and other citizens in Nevada, and hopefully, I'll also touch on one of the concerns that Grant raised earlier in the discussion period.

Now, what I'd like to do is put up the next view-graph, which is not in your package, but it is designed to help illustrate in a simple way what we mean by multiple barriers, and hopefully you're familiar with the Russian doll.

This is a cross-section through the Russian doll, a toy, and if you're not familiar with it, Russian doll is a wooden painted doll that is cut in the middle, and you open it up, and there's a similar doll of smaller size inside, and you open that doll up, and you find that there's another doll of similar character of smaller size, and this is a cross-section through such a doll, and basically, what we tried to illustrate here is, with the radiation symbol on the inside, is the possibility of spent nuclear fuel being deposited in Yucca Mountain, and around that spend nuclear fuel would be a number of barriers, including the waste packaging and the geology that surrounds it, the rocks and

so on and so forth, so through this process basically developed multiple lines of defense for releases of -- from the repository if one barrier fails and you have other barriers to compensate for that failure.

So, this is the concept of multiple barriers. Multiple lines of defense are what we at the NRC use in jargon terms, defense-in-depth, and I'll use the term "defence-in-depth," but it means using the multiple-barrier approach.

So, what is defense-in-depth in the context of NRC regulations? Basically, it's a fundamental part of all of our regulations. It's an aspect in dealing with nuclear power plants, as well as all other licensees.

If you're familiar with a nuclear power plant, you realize and you know that there's a concrete dome around the reactor. That's part of the defense-in-depth philosophy for a nuclear power plant.

What defense-in-depth and multiple barriers do is that they compensate for malfunctions or accidents or under-performance of a particular barrier.

If one barrier in the repository is breached, like the waste package or perhaps, as the people mentioned, the fault, through some of the geology out there, there should be other barriers there that would compensate for those failures or lack of performance.

The bottom line is public health and safety, in NRC's view, is not going to rely on one barrier; it's going to be a composite of the geology and the engineering of the facility to ensure that the public health and safety is protected.

What does it mean to DOE in terms of their getting a license for a repository at Yucca Mountain?

DOE has to do a number of things with respect to multiple barriers in coming forward to the NRC. They have to identify the barriers, they have to identify their capability to isolate waste, and they have to back up that capability with sound science and engineering.

Basically, they have to show and rigorously demonstrate that, through these multiple barriers, this facility is safe and safe in terms of protecting the public health and safety of the citizens of Nevada.

They have to show that it's safe and that there's a role for both the geology and the engineering at the site. You can't just rely on the geology to protect the public health and safety, and you can't rely on just the engineering. It has to be both. It has to be a system.

What do we do if there is a license application submitted? There will be a thorough evaluation by the NRC staff, and we do have a broad range of technical expertise -- nuclear engineers, chemical engineers, geologists,

hydrologists, so on and so forth.

There will be a thorough evaluation by the staff, but there also will be stakeholder input. As with all of our other activities, including this rule-making, there are ample opportunities for stakeholder input.

At the end, based on the demonstration that DOE has made and our review and your input, we can either deny a license application to DOE or grant them a license application to construct.

It's all going to be based on the decision of whether public health and safety is protected, in large part, through this process of multiple barriers.

Now, the focus of some of the comments that we received in March was why is NRC changing its approach to multiple barriers?

Fifteen years ago, we developed a different approach than what's being proposed now, and there are a number of reasons why we did that, and perhaps one of the largest is that there were recommendations from the National Academy of Sciences and our own advisory committee on nuclear waste that told us that our approach that we developed 15 years ago was not an effective approach for conceiving and demonstrating multiple barriers, and there are a number of reasons why.

First of all, we didn't consider the interaction

between multiple barriers. In other words, if you have water in your radiator, it's one thing if it's cold, but it's another thing if the engine's running and it's heating up.

Well, the same issue is applicable to Yucca Mountain. If you have the waste in place there and it's generating heat, what is the effect on the water in the mountain?

That type of analysis wasn't considered in our earlier requirements. We now believe we do address those particular issues and that DOE will have to address them in their license application.

It can't consider aspects of the site in isolation; they have to consider them in the context of the entire repository.

As Tim and others have mentioned, we've also made significant progress in how we analyze the various aspects of the site, how we model ground water flow, how we model waste package corrosion, things like that. So, we think we're a little bit smarter, after having 15 years of experience of looking at Yucca Mountain and what DOE is doing such that we can come up with a better and more predictive approach.

And I guess that's basically it, but the bottom line is that what we think we've done is better, it's going

to be more protective, but it always can be improved upon, and we're here to hear your comments, and if you believe it's not protective, then please let us know.

CHIP CAMERON: Okay. Thank you very much, Keith.

You just heard two presentations, and what I'd like to do is to confine the questions to either the infants and children issue or defense-in-depth. That doesn't mean that we won't get your comments on other issues later on, but I want to confine this portion to those two presentations.

Are there questions?

SALLY DEDLIN: The first thing I have to say to you and to Janet is our concept of Yucca Mountain is that it is an analog.

Now, I don't know if people know what an analog is, but that is a self-contained unit that cannot be opened. The only analog that I know of that contains high-level waste is in Canada. Is that right?

KEITH McCONNELL: I think so.

SALLY DEDLIN: Not only is Yucca Mountain an analog, but can it remain open for 300 years and be viable and protective?

Now, I've got to get back to Aby and his millirems and so on. All of the publications on Yucca Mountain compare the millirems of Denver, and Denver, because it's a

mile high, gets 365 a year. I serve on a committee at the university. We get 420 as of two years ago, and we get 460 here in Amargosa.

Out of 10,000 children, 12 boys and 10 girls died. This is unallowable. The figures given by DOE is one in a million, and I can believe those numbers, because I have read at least 20 inches of pages of these cancer numbers and the potential.

Now, the only thing I know, having studied radio-biology, is that nobody knows why anybody dies from it. Nobody knows why one cell gets into a person and metastasizes and you die of cancer, or as with Chernobyl, where 375 people died of cancer, 110 children died of thyroid cancer, that that cannot happen nationwide.

All the economic and socio-economic studies that you made of transportation going by the lower-class, poorer sections of cities indicate that this will be extremely high, and who has the highest rate of cancer in the entire nation in all 14 categories but the District of Columbia. Nevada is highest is only two, and that's -- when I say highest, in the top 10, and that was women's breast cancer and women's lung cancer.

Now, one of the reasons for this is the reporting of cancer and the reporting of all this, children's death and so on, and as I told Tim and as I told Kevin at the last

meeting, you're talking to Nevada, you're talking to rural Nevada.

We do not have coroners in 11 counties, and maybe 15 counties, 14 counties out of our 17.

Now, what does that mean? Ask our sheriffs over here. What does everybody die of? Coronary heart failure. Why is it that DOD is sending to every worker that worked at the test site a form to come in and get a physical? Why didn't they do it at Hanford? They had 2,500 people; 8,000 showed up. Everybody I know that worked at the test site has died of cancer.

Now, these are serious questions. We're talking about our children. We're talking about a disease that nobody understands, and we're talking about very serious numbers.

How many counties in Arizona and New Mexico and other sparsely populated cities is this true?

So, to me, when they're giving me these numbers, they're not only phony, but they're totally unrealistic as to what we might experience.

CHIP CAMERON: Okay, Sally. You're covering a lot of ground there.

SALLY DEDLIN: Well, I've covered the millirems that they're talking about, and the 25 millirems, whatever it is, is totally undetectable. We heard the word

"believable."

CHIP CAMERON: Okay, Aby. Can you distill an answer for some of the concerns that Sally brought up, either in terms of the data that she cited from the National Cancer Institute study or her skepticism about comparisons between natural background, whatever?

I mean you were listening. Why don't I just turn it over to you.

ABY MOHSENI: The natural background, generally, 300 millirem per year, on the average -- we know that cancer rate -- one-fifth of people, one-fifth, will die of cancer, and this is just statistics in this country, 20 percent. To distinguish who died from what cause, as you know, Sally, is really the issue.

The standards are set, as you know -- based on your background that you just described, you probably are as aware, if not more, than anybody else that the contribution to that cancer statistics from radiation standards that we have when we apply them, especially when, indeed, the exposures are a very small fraction of those standards, are not distinguishable, they're so low.

They're non-existent. They're mathematically calculable if you make certain assumptions in terms of you. As you are nodding your head in confirmation, since it's not being recorded, and indeed, I'm just confirming what you are

saying.

The fact that -- you know, the relevance of whether or not one can collect enough statistics on why people died in certain areas, specifically a locale that you are referring to, versus the data that's collected more broadly speaking from the general population, we have enough information -- in fact, we know more about radiation than we know about any other carcinogen.

Albeit the uncertainties are also known, we know the uncertainties at very low levels of exposure, and you are aware of that.

The standards that we have set, which are based on international and national expert groups over the years, from looking at statistics throughout ages, as you are aware, are not the contributing factors to the kind of statistics that you are referring to.

The statistics in Chernobyl -- very interesting. As far as I know -- you said 110 children.

SALLY DEDLIN: And 375,000 adults.

ABY MOHSENI: Yes. Well, the statistics that I have seen are different, very much different than what you mentioned, much lower in terms of fatal cancers to children. I think two was the number up to last month.

But more cancers have occurred. I'm talking about fatal. Thyroid, generally, thyroid cancer, as you're aware,

has a lower fatality, but the incidence, yes, the incidence of cancer did occur, caused through Chernobyl. That's known, recognized.

But statistics that I am referring to are the standards. The standards are, as you just confirmed in nodding with me, that are not related to those statistics that you were referring to.

CHIP CAMERON: Thanks, Sally.

Go ahead.

GRANT HALLE: I talked about the multiple barriers. On the metal barrier, the canister itself, one of the basic fundamentals of metallurgy is that you know about the vessel limits.

If you violate that, it will give you a catastrophic failure within three to six months. DOE -- I just got a report back through searching their database. We can't find it at all.

So, what does that tell you about the level of competence of the metallurgists in the DOE? They never heard of it, can't find it, basic fundamental safety consideration.

When you get through with all your calculations, all your tests, you take a look at the numbers, and I stopped the Sandia project based on that. They were going to irradiate the sewage with cesium chloride. The vessel

limits very clearly said, two to six months, catastrophic failure, that thing rips open.

When they finally took a look at it, they stopped the project, because otherwise they would have taken cesium chloride out of that and put it in something appropriate. That should be a requirement, that somebody at the NRC and somebody in the DOE know how to make sure that nothing very stupid is done.

These kinds of things are only known by people that are turn-around experts. That's how you get to think in terms of how you do things that have never been done before, like Yucca Mountain, and without turn-around experts in both the DOE and the NRC, you're flying completely blind.

The other barrier is in the hydrology model. The one thing they know for sure about that model, the various models that have been proposed, is they're all wrong and that every time they run a new test, every time they look at it a different way, they get completely different answers. That's consistent with hydrology models at other places all around the world. If that's supposed to be a barrier, it needs to be nailed down, and nobody has ever nailed it down yet.

CHIP CAMERON: Okay. Thank you, Grant.

I heard Nelson limits should be a requirement, turn-around, and hydrology. Do you want to address any of

those?

KEITH McCONNELL: Well, I can address a few, but first of all, let me clear up -- I think there are, Sally, other natural analogs, in addition to Cigar Lake, some in Australia and also in Africa, and if you want information, we could probably get you some information on those sites, if you don't already have it.

Second, with respect to the Nelson limits, I'm not a materials engineer or a metallurgist, so I couldn't respond intelligently to that, but what we will do is -- or promise to you is we'll take that back to the materials engineers that we have on staff, plus some of the people we have in San Antonio who work for us, and we'll have an answer back for you the next time we meet, or I can get back to you through a letter, either way.

With respect to hydrologic models, we agree that there's a lot of uncertainty in hydrologic models, as there is in geologic models, and the whole data collection effort that DOE is conducting is an attempt to narrow that uncertainty to where we can have greater confidence, and I think if you look at our reviews of DOE's program, we have a healthy skepticism of all those areas that you mentioned, and we're trying to make sure that the information provided does give us confidence.

CHIP CAMERON: Okay. Thank you very much, Keith.

Let's get Rob Lewis up here right now and talk about transportation, and thank you very much, Keith. Thanks, Aby.

Okay. By way of introduction, Rob Lewis is with the NRC's spent fuel projects office. He has a Master's in nuclear engineering, and he's from Arizona, and I think he feels glad to be back out west, so he can testify to that. Rob is going to talk about transportation for us.

ROB LEWIS: Okay. Like Chip said, I'm in the spent fuel project office, and we're a separate group from every one of the previous speakers who are developing this disposal rule.

What we do in the spent fuel project office is we work to ensure safety of transportation of radioactive materials and safety and storage of spent fuel when that storage is not at the reactors.

I'll try not to use acronyms, but if I should slip, which is very likely -- it's a little late for us east coast guys -- if I say RAM, it means radioactive material. If I say HAZMAT, it will mean hazardous material. DOT, which I probably will use, is the Department of Transportation, who we work closely with.

Tonight's meeting is about the new disposal regulation, but at the last meetings in March, there was a lot of questions about transportation. So, Mr. Reamer asked

me to come tonight to try to help answer some of those questions.

But there's another reason I'm here in that I want to explain tonight some of the opportunities that are going to be coming up in the very near future for some more interaction on transportation.

I know we definitely want to have a meeting in the fall specific to assessing accidents and transportation of spent fuel in Las Vegas, which if you sign up in the back of the room, I'll make sure that you hear more about that.

So, tonight, there's a selfish reason for me to be here, then. I'll get to meet some of you and hear some of the issues you have.

The first slide I have shows the Department of Transportation's role in regulating the safety of radioactive material. DOT -- they really have the primary role in transportation safety. NRC, who I work for, is in a supportive role of the DOT.

DOT sets the rules for all hazardous materials transportation. Radioactive materials are treated as a subset of hazardous materials by DOT. The rules are very similar. NRC has a separate rule which I'll get to in a minute.

I want to quickly cover the last bullet, because transportation is an international commerce issue. The DOT

and NRC both work together very closely with the international organizations to set the standards for transportation of all radioactive material, including spent fuel.

On the next slide, I show what NRC's role is. NRC's role in transportation is very narrow. When we talk about transportation of spent fuel, we certify the casks that are used to transport the fuel as accident-resistant, and I'll explain what we mean by accident-resistant in a minute.

We inspect the people that actually make the cask to make sure that they're made to appropriate quality standards, and we set rules to protect against theft and sabotage, which has already been mentioned tonight, and we inspect and enforce both DOT's rules and NRC's rules on NRC licensees. We have a very aggressive inspection program.

Now, I want to be clear that NRC or DOT -- neither one of us actually do the shipping of the material. That's done by our licensees who are, in this case, shipping stuff to Yucca Mountain, if it ever does happen, would be done by DOE or the nuclear utility that is shipping the stuff here.

There's three areas of focus in transportation safety rules.

We need to look at the hazards associated with routine shipments, we need to look at the hazards associated

with accidents should they occur, and we need to look at the hazards associated with the theft or sabotage, which I already mentioned.

The routine transport of spent fuel does present a hazard, because there is a small amount of radiation that emanates through the walls of the casks that they're shipped in, and that radiation can expose people along the transport route.

Now, back in 1977, which I know was a long time ago, but NRC sponsored a study that was done called NUREG-0170, and I only mention that because I'm going to talk about it at the very end as something we're looking at again.

That study we used to evaluate the limits we have in the rule for the amount of radiation that could emanate through a cask or the amount of contamination that could be present on a cask, and we use limits in the rule, in DOT's rules, actually, that specify the level of safety that's needed for routine transport.

Now, for accidents, there's a little bit of a different consideration. Each cask that's used to transport large quantities of radioactive materials -- spent fuel as an example -- would require what we call an accident-resistant cask.

What do we mean by that? It means four tests in

our rule. There's a 30-foot drop, there's a drop that's a puncture onto a pin, there's a fire immersion test, and a water immersion test.

All of those tests are done in sequence on each cask design, and the casks not only must withstand those tests, but they must contain the fuel or contain the radioactive material after the test.

The natural question that comes up is how do those tests compare to real-world accidents, and that's a very legitimate question, and what we have done in that area in the past, in 1987, we performed a study called the mobile study.

There's a brochure in the back of the room, this blue booklet, that describes the results of that study, and the goal of that study was to compare the tests we have in our rule, which are these hypothetical tests, to the forces that a cask would experience if a cask was involved in an accident in the real world, and the results of that study showed that -- we estimate that about 99.4 percent of all accidents that could occur would be protected against with the standards that we have in our rule, the current standards.

And finally, with respect to sabotage or theft, we look at -- for each shipment, we look at the routes. We try to detect threats. We review each route that's used.

During shipments, we rely on having an adequate communication system with the vehicle to make sure it's not in any danger.

We require armed escorts of spent fuel through urban areas, and each vehicle that transports fuel would have a disabling device on it.

We did a study in the past that estimated the consequences of any release that could occur as a result of sabotage.

The next slide is a slide that -- I wanted to put up this to show the favorable experience we have and put the shipment of radioactive materials into a little context, and it's hard to get a good number on -- an estimate of the number of shipments of hazardous material that occur. This one, 770,000, comes from the two Sundays ago issue of the Washington Times newspaper.

It says that, at any given time, there's about 770,000 shipments of hazardous material on the roads, and everybody's seen the gasoline trucks with the bright red diamond-shaped placards on them. That would be a hazardous materials shipment.

Now, hazardous materials shipment have a very good safety record. With the shipment of radioactive material -- and remember, radioactive material is a subset of hazardous material -- that has an even better safety record. That's

not to say that -- we need to continue to focus on safety, but it does have a very good safety record.

Every day, I estimate that there's about 10,000 radioactive shipments, and in the last 20 years or so, we have shipped about 1,300 spent fuel shipments safely. There's never been any accident that caused failure of a spent fuel cask to date.

We do realize that the number of shipments of spent fuel in the last 20 years, 1,300, is a lot smaller than they're talking about for the repository.

There's also a lot of spent fuel transportation experience internationally. Remember, I said in the beginning that we do use the international standards for transportation, and we do, in ways, account for the experience that has happened internationally.

Now for the last slide. Earlier I mentioned there's going to be some upcoming chances to have more dialogue and written comments on transportation safety. That's because we're sponsoring re-assessments of these studies that I mentioned, the NUREG-0170 report, the 1977 report that looked at the safety of all transportation and looked at the regulations and evaluated the limits that we have for transportation in the regulations, and we're also going to start looking at the mobile study, which is the 1987 study, again.

As the first step in looking at that mobile study -- well, let me say first -- why are we re-looking at these?

We're re-opening these not only because they're 10 and 20 years old, which is a good enough reason in itself to start looking at them again, but we know there's a lot of changes that are going to be happening.

Whether it's Yucca Mountain or a central storage facility somewhere, we know that there's a good chance that, soon, there will be a lot more shipments of spent fuel, and these shipments could be -- involve longer routes, and the casks could be loaded with more fuel than was assumed in these studies, the 1977 and 1987 study. We know that.

So, the question is whether the studies are still valid. We think they are, but we're certainly going to look at that. We're going to involve you intimately in that.

Also, the computer power that we have at our hands, the sophistication of the computer models, everything has gone up quite a bit since 1977, when we had to use the super-computer at the national lab to do this 1977 study. We could do it on our desk PC now in a half-hour.

So, for all these reasons, it's a good time to look at it, and we're going to look at it. The first step is to make sure -- we know that people have criticized these studies in the past. We've read those criticisms. We're not sitting in the ivory tower back in Washington with our

blinders on to all the criticisms that people have on these studies.

The first step, like I said, is to have workshops. We're going to sit down and identify the issues. The next step would be to identify a plan to solve those issues. That, like I said, is going to be starting up this fall.

So, that wraps up what I have to say.

I'd like to leave you with the thought that we do have this existing system for transportation, and the record shows that it is safe, and we rely a lot on that existing record.

We're in a different place than the disposal regulation. They're just starting to write a regulation. We have a regulation.

The question we have to ask is whether the new changes that might be occurring fit into that existing regulation, and we're looking at this, we want to involve people in looking at this and make sure that whatever we do is publicly scrutinized, and we're looking forward to seeing some of you again in the fall.

CHIP CAMERON: Thank you very much. Thank you, Rob.

Before we go on to questions for Rob, Bill Reamer just wants to address a couple of points to a related rule that dealt with transportation of spent fuel, and then we'll

go to Rob for questions and then to Bill, if necessary, for questions.

Bill?

BILL REAMER: Okay. Well, Chip, we are interested in comments on transportation tonight.

As Chip mentioned, there is a related rule involving nuclear power plants and the renewal of their licenses, and this is not a meeting on that rule. Nonetheless, if we have comments tonight that present information that's relevant to that rule and it's new information, we'll be sure that those comments are considered.

In addition, let me point out that there is a lot more activity coming on consideration of transportation impacts. We expect the Department of Energy, in its environmental impact statement, will be looking closely at transportation impacts.

We expect that our comments will consider that portion of the DOE EIS. We'll be interested in the comments that you folks have, as well, on transportation, in addition.

CHIP CAMERON: Okay. Thanks a lot, Bill.

Do you have a question on transportation?

WILLY FERGOSA: I was just sitting here wondering about the shipments made already. Of course, we know that

most of the waste is in the east. So, you have a pretty good record so far, although we know there have been leaks in different places.

If Yucca Mountain is actually used, the number of shipments would rise at an incredible rate compared to what's already taken place. I know there have been predictions about the number of accidents.

It's scary, because I mean just the computer models and in real life, they're talking about just the general public out there. If it was your family, even one accident would be too many, if that was your family that was involved. Wouldn't you think so?

You know, you're all people here, but we're dealing with such -- the potential for such tragedy, it scares me that they're moving stuff between Japan and France and nere and there.

I'm just trying to understand how this is just being allowed at all. I don't know if you really can give an answer to that, but it seems like, no matter what the public says, things are going to be transported. Things are going to happen whether we want them to or not.

So, I sit here almost feeling like this is a moot thing to be going through this. I'm just hoping that this process is actually going to help stop what many of us really don't want to happen.

CHIP CAMERON: Rob, do you have some answers for Wlily?

ROB LEWIS: You make an absolutely correct and good point.

You're right that most of the spent fuels are in the east and the midwest. If it were transported to Yucca Mountain or some other place in the west as a storage facility, for example, the distances that it would be transported would be greater than the studies that we have in the past assumed.

You're right on how we analyze those. We have a computer code that looks at the transport. Those codes, like I said, are becoming more and more sophisticated. They actually look at the accident rates on particular highways now. Back in 1977, we didn't have that data. These are the issues that we need to look at, and that's why we're re-looking at these things, to determine if our current rules are adequate.

As far as accidents, one accident that carries spent fuel, we need to rely on the cask's ability to withstand the accident.

That's where our -- that's where we focus our attention, because that's where we believe was the best strategy, because when we transport things on the highway or on the railway, there will be accidents.

There's going to be a range of severity of those accidents. Some accidents -- the great majority of accidents won't be that severe, but as you get higher and higher severities, the forces that the cask has to withstand go up and up and up dramatically.

We have to -- we could build the casks to be totally immune to any possible accident. That would be a very expensive system.

We have to somehow look at what we have for the ability of the cask, look at the accidents that are reasonably expectable, that we could expect, without looking at these very, very improbable kinds of things, because we have to find a balance between the safety that the cask -- to optimize the safety that the cask can provide.

I hope that is somewhat of a response. It's probably not the best response.

CHIP CAMERON: Okay. Well, thanks a lot.

I think we have another question on transportation. Go ahead.

AUDIENCE MEMBER: I went driving in Las Vegas today, and let me tell you, it was scary. So, it's something to think about.

They have roads around here called the widow-maker roads, you know, the road to nowhere and back, and it's scary.

CHIP CAMERON: That's a good point, and maybe either Rob or Bill can address how will specific transportation routes, for example, driving on the roads, this widow-maker or whatever, be considered in this whole process in terms of transport hazard, either one of you or both?

ROB LEWIS: I think what probably triggered that thought was that I said we have the capability now to look at the accident rates on specific roads, and we did not have that capability when we wrote these books, but we do now.

There's always assumptions that we have in these models.

We need to look at the assumptions and make sure that they're reasonable and people can agree that, yes, these are, in fact, reasonable assumptions, but the -- there's another place that those type of issues will be addressed, and that will be the EIS, and a DOE one prepared for Yucca Mountain will look at the specific routes going to Yucca Mountain, I believe, as part of the impacts that they're looking at.

That, of course, is not something that NRC would be writing, but NRC will be looking at the specific routes and the studies that I was speaking of.

CHIP CAMERON: Bill, anything to add to what Rob said in terms of the EIS process?

BILL REAMER: I don't think so.

CHIP CAMERON: All right.

Lavonne, you haven't had a chance to speak yet, and I believe you wanted to say something. Do you want to come up to the mike, or would like for me to bring this back?

LaVONNE SELBACH: We've been talking a lot about transportation safety and container safety and everything, and I wonder how secure it is for the people around us and how secure we are in our particular valley against sabotage or terrorists.

We could easily have a lot of sabotage or terrorists or things like that. I worry about that in the safety factor, too. I know that they will contain these things, but there can be sabotage used against us. So, that was really my concern.

Now, when we start thinking in ways of how secure is the Yucca Mountain site itself, I think of the terrorists and sabotage.

Also, I have some notes here that was given to me, and I'd like to read a paragraph of it into this record as a statement, but we would like to make sure that the standard for Yucca Mountain are set against the locally-established background radiation levels and not the national level, which is higher, and also, we would like a written response

to that.

I have a note in the back in regards to that, and you have a copy of it, too.

Thank you very much.

CHIP CAMERON: Okay. Thank you, Lavonne.

Does anybody from the NRC staff have anything to offer on the sabotage issue in terms of the NRC standards?

Tim, is there anything that you can say about that at this point?

TIM McCARTIN: The regulations require a security system for the repository to prevent unauthorized access to the site.

CHIP CAMERON: Okay. Thank you.

Lavonne, if you have something further on this, perhaps you can talk to Tim later.

Victoria McGee, do you want to say something?

VICTORIA McGEE: My name is Victoria McGee. I live in Amargosa Valley. I have many questions. Every place I go, they don't want my questions. It belongs to somebody else. It's kind of like it's not my job.

One thing, as a resident in this critical hazard area of Yucca Mountain, that concerns me, I'm concerned about my civil rights. I'm concerned about my civil rights because we are referred to as individuals with unusual habits and sensitivities.

What does that mean? Does it mean crazy? Is everybody in Amargosa Valley crazy, or most of them? Unusual habits, sensitivities? Who decides this?

CHIP CAMERON: Victoria, could you just tell us what you're reading from, where that was stated?

VICTORIA McGEE: Page 8646.

CHIP CAMERON: Of?

VICTORIA McGEE: Of your book.

CHIP CAMERON: Of the NRC rule. All right.

VICTORIA McGEE: I understand that you recommend that the Department of Energy make these determinations on who's crazy and who isn't. That's what it says here. Assumed characteristics. That's a good one.

What are the credentials to make these observations on people's personal habits, sensitivities? What does that mean?

CHIP CAMERON: Let's try to find out, Victoria.

Janet?

JANET KOTRA: First of all, I'm very familiar with the passage that you cite from the proposed rule, and what we're trying to address is recommendations of the National Academy of Sciences.

I think it's an excellent question in the sense of what does this mean, and let me assure you, first of all, it has nothing to do with one's mental state, and that's not

what the National Academy was telling the Environmental Protection Agency or the Nuclear Regulatory Commission, and furthermore, it's not saying anything at all about the people who live in Amargosa Valley now, because what the context of that recommendation was -- we're talking about trying to protect not just the people who are here -- and that means all of you, but it means very far into the future, and I think we can all agree that there's a lot of speculation, that we could all speculate about what's going to happen over the next 10,000 years, and how do you make a rational decision about what those people, even 400 years from now, are going to be like, let alone 10,000 years?

So, the question is, you could have unlimited speculation.

You could, you know, postulate that there would be new food sources that don't exist now. You could postulate that there would be different digestive processes, that the human being would evolve into something different than what we know about people today, and what we're trying to do, what the National Academy is trying to tell the Environmental Protection Agency, don't go there.

Talk about how you would protect people in the future that are like they are today.

VICTORIA McGEE: My problem is this is now.

JANET KOTRA: Right. Exactly.

VICTORIA McGEE: I live here now.

JANET KOTRA: Exactly.

VICTORIA McGEE: I'm exposed now to whatever goes in Yucca Mountain or down the highway.

JANET KOTRA: That's right. That's true. You are exposed to what goes on. There's nothing going on at Yucca Mountain that is exposing you to radiation. That's why NRC is here.

We are developing criteria to make a judgement about whether material will go to Yucca Mountain, and the question is we want to ensure not just the protection of everyone who lives here now but over that 10,000-year period that we're concerned about and how widely do we make assumptions about people who live in the future?

The first priority is protecting people that are here now, and I think we have reasonably good confidence that, based upon engineering judgement, based upon what we know now about how materials behave, we have be reasonably sure about what -- our ability to judge DOE's proposal.

The trouble is we're talking about a very long-term enterprise, and the quotes that you raise talk about how you bound those assumptions about who's going to live in the future, and is there something different about them that we need to take into account other than what we know about how you live now and what you eat and how you

drill for water.

That's the data that we know about. We can go out and measure that now, and so, what the National Academy of Sciences is saying is make reasonable assumptions that people in the future will be like people who live today, because that's what we know.

VICTORIA McGEE: Well, I'm not too sure that, when DOE comes out here to make these evaluations, that they won't meet with the first 100 people that agree with them and put the rest of us back.

JANET KOTRA: Well, we won't find that acceptable.

VICTORIA McGEE: But will you know about it?

JANET KOTRA: Yes, because that is one of the very most important things about the demonstration that they make for us, is how they have characterized what this term, the critical group, which is something that the National Academy recommended that we use -- we want to know how they define that critical group, whether their assumptions are reasonable, whether they are based upon real data about where people live and how they live and what they eat and how they farm, and we want to see that data, and if that data doesn't support a reasonable assertion on their part, then we will say either, one, go get the data that you need to make your case or we'll say no. It's that simple.

VICTORIA McGEE: It still might seem that simple

to you, but to the average individual, nobody is addressing our concerns. Nobody speaks to us in language that we could understand that pertains to our concerns. You're career people. You talk to each other.

You won't talk to us. You don't tell us things we can relate to. You have your own language. That's a good example.

CHIP CAMERON: Hopefully -- Victoria, thank you for bringing this point up, and hopefully tonight is the beginning of trying to talk to you and to explain things more clearly, and hopefully, Janet's explanation made that a little bit clearer.

JANET KOTRA: And if there are other things in what we put out that don't speak in plain English, that need clarification, that need to be more clear, so that people who are most important to us, the people we're trying to protect, can understand that we are trying to protect and do our job, we need to know about it. That's why we're here.

CHIP CAMERON: Thank you, Victoria.

Is there anybody who hasn't had an opportunity to speak tonight that wants to say something?

AL MURPHY: I'm Al Murphy. I'm the regulatory licensing advisor to Nye County, and I sense that this is winding down. I haven't spoken tonight for one simple reason.

We, the Nye County Government, had ample opportunity in March, during the public meetings that were conducted by the NRC in both Las Vegas and up in Beatty, on all of these issues that we're heard tonight, in particular on the proposed rules.

We have remained silent tonight out of deference to members of the public, and we wanted to make sure that everybody here in the room got an adequate change to express their views, but I do want to thank the NRC for listening to the public in March, especially the public's concern with the abbreviated, at that time, comment period on the proposed rule.

We want to thank the NRC for extending that time period, for re-opening it to public comment, and for coming back out here to conduct this meeting tonight and further meetings in Las Vegas, and we certainly appreciate that.

We hope everybody from both Nye County and other counties and our California folks here tonight have had an adequate change to express themselves, but we really do appreciate the NRC's coming for the second time and extending the public comment period.

Thank you.

CHIP CAMERON: Thank you, Al.

Anybody else who hasn't spoken tonight?

ENGLEBRECHT VON TIESENHAUSEN: I had a couple of

questions for Rob.

Is the NRC going to have any influence on what routing will be used for transportation? That's question one.

And question two is you made the statement that any shipping that would be done would be done by either DOE or the reactors. Does that mean that third parties are excluded?

ROB LEWIS: I'm not sure I understand the second part about third parties.

ENGLEBRECHT VON TIESENHAUSEN: In other words, DOE has been talking about privatization of the shipping effort. Is that something that the NRC would not condone?

ROB LEWIS: Our regulations would permit that, but in general, our licensees -- I was just making the point that we don't actually do the shipping, it's our licensees that do the shipping.

Someone, a contractor for one of our licensees, can ship something for a licensee, but we hold the licensee accountable for the safety of that shipment.

The first part of the question -- could you refresh me?

ENGLEBRECHT VON TIESENHAUSEN: The question was you were talking about analysis of accidents.

ROB LEWIS: Routing, yes.

ENGLEBRECHT VON TIESENHAUSEN: Does the NRC have any say?

ROB LEWIS: DOT will require the use of the interstate system or beltways around urban areas, as they are available.

Now, the reason DOT does that is because DOT has a lot of accident data that show that the interstate system is far safer than rural roads.

So, they want to maximize the safety of spent fuel shipments, and they require the use of interstate, actually for all hazardous material, not only for -- for all large quantities of hazardous material, not only for spent fuel, they do that.

Back in Washington, two weeks ago, we had a spill of gun powder on our beltway which shut down the beltway and really became a traffic nightmare for the rush hour commute home.

That stirred up a lot of talk in Congress about whether or not Congress needs to do something about DOT's routing requirements, but you know, that's something that is a long process that's going to be drawn out to see what they would do.

The answer to your question is NRC does not set the routing requirements; they're set by DOT. What NRC does do, though, is we review the routes that are used for

assessing threats and sabotage. We actually drive down the routes and look at potential rest stops that could be used to make sure that they're selected properly and issues like that.

I hope that somewhat answers the question.

ENGLEBRECHT VON TIESENHAUSEN: Well, yes, but it doesn't address the issue that, if you find that certain route segments have a large number of accidents, DOE could still pick that route.

ROB LEWIS: That's an interesting point. I'm not sure if I know the answer to that, but I could get back to you on that.

CHIP CAMERON: Okay. Thank you, Rob.

Al Murphy was right, we are winding down, and there were two people who had their hands up here that I'm going to go to for just a short comment, I mean very short question, and before we do that, if you have this evaluation and comment sheet, if you have that, please hand that in at the end, and if you need a copy of this proposed rule that we've been talking about, we have copies of that.

Let's go to Ralph very quickly, and then we'll go to you very quickly, and then we're done.

RALPH McCRACKEN: Okay. Thank you, Mr. Facilitator. I appreciate the opportunity to speak to you, but I didn't appreciate the point that, if a person spoke to

one presentation, you couldn't speak to another presentation.

That being said, I did find that the defense-in-depth comment was an interesting concept and also that you present yourselves as being impartial defenders of our safety.

Your presence here is evidence of your proactive stance rather than being caught up in the reactive, knee-jerk type position, and as regulators, you can specify what kind of rules and regs apply to maximum load of 70,000 tons that's the current law.

On June 10th, Russ Guyer, the gentleman who is in charge of the Yucca Mountain project, projected that there could be as many as 105,000 tons that would be looking for a home at an expanded Yucca Mountain.

Right now, you guys are in a position to make scoping rules for expanded critical studies that are not abbreviated to thwart the expansion. I hope you're following what I'm saying here.

What I'm concerned about is that there could be a push to expand the operation through expansion-type regulation rather than a re-characterization set of regulations, and this announcement made by Russ Guyer was made at a meeting with Nevada State Commission on Nuclear Projects.

It's not just a hearsay-type thing, and it's well reported.

Is there any kind of mechanism that you can initiate that would include this in what you're working on now, you know, to preclude, okay, we've got this, let's expand it, without doing a really serious re-scoping of the mountain?

BILL REAMER: Well, under the present law, it can't be done. The present law says -- limits the capacity.

RALPH McCRACKEN: That's the law. Okay.

BILL REAMER: Congress could change that law, but Congress, in changing it, would not be saying it is safe to have more. That would fall to us to make that determination. The burden would be on the Department of Energy to demonstrate that it's safe.

If they present the case that's a convincing case, if the right conclusion, based on all the evidence, is that it's safe, then that would be the right conclusion to reach, but none of that has transpired. We're speculating at this point.

JANET KOTRA: I think it's also useful to add that the 70,000 number, as far as I'm aware in the Nuclear Waste Policy Act and amendments, was not a judgement about what can be safely put in Yucca Mountain. That is an upper limit based upon a number of considerations, but if a license

application came forward and the demonstration was that some considerably smaller amount of fuel could be safety emplaced at Yucca Mountain, then we would issue a license that would limit -- that would condition -- Tim talked about conditioning a license.

So, that judgement about what can safely be put in Yucca Mountain has not been taken yet.

So, if the Congress were to propose another number, most likely also not based upon a safety consideration, we would still -- it would still be subject to our evaluation, and I would add that I strongly suspect that we would be consulted by the Congress to comment on that expansion from a safety perspective.

CHIP CAMERON: Okay.

RALPH McCRACKEN: This is enough of an issue to shove people who were, okay, just do it right into the camp of stop it, don't do it at all.

CHIP CAMERON: Good point. Thank you.

Sally, this is going to be real quick.

SALLY DEDLIN: In the assessment report, volume 2, page 54, there will be not one but two repositories. This has come up three times. I have it in writing. Also, there are 126,000 metric tons plus the 14,000 metric tons that is defense waste.

CHIP CAMERON: Thank you, Sally.

SALLY DEDLIN: I will submit this to you.

CHIP CAMERON: Thank you, Sally.

Grant?

GRANT HALLE: One requirement that the NRC should place on DOE is that they not be allowed to transport the waste at all. There's commercial technology for heat transfer.

There should be a requirement that those reports need to be a part of this proceeding. I think it's critically important.

I think, obviously, when you see them, you'll see that we don't need Yucca Mountain.

CHIP CAMERON: Okay. Thanks, Grant, and thank all of you for coming tonight. Thank you for your comments, and the staff will be here if you need to talk to them.

Thank you.

[Whereupon, at 10:30 p.m., the meeting was concluded.]

REPORTER'S CERTIFICATE

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

NAME OF PROCEEDING: PUBLIC MEETING ON PROPOSED REGULATIONS (10 PART 63) FOR A HIGH-LEVEL WASTE REPOSITORY AT YUCCA MOUNTAIN, NEVADA

CASE NUMBER:

PLACE OF PROCEEDING: Amargosa Valley, Nevada

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

Carey Leffler

Carey Leffler
Official Reporter
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