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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON NUCLEAR WASTE

(ACNW)

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163rd MEETING

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TUESDAY,

SEPTEMBER 20, 2005

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LAS VEGAS, NEVADA

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The Advisory Committee met at Pacific Enterprise Plaza Building One, 3250 Pepper Lane, Las Vegas, Nevada, at 9:45 a.m., Michael T. Ryan, Chairman, presiding.

COMMITTEE MEMBERS:

MICHAEL T. RYAN, Chairman

ALLEN G. CROFF, Vice Chairman

JAMES H. CLARKE, Member

WILLIAM J. HINZE, Member

RUTH F. WEINER, Member

ACRS/ACNW STAFF:

NEIL M. COLEMAN, ACNW Staff
JOHN FLACK, ACNW/ACRS Staff
LATIF HAMDAN, ACNW Staff
MICHELE KELTON, ACNW Staff
JOHN T. LARKINS, Executive Director, ACNW/ACRS Staff
MICHAEL LEE, ACNW Staff
RICHARD K. MAJOR, ACNW Staff
RICHARD SAVIO, ACNW Staff
MICHAEL SCOTT, ACNW/ACRS Staff
SHARON A. STEELE, ACNW Staff, Designated Federal Official
ASHOK THADANI, ACNW/ACRS Staff

ALSO PRESENT:

MICK APTED, Monitor Scientific
DEBORAH BARR, DOE
JO ANN BIGGS, Hunton & Williams
CHRIS BINZER, Robison/Seidler
BOB BRADBURY, MTS
COURTNEY BROOKS, Nye County
JEFF CIOCCO, NRB
RAY CLARK, EPA
ELMO COLLINS, NRC

ALSO PRESENT: (cont'd)

J. RUSSELL DYER, DOE/ORD
LEIF ERIKSSON, Waste Control Specialists, LLC
STEVE FRISHMAN, State of Nevada
ROBERT GAMBLE, MTS/Booz Allen
APRIL GIL, DOE
ALI HAGHI, BSC
DALE HAMMERMEISTER, Nye County
CAROL HANLON, DOE/ORD
NORM HENDERSON, BSC
GEORGE HELLSTROM, DOE
CHRISTIN HITIRIS, NMSS/HLWRS
DONALD HOOPER, CNWRA
JOHN KESSLER, EPRI
TIM KOBETZ, NMSS/HLWRS
MATT KOZAK, Monitor Scientific
GARY LeCAIN, USGS/DOE
BRUCE MARSH, Johns Hopkins University
TOMIANN McDANIEL, USALE
JACOB PAZ
GENE PETERS, NMSS/HLWRS
MYRLE RICE, Lincoln/White Pine Counties
SOLEDAD SIFUENTES, Cogema Engineering
ERIC SMISTAD, DOE

ALSO PRESENT: (cont'd)

JUDY TREICHEL, Nevada Nuclear Waste Task Force

DOUG WEAVER, BSC/Los Alamos National Lab

DON WOMELDORF, Southwestern LLRW Commission

I-N-D-E-X

P-R-O-C-E-E-D-I-N-G-S

(9:50 a.m.)

CHAIRMAN RYAN: We'll go ahead and get started.

This is the first day of the 163rd meeting of the Advisory Committee on Nuclear Waste. My name is Michael Ryan, Chairman of the ACNW. The other members of the committee present are Allen Croff, Vice Chair, Ruth Weiner, James Clarke, and William Hinze.

Today the committee will discuss the preparation of ACNW reports and letters, be briefed by a representative from the Department of Energy on the overview from the status of the Yucca Mountain projects, be briefed by a DOE representative on the 2005 update for the DOE Performance Confirmation Program Plan, be briefed by an NRC staff representative on the NRC project plan for the Yucca Mountain License Application Review, discuss progress on the development of a proposed White Paper on low-level radioactive waste management issues, and hear a report from an ACNW member and consultant who participated in the 2005 DOE probabilistic volcanic hazards analysis expert elicitation update.

Sharon Steele is the designated federal official for this -- for today's session.

The meeting is being conducted in accordance with the provisions of the Federal Advisory Act. We have received two requests to make verbal comments, which we'll do as we conclude our letter-writing session this morning at approximately 11:45 from Dr. Paz and Dr. Elzeftawy. So we'll hear from these gentlemen later this morning.

We have received no written comments. Should anyone, in addition, wish to address the committee, please make your wishes known to one of the committee staff.

It is requested that speakers use one of the microphones, identify themselves, and speak with sufficient clarity and volume so that they can be readily heard. It is also requested that if you have cell phones or pagers you kindly turn them off while in the meeting room.

Thank you very much.

(Whereupon, the proceedings in the foregoing matter were off the record from 9:52 a.m. until 11:06 a.m. for the letter-writing session.)

CHAIRMAN RYAN: With that in mind, we've had a few additional requests for folks to make comments to the committee this morning, and I want to

try and be as efficient and respectful of their time as we can. So I'll take them in kind of the order they've been presented to me.

Dr. Paz, you are first up for a few minutes, please, sir. Could you tell us who you are or who you represent?

DR. PAZ: My name is Dr. Jacob Paz. I will make my comment. I can attend all of the sessions. Particularly, I'd like the committee to look very closely at the potential or the probability that Yucca Mountain might become a mixed waste site due to potential or probability of metal and radionuclides will make sometimes in the future, and the lack of applicable large-scale study or small study.

Second, about two years ago I made comments about the general instability in radiation waste standards, and I recommended that the committee should look at it very close, develop literature, and make a recommendation to the NRC how to set the standard for Yucca Mountain on radiation-based standard effect.

Particularly, it's in light in the future what's coming up that metal, such as depleted uranium, chromium, nickel, and titanium, can produce genomic

instability. No study has been done in human implant. But, nevertheless, that can have an effect when eventually will come.

Striking me is that chromium+3 has been found to be a mutagenic at the dose of 260 micrograms. This is a very serious issue, and I think the committee should look not just on the radiation but to look at much more broader effect because of license application.

And also, this will have an implication, which I made a comment like around sometimes in the future on setting up the standards. It has an effect on the standard on people -- workers who are employees.

And the last, I'd like to make an analogy, in my opinion, of Yucca Mountain. In 1906, the State of Missouri sued the State of Illinois due to the fact they were dumping sewage into the river reaching St. Louis, and they claimed it was increasing in typhoid fever. They lost their appeal to the Supreme Court in 1906 due to the facts of lack of applicable study.

I can make an analogy to Yucca Mountain. We don't have enough study when it comes to risk assessment. And I raised the issue before, both to the technical, the board committee, and two years ago.

I have to give credit when the credit was given to the NRC that they told me to submit a written proposal on the risk assessment of bystander effect, which I plan to submit.

Thank you very much. I'll give you just two papers to abstract from the literature, which I gather on the bystander effect of metals, and one is on APA, which stated the chemical name be more important than ever we thought.

Thank you.

CHAIRMAN RYAN: Thank you, Dr. Paz.

Dr. Elzeftawy?

DR. ELZEFTAWY: Good morning. I think it's still good morning. Can you hear me?

CHAIRMAN RYAN: Good morning. Just a little bit closer, please, sir.

DR. ELZEFTAWY: A little bit closer. When I sit in the back, there's a lot of echoes here, so I'm not sure.

My name is Atef Elzeftawy, and I'm here to represent the Las Vegas Parute Tribe.

Number one, I just want to say thank-you, Mr. Chairman, for allowing me to be here for a second or two -- maybe more. And, number two, thank you for coming to Las Vegas. This is the time for people to

come to Las Vegas, when the weather is nice and reasonable. We got you some cool temperatures. Don't come when it's 117. You know, it's funny, everybody comes around with their children, and so on, when it's 110 and all that.

So we live here, and we know that you need to do it like the tourists. When it's 117, you need to go under the ground, cover yourself a little bit.

I just wanted to make a comment or two to you with regard to your goal and your mission, and so on. And I was just looking at this particular publication by the NRC in January of 2000, and this gentleman was talking about -- doing the history here and he said, "Much of the past has little meaning or importance for the present. And, deservedly, it remains forgotten in the dust bin of history."

I think if I were him, even though he is the Secretary of the office, the historian office of the Secretary of the NRC, I would disagree with that. Originally coming from Egypt, I think history can tell us a whole lot. So this is one point.

The second point, since I enjoyed very much the lunch with Commissioner Merrifield, Jeffrey Merrifield, whose picture is here in this book, it's amazing how his attitude and his demeanor and his

position as a member of the Commission was so humble to listen to some of the nonsense that we had to say to him when he was here visiting the Valley about -- I don't know -- I think it's five years ago. I'm not sure. Five or maybe six years ago.

I'm not sure if he is still a member of the Commission or not. But if he is, tell him Las Vegas Parute Tribe would love to invite you back, and come and have a bite to eat with us.

But here is what the Chairperson would say. Before -- and I recommend that. Before 9/11, we had a different perspective on the so-called repository of high-level waste. Maybe we could argue about the science and how safe it is, and so on, but I think 9/11 has changed the picture.

We did not see it, as far as 9/11 coming to us, and it came as a surprise to everybody, even though that we had some reason to believe that there's something out there. So what happened? Communication between federal agencies went haywire. We had a problem.

Now, we're still into another problem. So the Federal Government -- all of you, and you are a member of that program -- have done a whole lot of rethinking, and so on, to safeguard the whole nation.

Well, Katrina came. I don't know if Rita is going to be here, in the same spot or not, but Katrina came. A day before it landed I told my wife, you know, that day I was in San Francisco and I was looking at NOAA and that thing was heading straight for Mississippi/New Orleans. It was 180 miles per hour, according to the reconnaissance.

We had 24 hours. It's moving about 10 miles per hour. We had 24 hours to do something. What happened? You know the rest of the story. I'm not criticizing. But I think this brings me to the point I wanted to make for all of you to -- to remember when you go home.

It's now the transportation of the spent fuel. It is no longer, to me as a scientist, is an issue as far as risk assessment, and this and this and this. It's the transportation of that particular waste from a different part of the country to come to Yucca Mountain.

I know we're going to fight. The tribe is going to fight for not having anything coming to Las Vegas, and the people who live in Las Vegas, because it's growing like crazy. Nothing is going to come through here. But I'm sure they're going to find another route to go someplace else.

So in your letter to the Commission, please highlight that this kind of a situation that was published in 1987 -- I just picked it up. You know, the transportation of spent fuel published in March in 1987. That's the month that I left Neil Coleman and NRC and I came here to Vegas. That's '87.

I think we need, in the light of what we have been going through, one thing in your letter, Mr. Chairman, and the committee, is to highlight something with regard to the transportation. The Department of Energy is so huge, nothing is going to sink in the mind to move them like a carrier. We told them many times about that, technically and otherwise.

So you need to go to lunch. I realize that, so I'm not going to belabor the point. But think about it. If we had a dirty bomb in LA today, for whatever the reason is, are we going to be able to move those -- those five, six million people, if we had it here in Vegas? It's a million and a half, just like New Orleans.

Where are we going to go? We have a state planning document -- I have it in my office -- as far as emergency and all that will happen, but the point is it's not only in a piece of paper, please. It is when you conduct it, how are you going to tell your

brain that your leg was cut?

So we need that kind of point to be highlighted by your letter, if you can, and that's the recommendation of the Chairperson of our tribe.

Thank you very much for your time. Enjoy your time. Don't waste a lot of money on gambling, and $5 will be fine.

(Laughter.)

Good luck to you. There's a lot of good food here, and come back again.

CHAIRMAN RYAN: Thank you very much.

DR. ELZEFTAWY: Thank you for the opportunity and the privilege.

CHAIRMAN RYAN: Thank you very much.

Next on the sign-up sheet is -- forgive me if I pronounce it wrong. Is it Myrtle? M-Y-R-L-E. Myrle Rice. Is Myrle Rice here from the Lincoln and White Pine Counties? Is that you? Come on up.

MR. RICE: No, I'm not speaking.

CHAIRMAN RYAN: Oh, you're not speaking. Okay. It said to make oral statements on the sign-in sheet, so it was -- you were there -- wrong sheet. That's okay. Well, we're glad you're here. Thank you very much.

Let's see. I'll get to my other list

here. We had a couple other individuals who I believe are here. Let's see. We had staff from Congressman Givens' office. Do we have somebody from Congressman Givens' office here today? It's actually listed for tomorrow, but I wanted to give this opportunity if somebody is here today. And also Mr. Danny Kaufman. Is Danny here today, or will he be here tomorrow? I guess he'll be here tomorrow.

Are there any other members of the public that wish to make a comment at this point, or not?

Okay. Well, with that in mind, I think we're prepared to do one of two things, either pick up another topic, or adjourn here for lunch and reconvene at the scheduled hour of 1:00.

DR. HAMDAN: Mike?

CHAIRMAN RYAN: Yes.

DR. HAMDAN: Let's have -- the SRB is being copied. You could come early and do that, if you have anyone that --

CHAIRMAN RYAN: Actually, we'll pick it up tomorrow in the scheduled letter-writing session, so everybody can participate. That way we're kind of on track with the published schedule.

That being said, we'll adjourn for a lunch break and reconvene promptly at 1:00. The meeting

will stand in recess until then. Thank you very much.

(Whereupon, at 11:19 a.m., the proceedings in the foregoing matter recessed for lunch.)

A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

(1:00 p.m.)

CHAIRMAN RYAN: The afternoon session will now come to order.

We are scheduled for three presentations this afternoon, and two discussion periods on other items the committee will take up. The first presentation is an overview of the status of Yucca Mountain. It's an update, and Dr. J. Russell Dyer will be presenting it. So without further ado, begin.

I know it's -- the acoustics we've been kind of struggling with during the day.

Let me also ask, for our Reporter's benefit, if you do speak into the microphone, speak as close as you can get, like that. And please don't drag the microphone across the table, because that sounds sort of like an airplane to his earphone. So if we could do that, that would be very helpful.

So without further ado, Dr. Dyer, welcome.

DR. DYER: Thank you, Mr. Chairman. Can everybody hear me okay? Is this all right?

First off, I'm sitting in for my boss, John Arthur, who would really like to be here, since he's being deposed in Washington right now. So given a choice of venues, he would much prefer to be here.

But he's not avoiding you. He will try diligently to be back with you with the next ACNW meeting.

This is going to be a little different venue for me, because I'm usually a pacer and a pointer, and there's no place to pace here. And I really don't have anything to point at.

So I would urge everybody, if you don't have a copy of the presentation -- and they're in the back of the room, it's a little hard to see some of the screens in here. I'd urge you to pick up one of the -- one of the presentations, and I'll take about a two-minute break while people are going to do that. Well, I'll take about a 20-second break.

There's about five things that I want to cover here today. First off is this is generally a project update. There are some things that are general and specific about the project that we want to update you on, talk about an update of spent fuel status. We've updated some of the statistics on that.

Talk about the license application, status of the license application, and some of the things associated with that, such as the Licensing Support Network, talk about some of the survey results from a safety conscious work environment survey that we did, the second survey that we've done, and we've got some

comparative results that I would like to discuss with you.

Talk a little bit about the probabilistic volcanic hazard analysis update, what we've done on that, and what we are doing, and then I'll close out with a little talk about -- or a little update on Nevada transportation.

In your handout, page 3, this is an updated slide, which shows the latest information we have on the status of discharges and projections of commercial spent fuel from reactors. And what you see -- the blue curve, the blue solid curve, is the actual discharges. This is current as of about December of '04; about 51,000 metric tons had been discharged at that time.

The annual discharge rate is on the order of about 2,000 tons a year. So the current inventory is probably something around close to 52,000 metric tons. The little dot that you see above it, current cool capacity of 61,000 metric tons, is a useful datum.

Projection into the future -- there are two scenarios that we use to project into the future. The dashed blue line looks at projected discharges from all reactors, but only looking at 35 license

renewals. And the green line looks at the projected discharges, assuming that we have 104 license renewals. Neither case assumes any new reactors being built or any contribution to the waste stream from new reactor capacity.

Other lines on here. Down at the bottom there is a red line which shows the contribution from shutdown reactors, and the kind of orange line is -- is the amount of spent fuel that's currently in dry cask storage at reactor sites. So that kind of sets the stage for the -- updating what the inventory is that needs to be dealt with by a nuclear waste management system.

Next slide is slide 4, repository program steps. Just to, again, kind of set the context of where we are and where we're headed, this is current. The last of these milestones that are listed on here that has been accomplished was the approval of the site for development as a repository by Congress in 2002. The next major step is a license application, and then the hearings associated with the license application.

Should NRC grant authority to construct a repository, then we would have a construction authorization and proceed with construction, and then

a subsequent licensing action to receive and possess an updated license application.

Page 5, a little bit about the Licensing Support Network. Of course, as you're well aware, our previous attempt to certify the Licensing Support Network a little over a year ago was overturned. We are in the process of following the directions of the PAPL Board of certifying -- I won't say recertifying, but certifying our contents of the Licensing Support Network.

We've got about 3.3 million documents in the collection. We've done a lot of improvements in processes, building quality into the processes. Building on some of the lessons learned from last year, we've done reviews of e-mails, we have done a lot more in the way of -- of discriminating between relevant and not relevant documents.

We found that a lot of the documents we thought would be on the system turn out not to be really relevant documents. There was a lot of conservatism that went into the initial estimates of how much material would be put in there.

We've looked at all of the documents that we think need a claim of privilege associated with them. Those have all been through manual review. And

then, as I said, we've identified quite a number of non-relevant documents, duplicative documents, that we've been able to remove from the system.

The target is still for certification of the license -- of DOE's portion of the Licensing Support Network in the near term. John Arthur is back in D.C. working on that this week after he finishes his other task. I cannot give you a firm date as to when that will happen. It will happen when we're convinced and ready that it's ready to happen.

The license application, page 6, we've been looking at different versions of the draft license application, and this pyramid that you see on page 6 kind of captures the essence of the LA and all of the things that lie behind the LA, all of the supporting documentation and analysis, calculations, design drawings, etcetera.

And whenever we talk about the license application, it's not just the physical license application itself, which is around about 5,600 to 6,000 pages of text, but the hundreds of thousands, if not millions, of pages of supporting documentation, the technical basis if you will, that lies behind it.

There are two main parts to the license application -- the general information section and the

safety analysis report. The way that the license application is structured there are really two safety analysis reports. One deals with the operation or preclosure period, and the second deals with the post-closure period, the very long timeframe.

And what you see inside this pyramid is an attempt to convey some of the details of what the number of documents, kinds of documents and materials that support just the very top of the LA, the actual license application itself.

Page 7. Where do we stand in the license application process? Well, as I said, we're evaluating the draft license application. We've looked at a couple of versions to date. The science and design work in the LA is technically sound, and supports a robust safety analysis for the preclosure period.

First, we'll talk a little bit later about what the recent draft EPA rule does. There will be -- need to be some additional things looked at in the license application to accommodate the new standard.

We've been very meticulous in going back and making sure that traceability and transparency in the LA is thorough and complete, making sure that everything in there can be cross-referenced or cross-

walked between both the license application requirements in either 10 CFR 63 or in the Yucca Mountain review plan, and to make those crosswalks as transparent and explicit as possible.

We're in the process of looking at what it would take to accommodate and to address the draft EPA standard, and that's some work that will take us out in time. Of course, the draft standard was just released relatively recently.

Okay. Page 8. Let me shift subjects a little bit here. I had the pleasure of talking to this group. I think it was about 18 months ago when -- over at the Texas casino, and one of the things I talked about was an initial survey that we did looking at the safety conscious work environment within the project.

And we have gone through this cycle twice, and we have the results of the second survey, which was done a little less than a year ago. And I'd like to talk about some of those results, and that's what you see on this bar graph that's up on the screen and on page 8. But it's not terribly self-explanatory, so I'm going to add quite a bit to what is on this simple bar graph.

These are the results of the '04 survey,

and in every area, save perhaps one, we saw an improvement over the results from '03. Now, let me back up a little bit, because safety conscious work environment is only one of the metrics that we were trying to get a -- some kind of benchmarking data against.

In our paradigm for a safety conscious work environment, there are really four things that contribute to the safety conscious work environment, or the SCWE. First is management support, second is effective normal problem resolution, third is an effective alternate problem resolution, and fourth is effective methods to detect and prevent retaliation.

So what we did was take existing surveys that had been used elsewhere in corporate America and add some elements that we hoped would allow us to figure out where we were in those specific areas. And that's what you see here is the total overall survey, which starts with a -- sort of a baseline survey that can be compared against Fortune 500 companies or federal research and technology programs.

And let's -- let me just walk down and tell you what's specific to our program and what are metrics that can be compared against other, let's say, research and technology programs. The first metric,

SCWE culture, is unique to our program. The second, engagement, is something for which a baseline exists, and we can compare.

The same is true for teamwork, cooperation, and supervision. Retaliation is unique to us. Quality and safety emphasis, empowerment, goals and objectives, ethics and integrity, are all things that can be compared to other programs.

The Safety Conscious Work Environment Concerns Program is unique to us, while openness and communication and overall management are things that are -- can be compared to other programs.

If we look at the comparison to the federal research and technology programs on this scale, we are at or above the national norms in all of the categories that can be compared. If we compare against where we were last year, there's -- if you remember back to the original survey, one of the areas that we thought was very critical, that we had poor showings on, was the Corrective Action Program.

We put a lot of management emphasis into improvement in the Corrective Action Program. And what we saw was a nine-point improvement in the survey results from one year to the next. And the survey takers tell us that nine points is just about the

maximum that you can credibly get as improvement in a program. So this suggests that the actions we took were effective and were recognized as being effective.

Now, after last year's survey, we learned a lot of lessons from that survey. Some of the lessons were that we were not very clear about some of the questions. There were different ways that the questions could be interpreted. And we also learned that with -- one of the shortcomings we had was that we didn't leave people a -- it was a -- just a multiple choice questionnaire. There was no room or accommodation within the questionnaire for somebody to provide written comments.

So this year, after the survey was complete, we did focus groups to go back and talk to the people that were involved in the survey and make sure that the comments and the dialogue that we established for them/with them would confirm what we thought we were getting out of the survey results.

So we did -- we did focus group followups with all of the organizations that were involved in the actual survey. And it was based on a combination of the survey results and the results of the focus group meetings that we came up with a set of actions, or objectives if you will. They are laid out on page

9, which there's the focus of management attention for this cycle.

And if I can just walk down through those items on page 9, improve SCWE behaviors through human performance training, observation, and coaching. We brought in people and programs to help us with that.

Improve ease of use and employee confidence in the Corrective Action Program. We went -- we have done a lot of improvement in the effectiveness of the Corrective Action Program, but there is quite a ways to go. We are still very heavily focused on improving the Corrective Action Program.

Improve employee willingness to use the concerns program and maintain the confidence that concerns will be thoroughly investigated and confidentiality maintained -- a key pillar of the -- our four pillars of the safety conscious work environment.

Improved confidence in the commitment to quality throughout the program. Develop and implement organization-specific action plans as warranted. One of the things that we didn't have from the first survey was demographics of the results, so that we could discern whether or not there were issues that

were resident in specific organizations or departments, and now we have a little better demographic, so that we can kind of target corrective actions where they're needed.

And it may be giving people in a certain organization better information or better tools or better resources, and improve the survey instrument.

And, finally, one that's not on this list but which is also one of the objectives that we have is to complete alignment with NRC best practices to bring our survey tool into at least consistency with that.

Page 10. Let me touch briefly on the USGS e-mail issue, which came up in the course of some of the LSN reviews that we were doing. And I suspect everybody is familiar with at least the basic issue that happened, and let me just kind of jump to where we stand.

One of the things that we have -- are doing is a root cause analysis. There is an extent of conditions in a root cause analysis, and we expect to have those completed by mid-October.

We have corrective actions currently underway to replace or remediate the moisture infiltration work that was associated with the

individuals that were the parties to those e-mails.

We have planning underway to do a self-assessment on the culture, if you will, the cultural environment that -- to find out if there's anything systemic in the way of program culture that might have led to this -- these occurrences, and if it still exists, and if it does, what we need to do to address it.

Page 11. Shifting gears yet again. This is the update of the probabilistic volcanic hazard analysis -- the PVHAU, probabilistic volcanic hazard analysis update. Just to refresh your memory, in 1996, we did the original probabilistic volcanic hazard analysis.

Since that time, there has been a body of work that has accumulated. There were some ground magnetics that were done by the Center for Nuclear Waste Regulatory Analysis. There was an aeromag survey that the U.S. Geological Survey performed for Nye County in 1999.

These showed the potential for some varied anomalies that had not been considered in the original probabilistic volcanic hazard analysis. And as an update based on that information and some agreements that were reached with NRC staff through the key

technical -- KTI agreement construct, there is a number of things that we agreed to do, which would provide more information that would allow us to go in and do an informed update of the probabilistic volcanic hazard analysis.

In 2003, we did a helicopter survey, high resolution aeromag survey, low altitude of this entire area, and we found some more anomalies beyond what was originally identified by the 1999 USGS aeromag anomaly.

In 2005, we started drilling of these anomalies. To date we've drilled two of 10, plan -- we've got 10 boreholes targeted in the program. We've drilled two of those to date. Both of them have encountered basalt at depth.

We do not have any dates back yet on the basalts. That's one of the parts of the program is to get an age date on the basalts, and take that information back to the probabilistic volcanic hazard assessment team.

And we've been able to bring together almost the entire group that was the original assessment team of 1995/'96. There are a couple of people that were -- are not able to join, but we've -- those have been replaced by very competent

individuals.

We started the PVHAU process in 2004. We've have two meetings to date. The target is to have the information to feed the PVHA update in 2006, and close it out in late 2006. So have all of the information and have the assessments completed by the end of 2006.

Page 12. Let me move closely -- or let me move to transportation, Nevada Rail. And here we're only talking about the part of the transportation system that is associated with Nevada. And as you're aware, in the draft environmental impact statement -- I'm sorry, in the environmental impact statement for the repository, DOE expressed a preference for a rail, primary rail access to a repository at Yucca Mountain.

And then, this year we came out with a preference for a particular corridor. That's the Caliente corridor. And we initiated efforts to develop an EIS to support that decision. Work on the EIS has been ongoing. The bottom of page 12 lies out -- lays out some of the things that have been done -- geotechnical surveys, hydrology, aerial photography, etcetera.

What's important to note is that there has been no final decisions on whether to construct a rail

or to construct the Caliente corridor. That's still a decision that is before us.

Page 13, just to kind of refresh your memory. The red line on page 13 is the Caliente corridor, the rail access from the town of Caliente in southern Lincoln County, Nevada, north-northeast of Las Vegas, coming north of the Nellis Range and the Nevada test site, skirting around near Tonopah, turning south and then coming into Yucca Mountain -- about 330 miles of rail.

And where you see more than one red line on here, those are alternatives that are being examined to determine if there's one alternative that has more pros than cons for it.

For those of you who have driven much of Nevada, going east to west across Nevada, you go through the basin and range, and there's about seven ranges and basins that you go over. There was some question at some time whether this wouldn't be prohibitive in the -- or extremely inefficient as far as negotiating those up and down grades.

Page 14 is just a comparative, a topographic profile if you will, of the Caliente corridor from east to west, compared to some other existing rail lines. What's in the green is the

profile from Denver going to the west over the Rockies. What you see in blue is Rogers Pass profile coming out of Calgary, over the Canadian Rockies.

What you see in Red is Cajon Pass, if you come up from L.A., up through Bakersfield -- or Barstow and Baker. That would be that profile. And then, finally, orange is the Donner Pass profile, coming over the Sierra Nevada.

So if you look at it in the context of some of the other things that have been done, done years ago, it looks reasonable.

Finally, page 15. In summary, we are addressing the work required for the Licensing Support Network certification. I'd like to say we are on short final for that. We'll see here over the next several weeks or months.

Of course, that is a precondition to the license application, and we're taking the time that we have to make sure that we have everything done to our satisfaction in the license application before we submit it.

The proposed radiation protection standard from EPA is currently in public review. We're looking at ourselves commenting in the comment period, and also looking at how we would implement that particular

standard.

Finally, I would reiterate that the Department of Energy and the Office of Civilian Radioactive Waste Management is committed to safe disposal of U.S. spent nuclear fuel and high-level radioactive waste.

With that, Mr. Chairman, I'd like to answer any questions that the committee might have.

CHAIRMAN RYAN: Thank you, Russ.

Questions? Starting with Ruth.

MEMBER WEINER: I just have a couple, and they're disconnected. Who approves the documents for the Licensing Support Network? And who makes -- how is the decision made about what is relevant, what isn't relevant, beyond just documents that are repeats of other documents, verbatim repeats of other document? That's obvious.

DR. DYER: Let me try the first one, your first part of the question, because that's the one I didn't understand, which was who approves the documents.

MEMBER WEINER: Who decides what goes into the LSN?

DR. DYER: Okay. Individuals decide. And it is based on guidance that was provided by the

Office of General Counsel. Everybody received a set of guidance that said, "These materials are potentially relevant." And it was up to each individual to identify, to look at everything that they had in their office, or that they had produced, and make a determination as to whether or not their materials that they had met these criteria for relevancy.

Some people were very conservative in their interpretation of the criteria, and ended up identifying a lot of things that went way above and beyond what the criteria actually called for.

MEMBER WEINER: So you say individuals. Who were these people who had commented?

DR. DYER: Everybody on the program who had materials in their office, the notice went out to everybody in the program, the contractors, the subcontractors, everybody should have been polled. And the managers from each organization were responsible for certifying that their organization had made a good faith effort to identify all of these materials and make them -- make them available.

MEMBER WEINER: How about members of the public, other organizations? I remember way back initially those documents were supposedly part of this

system also.

DR. DYER: Well, only as far as like the public comment and response document for the EIS. That is a matter of public record, so that went into the LSN.

MEMBER WEINER: I see. I see. So where there was public response, it went in.

DR. DYER: Right. The other things that we polled were the records system, correspondence system, and it depends on what the nature of the correspondence is. Not every bit of correspondence with the public necessarily should be in the LSN. Somebody who is trying to sell us tires, for instance, we're not going to bog down. Although we tried to, we're not going to bog down the system with that kind of material.

MEMBER WEINER: My other questions relate to the transportation -- the draft EIS for the Caliente corridor. And, first of all, how does your new draft EIS differ from the FEIS for Yucca Mountain? Because I know that the Caliente corridor was considered, was looked at, environmental impacts of putting in a rail line are documented in that document.

DR. DYER: Well, but it was looked at as

one of I think seven, which eventually got down to five, alternate routes. So there's not a level of detail that was in the FEIS that really would support the decision that we need to make as to whether or not to build that rail corridor there.

MEMBER WEINER: But when you do an EIS, it's supposed to look at alternatives, yes, but it is supposed to look at the environmental impact of what you're planning to do. Was there just greater detail? In other words, there must be some similarities.

DR. DYER: There are some similarities, but, remember, this was in the repository EIS. It was focused on the repository system.

MEMBER WEINER: Well, if you have a lot of differences, that's -- I mean, you're looking at the same corridor. And what I'm trying to get at is, was the -- was it just more detail? Were there real differences that you found when you went back and did another environmental assessment?

DR. DYER: Well, let me take one example. Archaeological surveys. We have -- prior to embarking on this, we, the Department, had conducted no archaeological surveys along that corridor. There is some information in the public record, but not nearly enough that would inform the decision that you need to

make.

Now, we have a lot of information on archaeological -- archaeological information in proximity to the site, which is what the focus was. So there is a lot of other information that we had not really gathered, not just on that corridor, on any of those corridors. We mainly worked from existing public records for the information that was in the repository EIS.

MEMBER WEINER: Finally, if everything comes through -- well, let me rephrase that. Are you planning to have everything come through Caliente, even though it would be coming from, say, the northwest or Arizona or Idaho, or what? In other words, everything is going to be routed so that it goes through Caliente, or is there a plan for a north-south rail line?

DR. DYER: Well, by "everything," I presume you mean everything that is transported by rail.

MEMBER WEINER: Everything that is transported by rail. That's correct.

DR. DYER: And it would come through Caliente.

MEMBER WEINER: Yes. In other words,

anything transported by rail from, say, the plants -- powerplants at Hanford, WNP 2 or whatever it is now called, would come through south and then through Caliente.

DR. DYER: That's correct. There has been talk in the state for years about an alternate north-south rail route, but that's not -- it's not on the table in our planning considerations.

MEMBER WEINER: How about California? Or isn't there anything planned from California to the site by rail?

DR. DYER: I'm not aware of anything. I mean, certainly nothing that DOE has planned.

MEMBER WEINER: Okay. Thank you.

DR. DYER: Okay.

CHAIRMAN RYAN: Allen? Jim? Jim Clarke?

MEMBER CLARKE: A couple of questions about the survey, and I'm not sure if Ruth asked them or not. I'm having trouble hearing over here.

But the safety conscious work environment survey, if I understand this, you polled 1,650 people. Could you tell us a little more about who they were?

DR. DYER: Well, okay. We sent out 2,560 surveys to everybody that was either a DOE employee, contractor, or subcontractor employee. Everybody that

we could identify at a point in time was being paid for by the project.

MEMBER CLARKE: Okay.

DR. DYER: Not everybody was full-time on the project. Some of them were just part-time workers. We had a return rate of 65 percent, and that's the same return rate we got in 2003.

And it was spread pretty much evenly across organizations. There were some organizations that had a much better return rate than others.

MEMBER CLARKE: Okay. So it was a self-assessment. I think you said some categories improved from the earlier survey. Did you mention which ones those were?

DR. DYER: Well, the one that improved the most was the Corrective Action Program. It went up about nine points. And I've got a comparison here of last year's and this year's, somewhere in here. And it's not broken down the same way that it's represented there. This is broken down by individual questions.

After we get through, if you want to look through this --

MEMBER CLARKE: Sure.

DR. DYER: -- I'd be happy to discuss it

with you. But --

MEMBER CLARKE: Just another quick question. Did you see any major differences between organizations as far as the responses went?

DR. DYER: We saw some organizations that were substantially lower than others, and that -- those become management challenges. Some areas felt that they had been shorted in the way of resources, or that they had been ignored and misunderstood, and it shows in the survey results.

MEMBER CLARKE: Okay. Thank you.

MEMBER HINZE: Russ, I appreciate hearing directly from you, and also learning about what you feel are the important items in the update of the Yucca Mountain program. I do have a few questions.

We've talked about the LSN in terms of its completeness, and that's an important factor. But I'm wondering about how user-friendly it's going to be. I have not tried to use it even if I -- and I don't know whether it's even available to me.

There is not only the problem of is it complete, but how easy is it to find things in it? What are you doing to make certain that the LSN is user-friendly to people like me or to the stakeholders?

DR. DYER: I'm afraid I'm going to have to point to the owners of the LSN, which is the Nuclear Regulatory Commission. We are providing the information to populate it with, but the tool itself and the search engine that's used is provided by NRC.

MEMBER HINZE: Well, have you had any experience with using it yourself? Have you found it user-friendly?

DR. DYER: I do have experience with trying to use it.

(Laughter.)

MEMBER HINZE: Okay.

DR. DYER: And, I mean, in my judgment, the search engine that's associated with it could be a lot more useful.

MEMBER HINZE: Okay. That answers my question.

On page 3, you show us this interesting chart, and one cannot help but reflect on the fact that in a decade that we're going to have enough spent nuclear fuel, even without the DOE high-level waste, to fill up the mandatory maximum of Congress.

What is the Department of Energy doing about thinking out ahead in terms of the availability of additional repository capabilities and capacities?

DR. DYER: We are charged with going back to Congress in the 2008/2009 timeframe, making a recommendation to Congress at that time as to the need for an additional repository. I think it would be premature for me to second-guess what we're going to do some years down the pike.

MEMBER HINZE: Okay. You mentioned the PVHA. The instructions, I believe, to the PVHA panelists at one of the first meetings was that they were supposed to look at the probability over a 10,000-year period of time. At the PVHA that was held a few weeks ago here in Las Vegas, the comment was made that this was being ratcheted up to a million years in anticipation of promulgating the new standards and new regulations.

And yet we heard from Bruce Crowe, who you knew very well and is more knowledgeable of the volcanism at Yucca Mountain than perhaps anyone, Bruce Crowe stated at that PVHA that the 10,000 years was a tough enough problem without going to a million years.

Where does the Department of Energy fall on this? What are you doing about limiting this to a 10,000-year period, and extrapolating -- using those values and extrapolating out to a million years, as

has been suggested in the draft of EPA 197?

DR. DYER: I want to turn to Eric Smistad, if he's in the audience. Eric is our manager for the PVHA.

MEMBER HINZE: This was one of the concerns of the people, some of the people, including me, in attendance at your recent PVHA. I'm just wondering where we're headed with that.

MR. SMISTAD: Yes. We had from the beginning asked the panel to consider a million years. We're asking them to do -- actually do that. We had -- what we're really asking now is we're asking for sort of a two-step in terms of the timing process here. We're asking them to come up with a value for 10,000 years, and then another value for a million years.

MEMBER HINZE: So both. Okay. Thank you.

MR. SMISTAD: Yes.

MEMBER HINZE: That answers the question.

Let me ask another question. You referred to the e-mail -- USGS e-mail concerns. And the NRC has proposed in their draft regulation, as a surrogate for climate change, using a set flux, net flux, of moisture, water through the repository. And I'm wondering if you are doing any new work to look at the

net flux in the post-10,000-year period of time. Are you conducting any new studies? Are you looking at your models? Is anything new being done?

DR. DYER: Certainly, we're looking at the models, reevaluating the models. Whether we can use the same model and just extrapolate it out for many periods of time -- as you're aware, in the previous TSPA we forced some climatic changes. And in the -- we did something similar in the EIS. We did take the -- in the repository EIS, we took the calculations out to a period of peak dose -- well, a million years actually.

Whether the treatment we used in that, in the EIS treatment, is consistent with the recommendations or the elements of the proposed standard, I don't know yet, but that's one of the things that we're going to have to look at.

One of the things we are doing is relooking at the models, and the infiltration models in particular, and we may be putting new models in place.

MEMBER HINZE: Okay. Touching base with the USGS e-mail problem, once again, you stated that you are doing work, or work is underway, to replace and remediate the moisture measurements that were made

by the principals.

DR. DYER: Correct.

MEMBER HINZE: My recollection of that is that that work was done over a decade ago, and it was at a time before I think there was general appreciation of the role of fracture flow. And I'm wondering if your experiments are in any way being modified to bring the work up to date with the current status of our knowledge of the site. Are the measurements just being repeated, or are they --

DR. DYER: What we're going -- what we're doing, first off, is going back and looking at the existing database, and looking at interpretation and models that you can apply to that database. What models are consistent with the observations?

Now, there was a recognition 10 or 15 years ago that fracture flow had a very important role in infiltration. We also knew it was going to be difficult to quantify it very precisely. And until we have a new team come in and look at the infiltration models and go through that process, I can't tell you exactly what we're going to do.

MEMBER HINZE: Russ, the committee and the NRC are very much interested in the igneous activity issue and the potential risks from igneous activity.

And we're looking at certain aspects of magma dynamics that might have an impact upon the risk-informing of that item, of that topic.

I've heard that you have a new AMR coming out on magma dynamics, which may impact -- have a strong impact upon what we are trying to learn. And I'm wondering if you have any information that -- on when that AMR might be available, and is that AMR covering the topics that were brought forth as a result of the igneous consequence peer review panel recommendations.

DR. DYER: I'm going to have to turn to Eric again, who assured me that we were almost through with our consequence analysis.

MR. SMISTAD: Yes, Bill, and that's a new AMR. In fact, an AMR has just been completed, and we are sending it out to the LSO here shortly. That AMR takes the analysis further, quite a bit further in detail, than the dike/drift AMR did, so you'll see a lot more analysis in that.

And that is -- I can't remember the second part of your question, but it is a new AMR that we've got.

MEMBER HINZE: Well, my question, the second part of it, was how much does it incorporate

the kinds of studies that were recommended by the ICPR?

MR. SMISTAD: Right. Yes. There were several recommendations in that report, as you know.

MEMBER HINZE: Right.

MR. SMISTAD: This report certainly, or this AMR certainly, does, I'd say, a bulk of the modeling they were suggesting. They were suggesting more detailed modelings, and perhaps some 3-D modeling, that sort of thing, a little more emphasis perhaps on the multi-phased sort of looks. And this AMR does step into that --

MEMBER HINZE: Well, great. We're happy to learn that at -- that it's going to hit the street here shortly, because we'll be interested in it.

MS. GIL: Excuse me, Dr. Hinze. If I could just add something. April Gil, Department of Energy.

CHAIRMAN RYAN: Could you tell us who you are for the record, please?

MS. GIL: April Gil, Department of Energy. Let me just add to what Mr. Smistad had said. It's the Department's policy to put our analysis model reports on our website as they become issued. So I'll have to check on the specific schedule for the igneous

report that Eric referred to, but it usually takes some weeks to a month for the reports to be on the website. So this will be publicly available on our web.

MEMBER HINZE: April, if you could give us a heads up when that might be available, it would be very helpful.

MS. GIL: Sure, I'll be happy to do that, Dr. Hinze.

MEMBER HINZE: Great. Great.

One final question, Russ. I assume that the geotechnical study of the Caliente corridor includes some faulting and seismicity. Is that right?

DR. DYER: I presume so, but I -- to be honest, I haven't been that --

MEMBER HINZE: Okay.

DR. DYER: -- involved with it.

MEMBER HINZE: Thanks very much, Russ.

DR. DYER: Mr. Chairman, could I respond to Mr. Clarke? I finally found the information he was looking for here. Compared to the 2003 versus the 2004 survey, there were a number of areas that were better percentage-wise.

However, if you look at those areas that have a statistically significant change, there are

two. One is the corrective action process, and the second is the rewards and recognition area. There is one area that is statistically significant lower, but there's a caveat on that, and that's the one called safety conscious work environment culture, which is the one at the very top of the screen and which had the highest overall positive rating.

In the 2003 survey, we had four questions that kind of made up that category. We expanded that to make up 10 questions, so I'm not sure that's really an apples and apples comparison.

MEMBER HINZE: Thank you.

DR. DYER: Sorry, sir.

CHAIRMAN RYAN: Okay, thanks. That's fine.

Any other questions or comments for us?

DR. LARKINS: Can I ask a quick question?

CHAIRMAN RYAN: Yes, please.

DR. LARKINS: You were just talking about the Corrective Action Program. What are the success measures for your Corrective Action Program? How do you know when it's successful and effective? What metrics are you using?

DR. DYER: I think there's a couple of metrics that you can use for it. One is perception

and satisfaction of the users of the program. Do they feel that it is a program that has more value than cost, if you will? The second is to look at effectiveness metrics, such as what kind of repeat issues come up? And we look at both of those, obviously.

CHAIRMAN RYAN: We had John Flack first, and then Latif.

MR. FLACK: Yes, just to followup a little bit on that last question.

CHAIRMAN RYAN: Would you turn on the microphone, please, John?

MR. FLACK: Oh, I'm sorry.

CHAIRMAN RYAN: Thanks.

MR. FLACK: Yes. We're very interested for other reasons -- in other areas, like reactor areas, of the correlation between the Corrective Action Program and safety culture. Do you see a direct correlation between these two programs?

DR. DYER: Well, in our constructs, safety culture has many components to it, one critical part of which -- and a fundamental part -- is an effective correction -- Corrective Action Program. If you don't have that Corrective Action Program built into the culture, the tools, the processes, and the culture of

using it, I think you're going to be sorely pressed to try to develop an overall safety conscious culture.

MR. FLACK: Yes. I guess I was questioning on when you're looking at, say, improvements in the Corrective Action Program, what degradations that they correlate, do you see a direct correlation with safety culture itself in the broader sense of the word, as an indicator of safety culture?

DR. DYER: It's an indicator, and so far we don't have -- I mean, we've got -- we've got two years of surveys, so it's not too much of a trend to look at. But we saw -- well, like I just told you, we saw a positive -- a very high positive increase in the Corrective Action Program, at least the perception of the effectiveness of the Corrective Action Program, yet we saw an overall apparently statistically significant decrease in the effectiveness of the safety conscious work environment overall.

MR. FLACK: But they're clearly different things, too, in a sense, right?

DR. DYER: Yes, I would agree.

MR. FLACK: Yes. Okay.

DR. DYER: But I guess, from your question, I would presume that you would look for a positive correlation. If one goes up, the other ought

to go up. That isn't --

MR. FLACK: Okay.

DR. DYER: -- isn't apparently what we see, but I wouldn't want to draw a trend from one data point.

CHAIRMAN RYAN: And I guess, just to followup with that, I mean, when I heard you explain this and heard the questions, you've reported people's views on the systems and all of the --

DR. DYER: That's correct. That's correct.

CHAIRMAN RYAN: You haven't reported any analytical work to say that, you know, people's views correlate with actual response. And I think it's fair to say that, given that it's two years worth of data, that's tough to do in any circumstance.

DR. DYER: Right.

CHAIRMAN RYAN: So your secret is to be committed to a safety conscious work environment as an ongoing enterprise, not just a few or a couple, you know, years worth of data, and everything is in the green, and we're all set. So, I mean, I get the sense you're looking at this as an ongoing program.

DR. DYER: Oh, this is ongoing and very, very long term.

CHAIRMAN RYAN: Right. Okay. Thanks.

Any other questions or comments? Yes, Latif?

DR. HAMDAN: Mr. Dyer, on slide 7, on the second bullet, you told us that DOE is preparing to address potential changes in the --

DR. LARKINS: Latif, you've got to speak into the mike.

DR. HAMDAN: Yes. You told us that you are preparing to address potential changes -- changes in the rule by the EPA. In fact, that doesn't tell me very much. It doesn't reveal much about what DOE is doing. Can you tell us if there were specific issues the DOE team has identified that will be significantly affected by the rule? And then, you know, how will that affect the license application overall?

DR. DYER: No, I can't tell you, because we haven't finished the analysis yet. Things that we've looked at were the features, events, and processes that are -- that we take credit for for 10,000 years, and the arguments used to screen them out or screen them in. Are those still appropriate and adequate and correct if you -- if you use the same set of features, events, and processes for a million-year calculation?

Have you captured all of the appropriate features, events, and processes? Or was there some a priori screening made?

DR. HAMDAN: Why would that change? That is not changing.

DR. DYER: I think we have to convince ourselves of that.

CHAIRMAN RYAN: Any other questions or comments?

Russ, thanks again for your update and your own view. We really appreciate your insights and you being with us today.

DR. DYER: My pleasure. And as I said, I'll make sure John is here next time.

CHAIRMAN RYAN: Okay. Well, we'll look forward to his participation.

Our next presentation is by Deborah Barr on the Performance Confirmation Program. Welcome, Deborah. And if you would please just pick up that microphone, and don't -- there you go. That's great.

MS. BARR: Good afternoon. Oh look, no clocks. Just like a casino.

CHAIRMAN RYAN: I'm going to have to ask you -- you're going to have to just get right on top of the microphone.

MS. BARR: Okay. No, I was just commenting on the fact that there was no clocks around. So I may run over; let me know if I do.

This presentation is actually by two of us. There is myself, Debbie Barr, with Department of Energy, and Doug Weaver will be covering the second half of the presentation. So he'll join me up here when his portion comes up.

We appreciate the opportunity to come back before you and give you an update. It's been a little while since we were here.

On the slide number 2 -- we'll go ahead and start there -- this is the outline of what we'll be talking about today. I'm going to go over the evolution of the performance confirmation plan, meaning what has changed since we last spoke to you, a few years ago I think it was. And we were asked to address the issue of how risk insights were used in the development of the program, so I will talk about how a risk-informed approach was used in the development of the performance confirmation plan.

Oh, my goodness, everybody is leaving.

(Laughter.)

All right. Then, we were also asked to talk about how the results will be used in future

performance assessments, and I'll talk about that as well.

And then, Doug will -- Doug Weaver, who is with the TCO, he is with Los Alamos, and he will be covering the rest of the agenda here. And he will talk about the summary of the currently planned activities, and the program response to change -- how flexible the program is and how it can adapt to changes as needed along the way. And then, he'll also talk about the path forward.

So on slide 3, let's go ahead and move forward here, just a little bit of a history of the timeline here. We met with the NRC. We had, on Appendix 7 I believe it was, in February of 2003, and at this meeting we talked about the process that we used in the development of the program. We talked about the multi-attribute utility analysis methodology that we used.

However, at the time we were still finalizing the final list of activities, and so we weren't able to share with them at that time the activities which were determined to be a part of the program at that point in time. So between February of 2003 and July of 2003, when we spoke before this organization, we did finalize that list of activities,

and we also had recently completed the version of the performance confirmation plan which was available at that time.

And so when we spoke to the ACNW in July of 2003, we covered a number of areas. We talked about the vision of the program, which was, you know, why are we doing it? It's defined in 10 CFR 63. It gives an explanation of the purpose and the rationale for it. What are the goals of such a program, the purposes, what's the definition of what performance confirmation means, and what should a good performance confirmation program accomplish? Those were some of the things that we talked about.

We also talked about, how does it differ from other testing and monitoring? Because we wanted to make it clear that performance confirmation is not the place where you will see all possible testing and monitoring. It has a very strict definition and a specific purpose, and we wanted to make sure that it was understood that there were other things which may or may not be occurring which were not a part of that program but may occur in some other program.

Then, during that meeting in July of 2003, we went through a really painful and excruciating description of the multi-attribute utility analysis

that we did to develop the program. And it was lengthy, it was detailed, it was involved, it was very comprehensive, and I hope that it was meaningful, and that it was valuable to you, if you were there for that meeting.

And then, we also talked about -- we gave a brief description of the program, and the key components of it. We went through the activities that were a part of the program, that we had finalized as a part of the program at that time.

Slide 4. So, then, that was what -- where we were at as of the last meeting. So what has happened since then? Well, we do have an iterative process of reevaluating, you know, pretty much any aspect of the program. There is always the opportunity to look at something, see if there's ways to improve it or change it in a meaningful way.

And so, of course, we've done this over time with the Performance Confirmation Program, and there was a management review team which took a good look at the program and they incorporated things like programmatic considerations, and they use management judgment and things like that. And so there were some refinements along the way of the program, as there will undoubtedly be in the future as well until, you

know, we finalize the program.

So the management review of the program had certain objectives when they started to look at the program at that time, and they used certain criteria. Those criteria were things like: is the activity necessary or sufficient for regulatory compliance? Does the activity contribute -- how does the activity contribute to the primary barriers? Are there ones that are closely related that can be combined?

And also, are there activities -- are these activities really confirmatory, or are they really fitting some other purpose, such as model refinement, supplemental data, or are they developmental in nature? And those, by definition, aren't really appropriate for a confirmatory program. So these were the criteria that were used at the time.

Slide 5. So as a part of that review of the program, there were certain outcomes that came out of it. And so, first off, there were quite a number of activities that were related or overlapping that were, in fact, combined. So we were consolidating and combining and streamlining things, and things like that.

Then, there were also some activities

which were deemed to be model refinement, supplemental, developmental in nature, and so forth, and so in some cases these were deleted from the program. Well, in the cases where this was true, they were deleted from the program, and they may or may not have been considered for other -- you know, other programs, other testing or developmental programs. They may be captured elsewhere, or they may not, depending upon the appropriateness of that action.

And then, also, as a part of this management review of the program, there were three activities which were added in order to enhance our ability to meet the requirements, and these were construction effects monitoring, saturated zone alluvium testing, and waste form testing. So these were three new activities that you didn't hear about at that previous meeting where we spoke to you.

On slide 6, you can see -- these are the latest things that we added to the current version of the performance confirmation plan. This was just issued in November of 2004. It's Revision 5. And these are -- it's kind of a long list, and I apologize for the wordiness of the slide here. But there was a lot of material that was added or refined in this version of it, and I wanted to make sure and touch on

these points.

One thing is there is a clear crosswalk of the requirements and the guidance in the YMRP. So between the activities and the requirements we have -- we had some description in earlier versions. In this version, we have a much clearer crosswalk between the two.

For each of the activities there's expanded detail on those activities. There is also a general level of description in terms of test planning and implementation, but, again, at a general level. And we'll talk more a little bit later about where more information, more detailed logistical information, will be found.

There is also a high-level proposed schedule, which is included in Revision 5 of the performance confirmation plan. And as you're aware from the requirements of the regulations, we are required to define the ranges and the condition limits for the parameters that we measure, and there is guidance at a high level given for how that will be developed.

There is discussion of evaluation processes and also notification criteria. There are some wiring diagrams in terms of showing the flow of

how we would make decisions in terms of whether we need to notify the NRC or not. There is a nice -- a few really nice diagrams in Revision 5 that walk through the steps that would be involved, should we need to consider notifying the NRC and what we do at the point that that happens, and what are all the steps that are involved.

And then, there is a performance confirmation integration function in that this isn't purely just making measurements and then comparing the results against some, you know, strict ranges. There is an integration function to this as well. There will be an ongoing assessment of how all of this information fits together, what it all means together.

If we are, you know, looking like we're heading in the direction of exceeding ranges, or we do actually exceed ranges, it obviously requires an integrated look at the information and what it's telling us, so that we can then decide whether or not, you know, there is truly an issue, or whether we need to -- you know, whether we didn't understand the processes well enough, whether we have a mistake, you know, somewhere along the line.

Whatever the appropriate action is, there needs to be, and there will be, an integration

function which looks at all of the information as a whole and doesn't just, you know, focus on the tree and miss the forest, or something like that.

Then, another thing that's in Revision 5 is we did a qualitative comparison of the current program against the draft TSPA-LA model and report. And so this was one of those iterative steps, you know, like we talked about earlier, where we will consistently check back and make sure that we are consistent with our current licensing basis, or what we anticipate our licensing basis to be, since it is still draft at this point.

And so we have a series of checks along the way, such that we will make sure that this program will continue to be in line with those things that are deemed to be important to performance barrier and total system, as we approach licensing and as we reach it, if and when we do.

So, and then, the last thing here that we talk -- that I list on the table -- there's quite a bit more in the plan itself but -- is the performance confirmation test plans, and these are the places -- this is the place where the detailed information would be found about specific activities.

The level of detail in the performance

confirmation plan itself isn't anticipated to really change at any point now. This is the one that we anticipate will support us as -- for licensing, unless there's, you know, some reason to change some aspects of an activity based on a review like we talked about earlier.

But the detail, in terms of implementing the activities, in terms of the expected ranges, the reporting ranges, the methodology for accomplishing the tasks, things like that, these are in these performance confirmation test plans which are at a lower level than the performance confirmation plan. And they'll be developed at the appropriate times, such that they are -- they are there and ready to be implemented when the activity is implemented.

For ongoing activities, we have a staged approach of developing these plans, and then implementing them along the way. But for ones that -- or for activities that wouldn't even begin until some point in the future, they'll be developed and implemented at an appropriate time for when they're needed.

On page 7, we were asked to talk about how risk insights were used in the development of the performance confirmation program. And if you recall

much from the -- that meeting where we spoke to you before in 2003, it may just be a blur, you know, because there was so much we covered.

But we talked about how when you're making decisions in the face of risk and multiple criteria, there are certain methodologies that are normally and appropriately used. And one of them is the multi-attribute utility theory, and that is the one that we chose to use in the development of this program.

It's a well-known and well-established methodology for looking at something which is inherently risk-informed in the way that it does it, or at least you can make it risk-informed in the way you apply it. And so this is what we did in terms of our decision analysis process that we used to develop this program.

It was a rigorous process, and it was used to determine the complexity, extent, and number of activities that were used or that were developed as a part of the program. And so I'm going to walk through just a little bit of the detail, but not spend a lot of time on it, because we covered it before, and also if you would like to spend much time reading about it, the excruciating unabridged version is in Revision 2 of the performance confirmation plan. And if you look

back at that one, you'll see a quite extensive writeup in terms of all of the details of how this was done.

We didn't carry forward all of that information into later versions of the plan, because it was, you know, supporting information and it was a snapshot in time. But if you want to go back and look at that detail of how we took this approach, then that would be the place to find it is in Revision 2 of the performance confirmation plan.

So I'm just going to talk very briefly about a few of the points in it that I believe support the fact that we can say that we used risk insights in developing this program. We developed certain criteria as a part of the initial activity evaluation, and that criteria included sensitivity, confidence, and accuracy. And by that what I mean is sensitivity of the total system and the barriers to the parameter being measured or monitored.

So, for instance, if we were proposing to measure temperature of the waste package surface, we would then look at how sensitive is that parameter, or how sensitive is total system and barrier performance to that particular parameter.

The second one -- confidence -- is confidence in the current representation of the

parameter being measured or monitored? And so, for instance, if we were to measure temperature of the waste package surface, how confident are we in our current representation in our licensing case that we have a good understanding of what waste package temperature is.

And so, for instance, if you have a lower confidence, that means there would be increased value in obtaining more information on this.

And then, the third one -- accuracy -- is accuracy of the proposed data acquisition method at measuring the parameter. So is it measurable? So if it's -- if you can make accurate and direct measurements, those are more valuable, if all other things are equal, than something which is not as accurate or not as direct.

And so the first two -- sensitivity and confidence -- that's -- those are basically assuming that you have perfect information, if it's possible, you know. Then, what is the value of collecting that information, if you were able to collect perfect information?

The third one -- accuracy -- is used to scale the value of the first two, and that gets at things like -- well, I mean, perfect information is

rarely available, and so you need to modify your understanding of the first two in light of that second -- of that third point there.

So on the next slide, slide 8, I am not going to spend much time on this one, because this one was that was shown at the last meeting where we presented to you in 2003. And I don't want to get bogged down into too much detail on this, but I do want to, again, point out that if you look at the blue squares along the bottom, I believe that this helps to highlight the fact that risk insights were used in the development of this program, because this is the way the information rolls up into developing the overall utility or value of including a specific parameter.

And so the -- you can see from the boxes on the bottom that these are getting at things like sensitivity of system performance, or sensitivity of the barrier capability, our confidence in our current representation, our sensitivity of our conceptual models, and then how accurate are we in terms of temporal changes, spatial changes, and how direct can the measurement be made for a particular activity that's being considered.

So, let's go on to slide 9. Still on risk-informed -- I've probably beat this one to death

-- but we -- we went through this activity evaluation. There were development processes, selection processes, refinements that occurred along the way, and so all of that rolled into this being a program which we believe is -- takes into consideration risk insights.

We will have a continuing process of reviewing the program against the information available in the current TSPA, as well as the process models that support it. And we'll continually check back against that information which goes into our licensing case, such that this program is up to date and represents those aspects of the program that are important.

On slide 10, just very briefly here on the second bullet here, I want to talk about a little bit -- this is what I talked about a little bit earlier. This was the qualitative evaluation that was done against the TSPA draft, and I wanted to go into a little bit of detail here, because it did result in a few changes to the program.

I mean, this wasn't some box we were checking where essentially we were looking -- you know, we were comparing against the TSPA-LA draft, and saying, "Yes, it looks good." We actually did in this case make a few changes to the program based on what

we learned.

We determined in that qualitative evaluation that 17 of the current 20 activities were directly relevant to the technical basis. They fell into the area of medium to high significance in terms of TSPA-LA for importance or uncertainty. So we verified that 17 of those 20 activities did, in fact, address those things which were drivers for TSPA.

The remaining three activities - construction effects monitoring, drift inspection, and the thermally accelerated drift thermal-mechanical monitoring -- are related really to retrievability. That is the one preclosure aspect that we address in performance confirmation, and that is our ability to retrieve. And so these three activities for the most part really get at retrievability.

And so it wasn't so much surprising that they didn't rank high in terms of post-closure performance in the comparison against the TSPA-LA draft.

We didn't actually add any new activities at this point in time, but we did make a refinement of one activity and that was the waste form testing activity. We made a modification to that one to better confirm igneous scenario assumptions.

On slide 11, we talked here on the previous slide about how we did a qualitative comparison against TSPA-LA draft. We also intend in the future to do a quantitative comparison against the TSPA-LA, and this is going to be in the form of sensitivity analyses, which will be done using the TSPA and the supporting models.

This will be following the completion of the TSPA-LA and the associated documentation that supports it. We'll do this systematic evaluation, which, again, you know, as I said, will involve sensitivity analysis, regression analysis, and we'll do those to confirm that the activities that we have in the performance confirmation program still are the ones that are getting at those things that are important to barrier and total system performance.

We'll also during those -- during that assessment look at both nominal and disruptive scenarios, so we want to be -- you know, we want to make sure that we address all things that are important here.

We were asked to talk in this update on how the results of the performance confirmation program would be used in future performance assessments.

In 10 CFR 63.51(a)(1), it talks about how when we do an amendment to close that we would be required to do a TSPA at that time, and it talks, then, about how we would use information from the Performance Confirmation Program as a part of that.

So that is one explicit occurrence of a performance assessment where PC -- performance confirmation -- results will be used as a part of it.

Other than that, as we are conducting the Performance Confirmation Program, the actions that we take as a result of the information we receive could possibly, you know, go all the way up to having to run another performance assessment.

Now, we don't have any firm commitment to do any at any specific times. But depending upon the information that we collect and the recommendations, you know, that come out of an integrated look at the results of the program, we may feel that it's appropriate to do a performance assessment with the information that we receive, so that we better understand the results of the information we're collecting.

So those are the only two scenarios that I could think of in terms of how performance confirmation data is used in future performance

assessments.

So that is my portion of the presentation, and Doug Weaver now is going to talk about the rest.

MR. WEAVER: Thank you. In this section of the presentation, we'll go a little bit deeper into the question of what has changed since the last time this program was presented, and details associated with the 20 activities themselves.

Page 13, I've -- and the subsequent two slides afterwards, I've listed the 20 activities, sorted by the YMRP acceptance criteria, which is the way that they're laid out in the PC plan itself. I won't go through these at this time, because I go one by one a few slides down the road. But there you see bulletized on slides 13 and 14 the 20 activities.

I should mention that in the plan itself there is a lot more detail associated with the selection criteria of each activity, our current basis of understanding, and also our anticipated methodology as -- for each one of them. So here we're just hitting the highlights.

Slide 15, I've sorted the activities a little differently. It's a very busy figure, but it shows how these activities are mapped to the three barriers. There is more than 20 docs here. As you'll

notice, several activities address more than one barrier, but I think it's just a good representation of how we're applying the program into which of the three barriers.

Page 16, I'm going to talk now about these activities sorted by -- in time phase, and that's how the rest of the presentation will go. The activity is really conducted in three phases -- those that are ongoing and are a continuation of activities or similar activities initiated during site characterization, as required by the reg.

Some of these activities, of course, might have a hiatus. A good example of those would be mapping. We conducted mapping, of course, of the ESF during site characterization. There is none of that activity going on at present, but will continue once new excavations are opened up.

There is a small set of activities that we'll start really as early as practicable, but likely during the construction phase of the project, and then another set that would be more -- would start during operations, largely because of their need for live waste.

And the bottom note illustrates, you know, it's not a guarantee that these activities would

necessarily run during the complete preclosure period. Some of them may terminate early as applicable.

Page 17 is simply a graphic of that, everything on one page. I should note that the bottom line -- you should truncate that orange line at the middle vertical green line. That was a function of the graphic being split into landscape. But, again, it shows the activities, those of which we've started during site characterization in some form or fashion and are currently developing test plans for those in construction and in those to be initiated during operations.

So with that, I'll go into detail -- a little bit of detail of each of the 20 activities, beginning on page 18, starting with a simple one -- precipitation monitoring. The intent of that activity is to measure quantity and composition of precipitation near the site. Its real purpose is to give the seepage monitoring activity found below some context.

Again, precipitation monitoring is an activity that's been going on sometime. It continues to this day. We've started the first of our test plans with that activity.

Seepage monitoring, as the title suggests,

is that. We will look at sealed alcoves, sealed bulkheads on the uptake side of -- on the intake side of the repository, also in the thermal accelerator drifts, which I'll talk about in a little while, looking for evidence of -- if any, of seepage and to analyze any that's found.

Subsurface water and rock testing is an activity, as it suggests, collection of any water and rock throughout the repository, the underground forming assumptions of -- for fast paths being used currently in the UZ models. That would be things -- you know, chemistry of the upper natural barrier, water, chloride 36, things of that nature.

Page 19, three more activities that in some form or fashion began during site characterization UZ testing. That would likely piggyback onto the alcoves used for seepage to -- basically, as written, the field testing of transport and sorptive properties.

And we anticipate doing at least a test in the middle, and another in the lower left. It would be a tracer test to, you know, inject dye and collect -- in lower boreholes.

Saturated zone monitoring, which is using existing -- likely existing holes onsite, whether

those be through Nye County or others that we have to -- measurements of water level, and so forth, as written, pH and things of that nature, SZ, alluvium testing as an activity. That's basically alluvial tracer complex, most likely, using multiple boreholes, both the crosshold pump and tracer tests for that activity.

Slide 20. Again, the ongoing -- activities that are ongoing in site characterization, subsurface mapping as required by the reg. We will map the excavations as they're opened, likely behind the TBM, mapping of fractured faults, contacts, and so forth.

Seismicity monitoring -- that's monitoring of regional seismic and any observations of fault displacements, if there's a significant event. That's work that's currently ongoing largely by UNR at present.

Construction effects monitoring -- that's, again, behind -- as the excavations are opened up, as the measurements of construction deformation and confirmation of rock properties, largely for drift stability, it also relates, of course, to the preservation of the ability to retrieve, to ensure stable openings.

Page 21, we're into some lab work, largely corrosion testing. That's lab testing of waste package pallet and drip shield materials for general corrosion and transformation, localized corrosion, and so forth. Waste form testing, which is also a lab activity, and the uniqueness here is the inclusion of a scale mockup waste package to confirm in-package expected conditions.

That concludes what we would see as the ones that are similar enough to activities that began during site characterization to include them as ongoing activities.

Two of them listed as those that would begin during the construction phase -- turn to page -- slide 22 -- one of them would be saturated zone/fault zone hydrology testing, evaluating fault parameter assumptions that the SZ models use.

Again, we're talking boreholes with the packers, and so forth, across faults. And then, seals testing, which will test the effectiveness of any borehole seals, both in the lab and then a fuel component for shaft and ramp seals and backfill emplacement as appropriate.

Page 23, again, the list of those that would begin during the operations phase of the

repository. There are seven of them -- drift inspection, which will be periodic inspection of emplacement drifts and the thermally accelerated drifts using remote techniques, obviously for those drifts with waste, also related to the retrieval and preservation.

Dust buildup monitoring activity that -- as it's titled -- the collection of dust off EBS surfaces, collecting samples, and analyzing that composition. We've got waste package monitoring, which is the monitoring of the waste packages themselves, either visually and/or using some internal -- perhaps internal pressure techniques to confirm that the integrity of the packages are as expected.

On 24, there is the remaining four activities that we'd begin during operations. All four of these happen to also be part of the thermally accelerated drift component, which I'm going to show you a slide next.

That's the near-field monitoring and environmental monitoring of those drifts, the thermal-mechanical effects in the thermally accelerated drifts, and testing of -- corrosion testing, which will be the waste package materials in the drifts themselves taken later for laboratory testing.

Page 25 shows the concept of -- the two-drift concept of the thermally accelerated drift suite of tests. The two-drift concept calls for an observation drift run out of the back end of alcove 5, underneath panel 1, parallel with emplacement drift 3, to interrogate two drifts, likely emplacement drifts 3 and 4, to look specifically at peak temperatures over about a 15-year period. That will be done using loading similar to the remainder of the repository using ventilation to obtain those temperatures.

The second drift would be looking at a situation sub-boiling and near boiling using, you know, a configuration of the waste packages to obtain those temperatures, which would require, obviously, some careful thermal management to achieve that -- those goals.

A little busy sketch, but it -- I think you can see there the observation drift and the two -- and the two basin drifts overhead.

On page 26 -- so that concludes, then, referring down the 20 activities and a little description, like mentioned before, a lot more details in the plans.

Page 26, a question was asked, you know, how we respond to change. And, you know, we

acknowledge that -- given that a lot of these activities are a ways out from beginning, obviously advances in technology will occur, and that our program has to be flexible enough to be able to accept new technologies and to perhaps revise the details of the activities accordingly.

I believe the program does permit the reevaluation and modification of these activities. Inherently, as Debbie mentioned earlier, one of the ways we'll look to ensure that we're capturing changes, both from technology and/or from other testing programs within, is through this integration function workshop approach that's described in the plan.

And very briefly here, basically it's to facilitate evaluation of new data and the program effectiveness as we move forward. That can include changes in technology. PC data will continually be reviewed and evaluated against current program status.

We'll do this both internally using participants from other areas of the project, whether it be through environmental or, you know, design testing, and so forth, to ensure that we're capturing the state of knowledge that the project currently is at.

And expertise in other project areas, they're off project interfaces, again, to ensure that -- that we're not missing anything.

Page 27, it's a path forward from where we're at today. As Debbie mentioned, Rev. 5 of the plan was issued in November. Going forward now, we're analyzing and evaluating existing data from available sources to attempt to bound the parameters that are identified for each one of these activities, to give us our expected ranges and condition limits for each. That's done as we're developing PC test plans.

The program will begin to dedicate -- develop dedicated procedures for this program. At present we're using existing project procedures for the planning and implementation of the ongoing activities. I mentioned we're developing two test plans at present for two of the ongoing activities.

We're continuing to engage the NRC in the program discussion, continuing to monitor tests, continuing the monitoring, testing, data collection for those activities that are ongoing in the field or in the lab.

We are continuing to integrate this program with design and construction as they move forward in their planning to ensure that the needs of

this program are represented and accounted for.

We are -- the iteration with TSPA and the underlying process models continues, and might likely refine the program in the future, which then, of course, might result also in revisions to the plan itself.

So with that, we'll open it up for questions.

CHAIRMAN RYAN: Sure. Well, thank you both. That was an interesting and informative update to your planning.

To pick up on your last -- very last slide, if I may, Doug, it seems that the two confirmation test plans that you're drafting where all this will come --

MR. WEAVER: Right.

CHAIRMAN RYAN: -- will come together, it will be interesting to hear an update from you when those two are at a stage where we could hear about it, because that would kind of be the fruit of the work you've put in risk-informed things, and, you know, I think -- I don't think you explicitly said this, but you're going to be addressing, of course, issues of sensitivity, of measurement, of accuracy, of precision, and, you know, can you actually measure

what you hope you want to measure, and all those kinds of things, which I think you've -- just because of the brevity of our time here, we couldn't go into a lot of detail, but it seems obvious you've thought about it.

That would be -- that would be a real test. Do you plan on submitting those test plans with the LA, or will that be separate, or --

MR. WEAVER: No. And I'll let Licensing jump in if I misspeak, but no, they are -- they are on the order of SITPs or the test plans that we did for site characterization. They do contain that level of detail, accuracy, frequency, all the specifics of the test itself. The uniqueness of the PC test plans are that they also will identify the specific parameters and the ranges by which we expect to be making these measurements in.

So unlike site characterization, where you basically collected data for data's sake --

CHAIRMAN RYAN: Right.

MR. WEAVER: -- this is more of a trigger that we are -- you know, if found outside of that range, then there would be a response. But no, they're not --

CHAIRMAN RYAN: Which two did you pick, and why?

MR. WEAVER: The two we're currently working on is precipitation monitoring and construction effects monitoring, both because we felt they were -- yes, they were ongoing test activities, for one. They were maybe a bit simpler than some of the others to start with, and the staff that we had available were experts in that area.

MS. BARR: Let me just mention something briefly on that. Part of the rationale for the decision on that was that not only were these ongoing activities, but they were activities for which they were already occurring, in some cases, in places where -- like, for instance, we wouldn't want to develop a test plan for mapping now, because we aren't going to do any more mapping until we actually have emplacement drifts to map.

And so doing it now would just be to have it sit on the shelf and wait for, you know, when they actually were appropriate to start. And so in this case, these two activities were ones for which there was ongoing work that was in progress now that we could actually implement the test plan. So precipitation monitoring and --

CHAIRMAN RYAN: How did you rank these in terms of risk significance?

MS. BARR: I'm sorry?

CHAIRMAN RYAN: Are they high-risk significance test plans, or low, or medium?

MS. BARR: Well, you know, precipitation monitoring, it's -- as Doug mentioned earlier -- and, actually, you know, I don't know if you recall, but when we mentioned the precipitation monitoring to the ACNW last time we got a lot of laughs. But, you know, the intent of it is not for climate or anything like that. It's to set the context for the seepage monitoring.

So in that sense, in and of itself, it's not what I would consider one of the high-risk activities. However, it is providing a certain amount of information to put some other activity in context.

CHAIRMAN RYAN: And I realize you're struggling with the fact that some things are out in time as opposed to some things that are at hand. But, you know, and I see some of the interesting ones that talk about material degradation, or, you know, waste package activities, those kinds of things, those -- you know, I think it would be interesting for you to think about your plans and the -- you know, in the sense of, where is the risk significant activity? And don't leave an important risk activity until later if

it really ought to be thought about sooner.

MS. BARR: Well, I understand your point, but I think that, you know, as Doug laid out the schedule for the proposed implementation of these activities, as I'm sure you understand, I mean, there's no point in actually developing a test plan for something that won't start until waste is emplaced, or, you know, something far out like that.

It's an exercise in paperwork, which doesn't give us the opportunity to actually learn from trying to implement it and modifying it along the way as appropriate.

CHAIRMAN RYAN: Sure. That's a detail --

MS. BARR: So, really, a lot of it is driven by schedule in terms of when these activities would start.

CHAIRMAN RYAN: At the detail level that may be true. But at a more global level, it'll be interesting to know if a particular parameter is even within the range of available instruments or not. There are some key parameters, and so forth.

So I'm with you on a detailed -- let's start building at sort of that level of plan, but at a more global scale. It might be interesting to think about it just from the risk perspective, which is a

little bit independent of time. It's something to think about, but, again, it's -- it's clear you've made a tremendous amount of progress since our last discussion. So thanks for the presentation.

Let's start at this side. Jim, any questions?

MEMBER CLARKE: If I could just followup on that. Is it fair to say, then, that you're taking these plans as they come? You're open to where you should go and based on what you see? And I think one of your slides indicated that some things may, in fact, be monitored after closure. Is that a possibility?

MS. BARR: No. The current program right now ends with closure. I would out that 10 CFR 63 doesn't talk about --

MEMBER CLARKE: I'm sorry. I can't hear you.

MS. BARR: 10 CFR 63 doesn't talk about doing monitoring after closure.

MEMBER CLARKE: Thank you.

CHAIRMAN RYAN: Bill?

MEMBER HINZE: Just a few questions. I am very much impressed by this ambitious program you've laid out. I believe that our history on this suggests

that budget might have something to do with this, which means that we have to make selections. And I don't see the criteria here.

I hear risk-informed, but there are other factors as well as the risk significance, whether you can really improve on the measurements, and you've talked about sensitivity analysis.

MS. BARR: I'm sorry. I couldn't quite hear you.

MEMBER HINZE: Well, let me -- I'm questioning, what are your criteria for ranking these various program plans?

MS. BARR: For ranking the activities?

MEMBER HINZE: Yes. Do they all have the same rank? Does precipitation monitoring -- is that as important as saturated zone alluvium testing?

MS. BARR: No, we do not have a ranking of the 20 activities in and of themselves. When we went through the multi-attribute utility analysis stage, we developed a numeric utility value -- you know, utility that was assigned to each of the potential activities.

And, theoretically, you could say that we would then prioritize them. We'd -- you know, we'd have the highest on top and the lowest on bottom, and then we'd do some cutoff based on some criteria, and

we'd say, "Okay. We're going to do all of these up here." But in reality that doesn't give you a complete program.

There are a lot of reasons why you may do an activity which may not rank very highly in terms of risk. And so, for example, we had to weigh things like there are some things that are explicitly called out in 10 CFR 63 that caused us to elevate activities even though they didn't receive a high utility value as a part of that decision analysis process.

For instance, seals testing was something that, quite frankly, was kind of the bottom of the heap. And -- but, you know, it's explicitly called out in 63, and we put the time and effort and work into doing something that we felt was a well thought out, risk-informed program, and yet we also realize that there are other reasons why you want to do something, why you may want to do something. And so we would, you know, raise some things that had lower values, just to make sure that we were meeting all of our regulatory obligations as well as being a responsible licensee.

MEMBER HINZE: Well, it seems to me you've answered my question. You do have criteria, but they are not specified here.

CHAIRMAN RYAN: I was going to ask, are they all in the revisions of the plan? Is that laid out in --

MS. BARR: If you want to see the blood, guts, and gore of the multi-attribute utility analysis, that's all in Revision 2 of the plan. And it's -- there are some appendices in the back of it that essentially -- I mean, there's tables that actually give the responses to the questions on the questionnaire, that then rolled into the numeric values that gave it a utility value.

And so, I mean, if you really wanted to work at it, you could actually, you know, figure out why something is ranked higher and others lower, just by looking at those tables, although, you know, it can take a little bit of time. And I understand we'll have to do that as a part of defending this program, you know, during the licensing process, and clearly we will.

But all of that detail is documented explicitly in Revision 2. The methodology that we used in applying the criteria was a questionnaire. We would ask things like, okay, for this specific activity that we're considering -- say, you know, temperature on the waste package surface -- if you

measured something outside of the -- your anticipated range, how likely is it that it would cause the dose to change by more than .1 millirem?

And then, that would cause it to roll into, you know, a certain numeric value, and then there would be other questions that would also roll into that utility value that that particular activity would get. And so ultimately, at the end, by just applying those and management judgments in terms of the value in an overall context, those were actual numeric weightings that were applied as well.

All of these activities were given a numeric utility at the end. And, sure, you could look at that prioritized list, and you could say, okay, well, these -- you know, these ranked higher, these ranked lower. But then, like I said, there are other factors that need to be evaluated, and those might be things like completeness of a program or completeness in addressing all of the parts of the regulation, you know, that we have to meet, and, you know, things like that. So --

CHAIRMAN RYAN: That's real helpful. Thanks for that explanation. But the key is, I think -- the summary point is, as you've summarized all of the appendices -- it's on your slide 8 -- I mean,

there's a lot that goes in behind it, which it's good to hear. Appreciate it. Thank you.

Allen? Oh, Bill, are you done? I'm sorry.

MEMBER HINZE: Yes, I do have another question, if I might, please.

CHAIRMAN RYAN: Sorry.

MEMBER HINZE: I hear about the management review, and so forth. Many of us would think that the best people to look at the review of what is needed in the future, taking into account as you have listed here the technological advancements that have been made since certain data were acquired, how much are you -- and that leads me to the question, how much are you involving the grant -- I mean, the actual scientist that is involved in the program, or was involved in the acquisition and setting up of a program a decade ago in terms of looking at what is needed now for the performance confirmation?

MR. WEAVER: Okay. The question is along the line of the development of the test plans. Absolutely. The principal investigators and the technicians have been involved, and will be involved, in -- because ultimately they are the ones that are working to those -- those products.

But I think I heard the question, perhaps, how much were the investigators involved in the multi-attribute process that led us to say whether or not something was measurable or not? And if that was --

MEMBER HINZE: Yes, or needs to be measured.

MR. WEAVER: Yes.

MEMBER HINZE: Right.

MS. BARR: Okay. I lived through the painful process. Poor Doug, you know, didn't, so -- he was fortunate enough not to have -- not to have been working with us on the program then.

The questionnaire that we developed also addressed things like how measurable is this activity, and, you know, it actually got at things like the logistics of how accurate could a measurement be, and how direct is a measurement, things like that. And that, of course, is based upon a scientist's current understanding of the technology available, the work that they may have done in the past to measure just such a type of parameter, things like that.

And so they were basing it on their current experience, and these were the people that actually were performing those kind of measurements on the program. They were the ones who were answering

these questions in the questionnaire.

And that was that third one -- the accuracy criteria that I talked about earlier -- meaning, can you even measure what it is you want to measure?

MEMBER HINZE: Sure.

MS. BARR: And so I would say that they were very much involved in the multi-attribute utility analysis portion, which got at, is it something that we can even realistically get at?

And then, when I talk about management judgment that's applied, for one thing, in most cases the managers that I'm talking about are people that rose up through the ranks of the technical staff, and are all still well in touch with the technical work themselves.

And so we're talking about, you know, TSPA managers, you know, and process model managers who -- you know, who have been intimately involved in the work itself and are well versed in the technical area.

These are really more technical managers that we're talking about here, and yet that management judgment that we talk about is important because if all we were to -- is to poll the PIs about aspects of the program, what you'd get is a very narrowly-focused

view of the importance of a particular area, and you wouldn't be able to apply an understanding across the board of the relative weight of importance of that information as opposed to other areas of the program.

And so there is a very appropriate role for management judgment in terms of kind of, you know, equalizing things and placing them in the right perspective.

MEMBER HINZE: Thank you. That helps clarify it for me.

Let me ask another question in terms of the maturity of the program plans. Have you decided how you're going to make decisions about where to put down drill holes for the saturated zone alluvial testing? You know, what level of detail are you at at this stage?

MR. WEAVER: Rev. 5 discusses anticipated methodology and has made -- does make some statements as to where we would anticipate, how many, whereabouts, but none of it -- none of it firm until we get to writing those -- those test plans and really get those PIs in a room and decide exactly where and what faults to interrogate, or so forth.

So the plan identifies concept and maybe goes beyond that and actually gives some specifics.

But nothing firm until that test plan is signed off.

MEMBER HINZE: And, for example, what kind of a time schedule do you have set for that? Is that predicated on when and if the construction license becomes available, for example, or what's the situation? What are -- are you proceeding with that now?

MR. WEAVER: For those ongoing --

MEMBER HINZE: Yes.

MR. WEAVER: -- test activities, yes. Like I said, we've got two in draft right now with more planned on the heels of those, so --

MEMBER HINZE: That answered my question.

MR. WEAVER: Yes.

MEMBER HINZE: Thank you.

CHAIRMAN RYAN: Allen?

VICE CHAIRMAN CROFF: Thank you. Early in the presentation you mentioned that -- in the management review that some activities were deleted and left to other testing development programs. What other testing development programs are there into the future, and is there sort of a one-stop-shop to get the big picture on all of these kinds of activities?

MS. BARR: We get that question a lot. We talk very briefly in Rev. 5 about some of the other

possible testing and monitoring programs. And, for instance, there are some that are explicitly called out in 10 CFR 63 that -- usually -- and we did this at the presentation we gave in 2003 -- I always start off with this balloon diagram, which basically shows how performance confirmation is one fish in a big school, you know, of fish or something.

But there are other things out there, and we do always, you know, get the question of, where can I find information about these other programs? And so we are working on developing an overall, you know, testing and monitoring strategy, I guess you could say, and that's in the progress right now. That's in progress right now.

Some areas are more mature than others. But probably this program is one of the more mature of them, just because we've had to conceptualize it and develop it as a part of our license application.

In 63, it talks about things like design, construction, and operations testing, like prototype evaluation testing, operations and maintenance testing, license specifications testing, security and safeguards and emergency testing, you know, regulatory directed -- I mean, NRC-specified tests, things like that.

There is a number of things that are explicitly called out in 63. And do we have a plan that shows the development of those areas yet? Well, in a conceptual stage at this point. There is a draft -- I think it's draft. Bob, do you want to talk to this? No. Okay.

(Laughter.)

There is a draft plan, which sort of lays out a vision for a testing and monitoring strategy. It's not yet a plan, but it's sort of a vision, and that's something that's currently under development.

VICE CHAIRMAN CROFF: Okay. And the performance confirmation seems to be largely directed at gathering data from one place or another, whether it be the lab or the field. At some point it seems this has to get into models and ultimately be reflected in its -- in the effects of new information on a performance assessment, and do we understand what's going on or not?

Who does the modeling part and the performance assessment part? Is there a continuing activity like that someplace else, or is it part of performance confirmation?

MS. BARR: Well, I would say that all of that had to precede the selection of these activities

and the development of expected and reporting ranges. We had to have had that very information that you're talking about to decide whether or not these were risk-informed activities, whether or not they made a difference in terms of total system or barrier performance, whether or not they were important.

You know, it's not like we just started off with a whole list of, you know, things we could measure and just, you know, sort of threw a -- you know, a dart at them or something. These were all informed decisions made on the very fact that they are a part of our modeling in the process model level and in the TSPA.

And so all of that work had to precede the selection of these activities, and so we started from the bigger picture, you know, how do the processes, you know, perform? How do they develop? How do they go? And narrowed it down to specific test activities which would then confirm those models and those assumptions, those -- you know, all of those things.

And so now we're at a point where we've done all of that homework, and now we have this list of activities, we specify a range where we say, okay, if it's within this range it's behaving just the way we thought it would in our models, in our process

models and our TSPAs, and -- but if it starts to go outside of that, well, what does that say?

We have to go back and revisit those process models and possibly that TSPA to say, did we really understand this as well as we thought we did? So I guess the answer there is I think we already did all of that that you're talking about.

VICE CHAIRMAN CROFF: I was thinking more in just a future context as opposed to the past. You started to get to it at the end, and that is, if you start to observe things that don't look right, that are outside some defined range, does your program get into trying to understand the whys and --

MS. BARR: Yes. Yes.

VICE CHAIRMAN CROFF: -- or is there something else out there that you interact with?

MS. BARR: Well, we talked a little bit about this integration function. And essentially, you know, for the most part, like I said, we've done all of this homework that preceded the selection of these activities, and what we expect those ranges to be. We define them. And then, it should be fairly textbook unless we start to exceed those ranges.

And so that being the case, the performance confirmation program is very, very simple,

very -- you know, it's not science for science sake. We're not doing further research on, you know, seepage or anything like that. We are simply making those measurements and confirming that they are, in fact, supporting what we have in our models.

But should we start to head in the direction of exceeding those ranges? Or should we actually exceed those ranges and have to notify the NRC? We then trigger this integration function, which is we -- we look at that data. We say, you know, what does it all mean? There is, in fact, you know, why -- why have we, you know, started heading in the direction or actually exceeded the range that we had predicted?

Yes. Answering the whys is a part of this program. And so, ultimately, that would result in notification to the NRC -- well, first notifying them that we've exceeded a range, you know, a reporting range. But then, also notifying them of the results, notifying the NRC of the results of the assessment that we do.

Is it that we need to reconsider our models? Is it -- does it have an impact on barrier performance or total system performance? And at the very end extreme, do we have to start considering

retrievability?

So the role of the performance confirmation program would be to assess that information to see whether or not we need to revisit our understanding of things and even potentially have to make a recommendation on retrieval.

VICE CHAIRMAN CROFF: Okay. Thank you.

CHAIRMAN RYAN: Just one quick follow-up, Ruth, before, if I may. It seems to me that when you set a range for a parameter like you discussed, if you do the integration thinking first, then you'll really know what that range means.

Now, the range may be picked based on what you can measure, or what you should measure, or be able to measure. And if it's risk significant, you should be able to back calculate. Or if it's in this range, it should be okay. If it's outside of this range high, or outside of this range low, that might have an implication that something is working really well, or something is not working so well.

So rather than do the integration after a measurement goes out of range, I would think you'd want to try and figure out what it means if it's out of range up front, and make sure your range is adequate for its purpose. Am I out of whack there, or

is that consistent with what you're trying to tell us?

MS. BARR: I'm thinking it's consistent with what we talked about. But I'd also add to that this -- the sensitivity analyses we talked about dealing with TSPA, because that's going to also help us to define what those --

CHAIRMAN RYAN: Exactly, yes.

MS. BARR: -- ranges are. And so, for instance, we may say, okay, the -- what we feed off from the process model to the TSPA is, you know, this range for this parameter, and that would be our expected range. It's a distribution, you know, over this area, or whatever.

CHAIRMAN RYAN: That's the exact point where you get your first risk insight as to what a measurement means.

MS. BARR: Right.

CHAIRMAN RYAN: Now, the accuracy precision, measurability, viability of instruments, and all of that kind of comes as the second part of the thinking process.

MS. BARR: Yes. Yes. Well, and then, this gets at what I was saying before about how our reporting range might be different from our expected range. For instance, you know, our expected range,

say, on, I don't know, thermal conductivity, you know, we may -- we may be able to exceed that expected range, and it really doesn't make a difference in terms of performance.

And so our reporting range would be something wider. It would probably be something that were based on, if we were measuring thermal conductivity as a parameter, which I don't think we are, but let's just say we were, it would be based on some information which would say, all right, we can exceed our range to a certain extent, and in terms of performance it really doesn't make a difference.

But then, you know, once we go beyond a certain point, then we're starting to look at impacts to performance. And so that would be something we would consider as a basis for --

CHAIRMAN RYAN: So that raises the next question. If something has a narrow range relative to performance, your reporting range should be inside of that.

MS. BARR: Inside of it?

CHAIRMAN RYAN: Perhaps.

MS. BARR: Well, if it's inside the range, we're behaving as we expect.

CHAIRMAN RYAN: Well, you know, your range

-- I'm sorry. Let me restate that. The width of your range should be narrower because --

MS. BARR: Yes.

CHAIRMAN RYAN: -- it's important to --

MS. BARR: Yes. I would anticipate that would be the case, yes.

CHAIRMAN RYAN: You know, and I -- believe me, I recognize it's very hard to lay out all of these interrelationships in an hour, but we appreciate your Promethean effort to get that done today.

Ruth, thank you for your patience.

MEMBER WEINER: Thank you. I have some questions about your multi-attribute utility analysis. I confess that that's because that's an interest of mine.

You've correctly said the MUA is itself a risk-informed process. Did you use risk scales to rank any of your attributes, any of your activities?

MS. BARR: Well, I am actually not the person who did the logistics of it. And so I wish I could answer your question, but we had Karen Jenni, who was with Geometrics. She was the one. And I believe you were -- you had just joined the ACNW I think at that time.

MEMBER WEINER: Yes, that's correct.

MS. BARR: And so I don't know if you remember Karen, but she's very good. She's really good. And she was the one who set up the entire analysis that we did. And so, unfortunately, she's the one who would be able to answer the logistical details of how it was done.

MEMBER WEINER: So you're telling me go read Rev. 2.

(Laughter.)

MS. BARR: Well, yes.

MEMBER WEINER: Okay.

MS. BARR: I'm happy to say, though, that Karen is still working on the project. I heard she was doing a utility analysis for some other aspect of the program as well, so I was very happy to hear that she is -- she is spreading that particular knowledge in other areas of the project.

So if worse comes to worse, you know, we can still tap into that resource.

MEMBER WEINER: Did you use constructed scales for any of the activities, or did you always use natural scales in measurements of things? Was there any -- were there any activities where you said you had to figure out yourself or construct what would constitute a rank, a given high rank or low rank or

medium rank? Or is this a question I should ask Karen?

MS. BARR: Yes, I'm thinking Karen is probably the one for this one, too. Sorry.

MEMBER WEINER: Oh, okay. You mentioned the question that in some cases like waste package performance you can scale some things. How do you determine when and what kind of scaling is appropriate?

MS. BARR: Scaling in terms of like -- well, we talked about a couple of different kinds of scaling. One was you scale it based upon the -- you know, whether or not perfect information is available. There is that scaling factor that we applied in terms of the accuracy of the method. That's one scaling factor.

MEMBER WEINER: The other is -- what I was thinking of was more physical scaling. I mean, you can do a corrosion experiment --

MS. BARR: Okay.

MEMBER WEINER: -- on a piece of metal. You don't have to do it on the whole container. But there are some things --

MS. BARR: Oh, I see.

MEMBER WEINER: -- where you need to do

measurement -- make your measurements on the whole system.

MS. BARR: Oh, absolutely. And as a matter of fact, you know, in 10 CFR 63, there are some parts of the text there that specifically say that it has to be in the environment, you know, or -- I mean, you know, it gets at things like that it has to be a full-scale or in the drift, or things like that.

There are some where we're looking at lab testing -- for instance, long-term corrosion test facility type of thing. That would be looking at samples, at coupons, at things like that. However, that's then counterbalanced. You know, that's balanced by also having waste package monitoring in the drifts.

And, sure, you can say -- you know, one is you can say, how can you say that the samples that you have in your tanks are representative? But on the other hand you can say, how can you say that what you're seeing in 50 years in a ventilated drift, or even an unventilated, thermally accelerated drift, is really going to say anything about the rates and the -- you know, the environments in question?

Well, our intent is that the two of them together will be able to capture all the aspects of

that. So, yes, there is some scaling in some places.

We also talked a little bit about waste form testing, and that one was one of the ones that was added based on the part of the regulation that said that it had to be in the environment, anticipated, or something like that.

We originally didn't really have much in the way of a big, you know, comprehensive waste form activity, but then we were worried that we were not quite meeting the wording of the regulation, and so we ended up putting that activity in for that. And that one actually looks at -- has two full-scale waste packages with, you know, some sort of waste material inside of it in a lab environment. So that's not even really scaled, but it's in a lab environment.

MEMBER WEINER: It's full scale.

MS. BARR: It's a full scale.

MEMBER WEINER: And you've really -- Allen's last question was really the same as mine. I take it you do have a system that kicks in if you get a confirmatory measurement that somehow exceeds what you expect, is different from what you expect to automatically kick in a system that -- that starts to look at that.

MS. BARR: Right.

MEMBER WEINER: Does one of your documents describe that system in some detail?

MS. BARR: Yes. We have a general overview of it in Revision 5. There is a couple of figures in here. Well, Figure 4-1 in Revision 5 is a generalized flowchart that talks about the analysis and trend detection process. And so it walks through the, you know, we're making measurements. Are they within the range expected? You know, if yes, go in this direction. Are they not? Then go in this direction, you know.

And then, at this point, notify NRC, initiate, you know, a document that results in the CAP system -- Corrective Action Program, you know, and then start the assessment of the meaning. So there's an overall sort of flowchart here in terms of how we would -- you know, how we would move through the assessment and everything.

But the details will be -- in terms of reporting, to some extent will be in the test plan. So, for instance, in the test plans we'll establish what those expected ranges are and what the reporting ranges are. And then, in the test plans that the PI is working to, it will trigger them. You know, they'll assess the data against the ranges.

And then, if they are -- you know, if they meet certain criteria, that will require them to then make a notification process to the overarching, you know, performance confirmation organization, at which time then we would start a process of evaluating that information and deciding what path to go forward on it.

MEMBER WEINER: I imagine you've had some technical exchanges with NRC on this whole performance confirmation question.

MS. BARR: We had -- well, as I mentioned earlier, we met with them shortly before we met with the ACNW here in 2003. And at that time, what we did was we walked through the decision analysis process. We explained, you know, the methodology we were using, but we were still kind of like in the final stages of developing the listed activities, and so we weren't able to share those with them at the time, because it was still draft.

And then, you know, of course less than six months later we had that information that we were able to share with you.

We have had some telecons. I have had regular phone calls with my counterpart in the NRC, who is Jeff Poole. You know, we have made available

to them the revisions of the performance confirmation plan as they become available, and so there has been coordination -- well, there has been communication going on between us.

MEMBER WEINER: Thank you. Thank you. And thank you for an excellent presentation.

CHAIRMAN RYAN: Thank you, folks. Any other questions or comments? We're running a little bit long, so let's make it quick. Ashok and then Neil.

MR. THADANI: Yes, a quick question. Obviously, it's important to look at the issue of metrics in terms of the analysis you did. But did you utilize some formal procedures to seek opinions of experts, in terms of expert elicitation? Was there a formal procedure for that?

MS. BARR: Are you talking about, say, like an independent technical review, or --

MR. THADANI: No, no, no. I'm talking about your multi-attribute --

MS. BARR: Oh, I see.

MR. THADANI: -- the analysis, you went to certain experts presumably to get their views. Was there a formal structure to say, "Who are these participants in the study whose opinion you are

relying on?"

MS. BARR: So, are you asking if there was a procedure we followed?

MR. THADANI: Yes. You know, normally, for expert elicitation there are formal methods. And the question is: did you go to people you knew, or was there a specific procedure that you laid out in terms of who could participate in providing you their input?

MS. BARR: Well, I can tell you that the people that were involved were the -- you know, either the managers of the particular disciplines or the people who were involved in the model implementation themselves. So we have the direct people who were involved in the development of that work.

In terms of utilizing a formal procedural process for this decision analysis, that's something I think I'd probably have to get back to you on, because I don't remember. I remember -- it's been years, I'm sorry. I've slept since then.

(Laughter.)

MR. THADANI: That's fine.

MS. BARR: I would have to get back to you on that one.

MR. THADANI: Okay.

MS. BARR: Because we had a different manager of the area at the time, and I remember us talking about it, but I just don't remember exactly what the response was.

I'm sorry. April?

MS. GIL: Debbie, could I just help you out just a bit? April Gil, Department of Energy. The process that Karen Jenni used for the multi-attribute utility analysis was very well defined, rigorous, and documented.

MR. THADANI: I understand.

MS. GIL: I don't believe we have internal procedures on it, because this is something that we just do, you know, very rarely. The last one I remember was done on the site characterization plan.

However, let me mention to you that Karen Jenni is also working with the probabilistic volcanic hazards assessment expert elicitation, and we do have a procedure for expert elicitation internally to the program that we have used on a number of occasions and NRC staff has reviewed it.

So Debbie is correct. I don't believe we have a procedure per se for the MUA. However, it is very well documented, rigorous. The process is gone through. Everybody knows what the process is. You

make sure that the people that are involved have the correct credentials.

MR. THADANI: Okay. Thank you.

MS. GIL: Sure.

CHAIRMAN RYAN: Neil?

MR. COLEMAN: Russ Dyer mentioned there's an analysis going on right now of potential changes to a license application based on a million-year compliance period. I noticed from your slide 11 that following completion of the TSPA-LA, performance assessment for LA, that there would be a systematic evaluation done to confirm the activity and parameter selection.

Is that when the possible implications of a million-year compliance period would be considered for the Performance Confirmation Program?

MS. BARR: Formally, that would probably be an appropriate time. But, informally, we are staying in contact with the work that's being done to develop the peak dose calculations. In terms of looking at -- being aware of the discussions that go on in terms of, you know, what are the processes that we would need to consider that might be different for the longer timeframe than the shorter, you know, we're trying to keep in touch with all of those kind of

discussions that are going on, such that we would be aware if there was a need to make any modifications to the program based on a longer timeframe.

However, I would say that to date nothing has popped out. And when I say that, it's because in the -- well, as you're aware, the peak dose calculations are very much a simplified, stylized assessment that's being done. And in most cases the guidance that's given is to really not make any changes substantively in terms of processes, except for a few areas.

And so that being the case, it's hard to say that the program -- the Performance Confirmation Program should change in any way specifically. However, one area, though, would be something like generalized corrosion. That's something that I believe is mapped out for the 10,000-year case, and yet for the million-year scenario that's something that then does come into play.

And so, you know, that would be an area where we would consider whether or not there was a change needed. However, if we look at the program that we have in place right now, we're already I think well capturing that. We have laboratory testing of waste package materials. We have observation of the

waste packages in the drifts.

We have a fairly comprehensive look at those things, because they had already been identified as risk-informed activities. So I think what you're asking is is over the longer timeframe, are there other things that would float to the top in terms of risk-informed activities?

And we are -- we are working on making that assessment and keeping on top of what's being done to address the longer timeframe scenario, but so far nothing is coming out that is inconsistent with what we already have in the program.

CHAIRMAN RYAN: Okay. Thank you.

I think, with that, we are scheduled for a short break. And to be mindful for our other speakers this afternoon, we should probably stick fairly close to the schedule. So why don't we take our break and return promptly at 3:30. Thanks.

(Whereupon, the proceedings in the foregoing matter went off the record at 3:19 p.m. and went back on the record at 3:38 p.m.)

CHAIRMAN RYAN: All right, folks. If I could get everybody to take their seats, please.

We have one additional presentation this

afternoon, I think. Two, actually. We've got a discussion of a couple of items for the committee. The presentation is high-level waste repository safety licensing review process project planning, and Jeff Ciocco is here to make the presentation. Jeff?

MR. CIOCCO: Okay. Thank you, Dr. Ryan. Thank you, committee members, for the invitation today. It's been a few years since I've briefed the committee. With that, could we go to slide 2, please?

The overview of the -- of what I'm going to cover today, I'll go through the purpose of this presentation, I'll go through our project management approach that we would apply if a license application was tended to the NRC.

From there, I'm going to break out a specific element for the safety evaluation report process. It's certainly one of the biggest elements and the biggest product that we would produce as part of this licensing review process. And then I'll go through a path forward from there.

Slide 3. The purpose of this presentation today is to explain to you the project management approach for the licensing review. Whenever I say "project," I always think of it in terms of -- as a temporary endeavor to create a unique product or

service. In this case our biggest product is the safety evaluation report. Certainly, nothing unique to the NRC.

We certainly produce many and varied safety evaluation reports, but this is unique to us in that it's the first safety evaluation report produced using Part 63, using the Yucca Mountain review plan, using Part 2 of the Appendix D milestones, as well as Part 2 Subpart J. So it really is a very unique endeavor.

As well as I want to present to you the licensing review process. And by the process, I'm talking about the -- who will do the work, what they'll do, and when they'll do it. And to a lesser extent, how they're going to do the work. How is work -- we have defined in policies and procedures at the NRC. How is defined in the Yucca Mountain review plan, in the standard review plan.

So we're really looking at, who will do what and when in this licensing review process? That's the project planning approach.

On slide 4, getting into the project management approach, these are the real drivers charging the NRC with our mission here. And I start with the Nuclear Waste Policy Act. From there, I can

derive a lot from this little paragraph out of Section 114(d) that gives me a little bit of scope, and it gives me a timeline and some reporting requirements.

Looking down, starting about the third line, that the Commission shall issue a final decision approving or disapproving the issuance of a construction authorization, not later than the expiration of three years after the date of the submission of such application, except that the Commission may extend such deadline by not more than 12 months if not less than 30 days before -- 30 days before such deadline the Commission complies with the reporting requirements established in another subsection.

So here I've got a schedule with a three-year deadline, possible one-year extension, and I've got some reporting requirements that I have to factor in as well.

Moving down, Title 10 of the Code of Federal Regulations, driving -- charging us here is Part 63. From that, I get the content of the license application. I get the scope of what has to be covered in this licensing review.

In Part 2, which is the rules of practice for domestic licensing proceeding, I get a timeline.

Part 2 Appendix D gives me 30 milestones -- gives us 30 milestones over a period of 1,125 days that really lays the framework for doing this process. And that is unique in the NRC, this Appendix D, and I guess they've extrapolated from the NWPA a three- to four-year time period, as well as the requirements in Subpart J.

So this is really the foundation for us. We get scope and schedule from the regulatory and statutory processes.

On slide 5, what are the project objectives? Well, they're certainly tied directly to the statutory requirements. We want a licensing process and decisions that are technically and legally defensible, which is a complex project, first of its kind, one that could go through an adjudicatory process.

Second objective, compliance with the applicable statutory and regulatory requirements and the NRC standards and policies. NRC's most important mission is applying our statutory and licensing authority to protect human health and the environment, and we take that very seriously, and we want to use this project plan to help us make those decisions.

When I talk about NRC standards and

policies, I'm talking about NRC as an independent regulatory agency, which means we will conduct a thorough safety evaluation of DOE's license application and report our -- all of our findings in a public safety evaluation report.

And the final objective is certainly a good business practice -- complete your project on time and within budget, meeting all of your major milestones.

One slide 6, moving along to project management approach, we want to apply the best project management practices, and leveraging other licensing programs within the NRC to build the elements of our licensing review process. And when I talk about leveraging other licensing programs, I'm talking about those from the reactor side, looking at license renewal programs, licensing amendments.

From the materials side, we have independent spent fuel storage installations, fuel cycle facilities, all of those we're trying to leverage as much information as we can to build the best process. Even though our process is unique, we know that we can leverage other licensing programs.

So our approach for meeting our project objectives I list in bullet form all of the elements

of the licensing review process. And I have slides for each of these that I'm going to provide you a little bit more detail.

The first is the work breakdown structure. It's the road map of the activities. I've got about eight slides to cover that. I'll talk about the integrated schedule. I'll talk about the resource planning and management, how we're going to utilize resources, and I'll talk about -- a little bit about project risk management.

And this -- I want to differentiate this project risk from the human health and safety risks. These are problems that haven't happened yet. But if they do happen, they'll certainly impact negatively on the scope and schedule and costs of this project.

Change assessment and management, it's inevitable the plan is going to change. We need to have a process to manage those changes.

Communications, giving the right information to the right people in a timely fashion.

Records management, as well as establishing performance measures. How well are we doing in our licensing review program?

So with that, I want to go -- first, I'm going to cover a lot of these project scopes. For

this project, the scope is organized into what's called a work breakdown structure. It provides the foundation for the project by defining the project task, milestones, and activities.

What you see here is a hierarchical representation of this planning effort. It goes into progressively greater and greater level of detail as you go down, and we go through a -- kind of a work scope decomposition identifying tasks.

Let's start with the top block. We'll call that Level I. That's the entire scope of this licensing review program. Level II, these are the three high-level phases where the NRC has to make decisions throughout the licensing process. For those of you who know Part 63 Subpart B titled "Licenses," there's three phases -- construction authorization, that's the first block on the left of Level II. And that's really what we're going to be -- what we're focusing on now.

To the right of that is the next phase, the license issuance and amendment, and, finally, permanent closure. Those two aren't included right now. We're going through a planning and implementing phase, where as we get further down the road we'll get into planning and implementing the license issuance

and amendment and permanent closure, if we get that far in the project.

So let's move down to Level III of the activities of the project scope. Going from left to right -- and I'm going to explain a little bit about the scope of each of these -- we start with the acceptance review process. That leads to our docketing decision. There's a Federal Register Notice.

Next is the EIS adoption, the environmental impact statement adoption, safety evaluation. I'm going to pull this out, and at the end of my presentation I've got a few slides that get into a little bit more detail the safety evaluation report process.

Hearings support -- that's the adjudicatory process, field reviews that are going to support our licensing program review, construction authorization decision at the very end, and then kind of a catch-all -- program management.

Now, what this does whenever we set out for this licensing review process, it tells us what is in the scope of this. What it also tells us is what isn't in the scope of the licensing review process that I'm talking about here.

And a couple of those areas, which you won't see here, is the transportation cask certification program. You won't see the cask inspection program. Those are separate programs that are done by other parts of the NRC.

Permanent closure -- I mentioned that's not part of this right now. License issuance and amendment isn't. The inspections program, the allegations program, those are all programs outside of the licensing review program leading to a construction authorization decision.

So this helps us lay out what's in scope and what's out of scope. So now I'm going to walk you through the next couple of slides telling you what the scope of some of these activities are. First is the acceptance review. Determine whether the license application is complete and acceptable for docketing. For this, we look to Part 2, 2.101(f).

The foundation for that for our completeness review, before we would begin any technical review, is found in the Yucca Mountain review plan in the Appendix B. This will lead to a -- to a docketing decision and a Federal Register Notice. So that's just, in short, what the scope of the acceptance review is.

On page 9, project scope for the final environmental impact statement adoption decision, this would entail reviewing DOE's final environmental impact statement and license application to reach an adoption decision.

NRC is required under the Part 51 regulations to adopt the FEIS to the extent practicable, and then to make it -- and then to make a decision at the time of docketing. Well, what this tells the project manager, that there are certain interdependencies when you have to make a decision at the time of docketing.

We have certain staff doing an acceptance review over a nominal 90-day period after the license application is tendered. In parallel with that, we have staff who estimate an EIS adoption determination, so now we're starting to get into some of the interdependencies of our project planning process here. We're looking at scope, schedule, and resources. Staff may be doing two activities in parallel.

And also, we know that certain areas of the environmental impact statement can be contended in the hearings, so I have to think as a project manager what staff, what resources, what scope, how can I

estimate the amount of staff needed to support any kind of hearings on the environmental impact statement. And when would those hearings be?

On page 10 -- actually, my next step would be the safety evaluation report, but I'm going to cover that a little bit later. So now let's focus in on the project scope for the hearings support.

And the Appendix D of Part 2 gives us a lot of milestones to meet, gives the agency a lot of milestones to meet, and a lot of deadlines for the hearings support, because the safety case is what would be decided before any construction authorization.

And I've listed in bullet form a couple of these activities for the hearings support. Reviewing and preparing responses to petitions, contentions, appeals, testimony, other filings from third parties. Participating in conferences and hearings with the Atomic Safety and Licensing Board and participating in discovery.

So we see a lot of activities that are going to happen, that the NRC staff has to support in the hearings, beginning with notice of a hearing, first -- everybody looking at contentions that are proffered, what contentions are admitted after the

first preconference order. We have a period of time where the staff is going to be writing the safety evaluation report, and there could also be discovery -- what we call pre-SER discovery, which the staff may have to be involved with.

We have a period of time after the staff issues the safety evaluation report the staff would have to support post-SER discovery. From that, we have the evidentiary hearings, and then after that we have the entire appellate process and the Commission decision.

So we're starting to understand the scope of the hearings by drilling into the Appendix D milestones to see where the NRC staff has to support what -- you know, what's the scope of the activities, what's the timeframe, what's the workflow, what are the resources needed.

On slide 11, this is called our field reviews. This is something that would support the license application review. It's intended to confirm the basis for the information and analysis in the license application. It may include detailed reviews of data, models, software, assumptions, or it may help us clarify an area of the license application.

And by doing these kind of field reviews

it may also eliminate a need for a request for additional information, an RAI. With this, we plan on leveraging regional resources in such areas as data validation, models, looking at assumptions, etcetera.

We'll have review teams looking at the application. They will identify areas where they want to do field reviews. They will come out to the site, do the reviews, provide that information back to their teams. That's the field reviews.

Next is on slide 12. There really isn't a lot of information that we can get from Part 2 Subpart J on the construction authorization decision. But we need to identify scope, because we know that there are certain activities that the staff is going to have to do, and this is certainly towards the end of the adjudicatory process.

We may have to revise the safety evaluation report, identify and discuss license conditions with the Department of Energy, if needed, if we get to that point. Certainly, under 63.32 -- it's called Conditions of Construction Authorization, we know that there are certain requirements that we would have to deal with to get to a construction authorization phase. And then, ultimately, we may have to prepare a notice of issuance or denial of a

construction authorization.

On slide 13 is the program management element of our scope, project planning. That's everything we've done to date. It's in progress, it's still underway.

The second bullet is the project implementation, which is upon receipt of the license application. And I'm going to go into a little bit more detail on some of these areas on the communications, the change control, the project controls, the project risk management, as well as the performance measurements.

On slide 14 -- now, we're done with the scope and we're looking back at the elements of our licensing review process, the integrated schedule. It's certainly based on 10 CFR Part 2, Appendix D. This is these 30 milestones that lay out over a period of 1,125 days specifically. So that gives us a lot of constraints on what we can do.

There are certain major event triggers in our scheduling, such as DOE's Licensing Support Network certification, the receipt of the license application, and a Federal Register Notice of Hearing. Most importantly, what the integrated schedule does is that it converts that work breakdown structure, that

scope, into an operating time table with plan dates and milestones for us to track.

It provides us a tool to identify and control the interdependencies amongst all of the different scope that we have in a task. It gives us a baseline for controlling all of the activities, and it -- it's a baseline that we would establish at a point where we think we're very close to receiving a license application.

With that baseline, there's a lot of assumptions that we use in building our schedule assumptions in many aspects of the project, such as how was the work organized, what resources are going to be available, how are they going to be organized, what decisions need to be made, and which deadlines we are designated to meet.

So events are going to unfold, assumptions are going to change. We need to be flexible and really -- and to have a changed management process as we baseline this integrated schedule.

On slide 15, the resource planning and management, to ensure that the resources needed to complete the project are available when they are needed -- how do you do that? Through solid resource planning. And for us, that's linking the resources to

the work breakdown structure, to the scope, and to the integrated schedule.

What's going to be done, by when, and by whom -- very important for us. So we can assure that we have all of the technical and legal expertise that we need to meet our project objectives.

We are also putting together what are called responsibility assignment matrices. That's where we lay out the entire scope of the project in a large table on one side, and on top we have all of the staff involved, and we can put levels of effort, hours. It's a tool that we're using in Microsoft Excel and Microsoft Access to really lay out the resource utilization throughout the entire project, from beginning to end.

On slide 16 is the project risk management. If you look at that second bullet, unidentified bullet in italics, we're talking about the project risk, and this is just a little definition. The project risks are any events or occurrences that might negatively affect the project scope, quality, schedule, or cost objectives.

When I say any events or occurrences, I talk -- whenever we talk to the staff, and we certainly get their input, it's what keeps you -- what

would keep one up at night worrying about the project being completed?

Well, if you ask me that, I think about things like, well, we don't know the quality of the license application, we don't know how many contentions are going to be proffered, we don't know how many contentions are going to be admitted, we don't know how many RAIs we're going to have to write after reviewing the application.

So these are the kind of project risks -- those are examples of the kind of things that we identify. When you have the complete information on a project, it creates a certain environment of uncertainty, and that uncertainty leads us to identify what the project risks are.

So we have a process here where we anticipate what the uncertainties are and try to plan for them and address for them. The model that we're following is on the first bullet, very typical in project risk management where you identify the risks, you analyze them, you plan for them, you track them, you control them, but most importantly you communicate those risks between the staff and the management of the project.

Risks will change, and they do change,

since we started this process a year and a half ago. When new risks arrive, old risks become obsolete. So that's why when I say "throughout the life of the project," project risk management won't stop because the risk will change as we go through the project.

And, certainly, I think failure to identify these risks early and continually could have some negative consequences -- schedule delays, us being able to meet the project objectives. So we think we have a pretty good process to identify the project risks.

17 is the inevitable -- change assessment and management. We know it's going to happen. We want to implement a process to control those changes, to be able to communicate the potential changes to management and within the project team to assess their impact on the project. If you change a Level IV or Level V milestone, what does that mean across the project? And then, to implement procedures to accept the changes, and then disseminate those changes throughout the project team.

So we're going to plan, we're going to implement, we're going to control, and we're going to track.

And when I talk about implementing on

slide 18, I'm talking about the implementation procedures.

We have a project controls function. With this, we'll be maintaining somebody who is going to maintain all of the tools that we have in place, such as the work breakdown structure, the integrated schedule, the risk management, the resource utilization, all of those electronic tools which aids the project manager.

We know we have status reporting and performance measurement reporting. It's been made clear to me that there's a lot of people who want a lot of information throughout the licensing review process. We'll look at bi-weekly and monthly reporting, etcetera.

You know, there's a saying that you plan to get in control, and you track to stay in control. Well, we'll hold regular progress tracking meetings to identify issues that come up and to look and to track the milestones as we move through the project.

On slide 19, communications. Close and coordinated communication is going to be necessary and very important on this project. It's a very complex project, and we have a need to get the right information to the right people in a timely manner.

So whenever we think about communications, here I talk about internal communications amongst the management at the NRC, as well as the project team, and there's a lot of teams, and external communications. At the NRC, it's important that we do our business in the public eyes. It's one of NRC's openness initiatives.

We will have public meetings with the applicant, as necessary. Certainly through the RAI process, the request for additional information, we could have public meetings with the applicant to explain a draft RAI. All of the letters that we send between us and the applicant would be made publicly available. So those are the external communications.

On slide 20 is records management. We need to identify what the official records are for the agency. We had management directives and other requirements as far as documenting our work, and as well as the documentary material that would go on the Licensing Support Network that's required by Part 2 Subpart J. So records management is certainly a very important element of the licensing review process.

On Slide 21 is the performance measures. Indicates how well the project is functioning, and it's something that we would monitor over the life of

the project. This is an area that we're currently developing. It's not fully developed. We certainly have a lot more work to do in this, and we have been challenged by our senior managers to come up with useful and meaningful performance measures.

Typically we'll look at performance measures in the area of the quality of the technical work, the timeliness of the work, resource utilization, as well as risk management. So it's an area that we're certainly developing, we've been challenged to identify performance measures in this area, and we're going to keep working it with our management at the NRC.

Okay. Now we'll get out of the elements of the licensing review process and get into a little bit of the specific element of our scope, the safety evaluation report, the biggest product we're going to -- that we're going to have to produce.

Certainly, it has been a major focus of our project planning, certainly the most tasks we've identified in our integrated schedule, the most resource-intensive area is for the safety evaluation report.

So with that little introduction, on page 23 of the safety evaluation report process, it

has to be consistent with the regulatory requirements, it has to be produced in an 18-month duration. I think Part 2 Appendix D gives us 548 days to produce a safety evaluation report, and to issue it. That is our planning basis, and it's the law.

It will be consistent with the Yucca Mountain review plan, and the little picture on the bottom shows the safety evaluation report process and lays out -- these are actually chapters in the Yucca Mountain review plan that are tied back to Part 63.21 for the content of the application.

That's how we're going to produce our safety evaluation report, beginning with the general information section, the preclosure, post-closure, the administrative and programmatic sections, the license specifications, and the research and development and performance confirmation program. So these are all tied directly to the -- to Part 63.21, as well as the Yucca Mountain review plan.

What are some of the key elements of the safety evaluation report process? I talked about joint teams. These are joint. This is identifying the joint NRC and Center for Nuclear Waste Regulatory Analysis joint teams, and those teams we've laid out in our project planning exercises.

Another key element of the SER process is the request for additional information. We have an assumption that we have one single round of requests for additional information. That's what's in our integrated schedule. That's what will be in our baseline work breakdown structure.

We go through a review cycle, typical really for producing any work product. It's a sequential review cycle, not just for the safety evaluation report but for the request for additional information.

The technical staff producing the document -- we have an integration -- a safety integration review. It's a peer review. It's an expert panel to look at the integration of many, many different sections, and I think my next slide talks about the sections. We call it a safety integration review, an editorial review, legal review, followed by a management review.

So these kind of sequential review cycles are going to happen as we move along our work flow for the safety evaluation report.

On slide 25, on the left side in small print is the 50 sections of the Yucca Mountain review plan. These would be the major chapters of the safety

evaluation report. So we align all of the chapters of the Yucca Mountain review plan with the chapters of the safety evaluation report from the general information down to the research and development and performance confirmation program.

And the output would be a NUREG, which would be the safety evaluation report -- all of the major chapters and sections of that safety evaluation report.

On slide 26, this is our general approach using a five-phase process, and for us this is a major accomplishment. This really lays out for us the workflow for producing the safety evaluation report.

And you can see on the very bottom it says the duration of 18 months. And of the five phases, Phase I is where the staff, these teams, the lead authors, lead technical reviewers, etcetera, where they draft the SER section. At the same time it's doing that, if there is a request for additional information, it would be drafted in Phase I.

Phase II is the safety integration review. It's this expert panel. It's our senior-level scientists, our senior-level engineers. It would be an attorney, it would be managers. We would do a safety integration review, it says of the RAIs, but

it's more than a -- it's of the RAIs and the safety evaluation report. They go hand in hand. You have to draft a section of the SER before you can identify what the request for additional information is.

And they'll look at the integration as what is -- is it risk significant, the request for additional information? Is it tied to a statutory requirement? Is it tied to a specific finding in the Yucca Mountain review plan?

And we are going to use the safety integration review, the SIR, not just in Phase II, but I -- I should have mentioned that it's also in Phase IV. In Phase III is where we actually issue the RAIs to the applicant, to the Department of Energy, and we go through a process here where we'd have a public meeting with the applicant, explain what the draft RAIs are. They have a certain amount of time to provide their response.

In Phase IV, after we get the response from the applicant, we go through where we actually complete a final draft of the SER sections. And in there we also -- we would have the safety integration review, looking at the information once again, and then, in Phase V, where we would finalize the safety evaluation report and produce the NUREG document.

On slide 27 is the path forward. We're going to continue all of our pre-licensing activities in preparation for license application receipt, if one were to hit -- come our way, monitor the project environment for conditions that could affect the project.

Certainly, the rulemaking underway affects the project. That was a project risk identified a long time ago. It's not obsolete, but we are in the proposed rulemaking phase. Continue our project planning process, working on our workflows, working on the task durations, so we can get to a point of base -- of down the road baselining our project.

And then, finally, there would be implementation of our licensing review process following receipt of the license application. Actually, it would probably begin a little before that. It could be whenever DOE certifies its LSN collection where we couldn't docket the application. I think six months have to elapse from the time that they certify until the time that we can actually docket the license application.

So with that, I conclude my presentation on our licensing review process.

MR. COLLINS: Before we turn it over for

questions, I would just like to add --

CHAIRMAN RYAN: Could you just tell us who you are and who you're with for the record? We have --

MR. COLLINS: Excuse me. Elmo Collins, Deputy Director.

CHAIRMAN RYAN: That was my mistake. I didn't mention you by name.

MR. COLLINS: Thank you. Thank you. I just wanted to add that we have put a considerable amount of effort into this plan. It's very extensive, I think fairly exhaustive, and we -- we believe it represents a good basic plan. As you have indicated, it will change. All plans change, but the value is in the planning.

We also were able to derive from it what we believe is a fairly solid resource estimate for what it's going to take for us to conduct this review and prepare this safety evaluation report. And, of course, the key element -- one of the key elements is that it recognizes important areas where there are unknowns and uncertainties, such as the number of contentions, the number of requests for additional information.

We'll need the quality of the application,

what are we going to see when we get it, and environmental issues and environmental conditions as well. So we believe we're well positioned at this point in time to take the license application.

CHAIRMAN RYAN: Thanks very much. Appreciate your comments.

Jeff, thanks for your presentation.

MR. CIOCCO: You're welcome.

CHAIRMAN RYAN: Let me start with a question. You mentioned one place -- and it's toward the last couple of slides -- where Phase III of the RAI issuance was the place where there'd be a public meeting with the applicant.

Are there any other opportunities earlier in the process where information will be available publicly, or is that predecisional phases? Or just -- I know that question will come up, so I thought I'd ask it first.

MR. CIOCCO: Do you mean as far as in Phase I as staff is preparing the --

CHAIRMAN RYAN: Well, no, I --

MR. CIOCCO: -- the draft?

CHAIRMAN RYAN: -- just thinking about it, you know, the LA is received I guess right here in Phase I. And then, what happens in terms of public

involvement during those first two phases? The first place where you said, you know, the decisionmaking comes out is in Phase III.

MR. CIOCCO: Yes. I think probably in Phase III would really be the first opportunity for public involvement, unless we decide -- if we have questions that we need asked, ask the Department of Energy, there's an opportunity for us always to -- to meet with the applicant and request clarification on certain areas.

CHAIRMAN RYAN: Okay. Have you thought about, you know, are those meetings all going to be open or all going to be closed? Or a mix of both? Or has that been decided? I don't know. That's why I'm asking.

MR. CIOCCO: Yes. Well, it probably depends on the nature of the information that we need to ask.

CHAIRMAN RYAN: Knowing itself obviously will be in the public area, but it would be interesting to think about how it's going to work.

MR. CIOCCO: Yes, we'll have to think about it. Like I said, it really depends on -- I think on the kind of information that we need, when we need it, how we need it, whether it would be, you

know, public interaction with the Department of Energy.

MR. COLLINS: Let me just add, Mike, there will -- that mention of public meetings at RAI, that was a very discreet mentioning of a public involvement.

CHAIRMAN RYAN: Oh, no, I understand that.

MR. COLLINS: There will be others in terms of the review process itself. That's NRC internal, although Part 63 does make a provision for us to entertain requests for participation in the application review. So we would entertain a request --

CHAIRMAN RYAN: Okay.

MR. COLLINS: -- if we received them.

CHAIRMAN RYAN: All right. Thanks. Again, I think it's a very thorough job that you've put together to look at this. It's a very formal and detailed project. A couple of us had the benefit of seeing a few demonstrations of your work breakdown structure capability and how you've prepared to manage it. It seems very thorough, and it's a well developed and well thought out tool and process you've put in place. So congratulations.

MR. CIOCCO: Thank you.

CHAIRMAN RYAN: Ruth, any questions?

MEMBER WEINER: I'll try it this way. That's a very thorough presentation, and we congratulate you on it. Do you have a contingency plan? In other words, what if there are unanticipated budget cuts? The regs require and the law has -- gives you a certain time scale in which you have to do things. So what if all of a sudden you don't have the budget to do what you want to do?

MR. CIOCCO: Yes. That's certainly a project risk, if you don't have the budget or the resources to do the work. And from a project manager standpoint, I certainly -- I would use the escalation process, and I would pass it over to Elmo Collins.

(Laughter.)

MR. COLLINS: Well, our current planning basis is established, and it's as we know it, and in anticipation of a license application in the relatively near future. I think if the application is received and we begin our review, it would -- I wouldn't anticipate budget cuts at that point. But if they did come, it would -- it would have a substantial effect and lengthen our delay considerably.

CHAIRMAN RYAN: Well, isn't your job at that point to assess the impact of it, not to find the

new money? I mean, so, you know, you really have two different questions there. I think, you know, you are obviously focused on assessing the impact of any cut rather than, you know, worrying about how big it is or how little it is, or, you know, the impact is the important issue from a project management standpoint.

MEMBER WEINER: Well, my question -- the original question was: do you have a contingency plan? Or have you thought about a contingency plan? And not just for budget, but for any kind of unanticipated thing.

MR. CIOCCO: For certain project risks we do. I mean, we look at how do you handle the risk. Well, you can accept them, you can avoid them, you can transfer them, or you can mitigate them. So, I mean, it really -- it really varies across the board. Some risk we have to accept, that -- you know, that we have an 18-month timeframe, so we try to put the resources on the most significant areas of the license application.

So we really look at it across the board as --

CHAIRMAN RYAN: A more realistic question, Ruth, might be, what if a particular technical review extends in time, for six months instead of three

months? I mean, that's probably a more realistic kind of question or that's, you know --

MR. CIOCCO: It is. I mean, I think it's a good question. It's an issue that we would have to track. We would have to figure out why and how, is it a resource that could be applied to it, do we have enough information to get to our safety evaluation report process. But it's certainly one that we want to be able to address and catch early in our progress tracking meetings throughout the implementation.

MEMBER WEINER: What's the basis that you're going to use for the FEIS acceptance? And I ask because we had a presentation earlier on what is, in effect, a supplemental EIS. There is another environmental impact statement on Nevada Rail. Now, would you look at the original FEIS? Would you look at that along with the new one on Nevada Rail? What would you -- would you consider supplemental environmental assessments? How do you plan to accept -- since part of this is acceptance of the environmental impact statement, how do you plan to accept that?

MR. COLLINS: For the final environmental statement, the law requires Department of Energy to submit that -- the final environmental impact

statement, which has already been prepared to us, as part of the license application. We're anticipating, along with that, we'll have an environmental assessment. In our -- it does specify in the law that we will adopt, to the extent practicable.

So the elements of our -- they basically are going to be, are there new significant changes, new significant information that we either become aware of or was brought to our attention as part of the environmental assessment, which would then dictate the need to supplement that environmental impact statement, and which we would do that at that point in time.

MEMBER WEINER: Would the new EIS on the Nevada Rail be part of what you accept?

MR. COLLINS: It's not going to -- not part of the Nuclear Waste Policy Act per se, but we do participate in that environmental impact statement process through NEPA, with our ability to take that and comment on it, which we plan to do as well.

MEMBER WEINER: But you would be accepting -- the document --

MR. COLLINS: No. It would be --

MEMBER WEINER: -- that you would be accepting would be the FEIS.

MR. COLLINS: That's correct. That's correct.

MEMBER WEINER: Finally, and you may not be able to answer, this is really not a fair question to you. What if the construction authorization is denied? What happens -- who decides what happens to the site? Is that a DOE decision? As I said, you --

CHAIRMAN RYAN: I'm going to ask that you guys don't slide that microphone. It puts a hurricane in his ear. Just pick it up and move it.

MR. CIOCCO: Okay. Yes, I think it's specified in the Nuclear Waste Policy Act what happens at that point, and I don't have the Act in front of me here to know what it is.

CHAIRMAN RYAN: I agree with Ruth's comment it's not a fair question.

(Laughter.)

MR. COLLINS: Okay. Thank you.

CHAIRMAN RYAN: Allen?

VICE CHAIRMAN CROFF: Good job. I don't have any questions.

CHAIRMAN RYAN: Great. Bill Hinze?

MEMBER HINZE: A quick one or two. The RAIs, what are -- do you have protocols in place with DOE regarding these? And what is the manner in which

you're going to conduct a request for additional information?

I note here on 26 that -- page 26 that it looks as if you're going to collect all of the RAIs together, and then ask for them and then get an answer. But many of these concerns are really staying, so you need the information in order to conduct further investigations.

MR. CIOCCO: Yes, that's correct. I mean --

MEMBER HINZE: Let's hear about how you're going to do RAIs.

MR. CIOCCO: Yes. Well, we haven't interacted yet with the Department of Energy on this entire process. This is really the first time that we're kind of laying out what our five-phase process is for the safety evaluation report, and we will down the road. We're certainly committed to interacting with the Department of Energy on this process and getting into some of the more details.

But we do plan on, whenever I talked about the chapters of the safety evaluation report, making sure that we have the RAIs for that particular area, because a lot of them are cross-cutting, and we want to make sure through the integration review that we

have -- we're not just kind of piecemeal sending out requests for additional information, and that the safety integration review looks at those in total, and whether it's post-closure, whether it's preclosure, general information, whatever.

So we do want to make sure that they are bundled to the extent that they can be, so that we're not redundant, we're not asking for information that isn't really important. And then, those would be sent to the Department of Energy.

We would have an interaction with them, I guess whenever the RAIs are in draft format, to explain -- make sure they understand the basis of what we're asking for, because we do have a very -- a very limited timeframe in producing the SER, so we want to make sure we're -- that we're as clear as possible in the RAIs.

MEMBER HINZE: I assume that you'll have a time goal that you'll want to have the DOE answer these and to take care of them.

MR. CIOCCO: Correct, yes.

MEMBER HINZE: What is the technical staff doing after the 18 months of -- and the completion of the final SER?

MR. CIOCCO: Well, we'll be doing a lot of

activities. A lot of them will be supporting the -- you said the post-SER discovery, leading up to the evidentiary hearings. A lot of the other programs that aren't -- maybe they're kind of out-of-scope programs, performance confirmation program, inspections program, allegations program. They will be supporting a lot of these different areas.

And, certainly, when you just look at the resource utilization, there is peaks and valleys of staff utilization over the five-phase process. We're trying to shave off some of the peaks and fill in some of the valleys, but there are a lot of other activities underway throughout the entire process.

MEMBER HINZE: Thank you.

MR. CIOCCO: You're welcome.

CHAIRMAN RYAN: Jim?

MEMBER CLARKE: Just a quick followup. As you noted, many of these issues it looks like could be addressed in parallel. Teams could be working on them at the same time. Others are cross-cutting. Is there a -- does the review plan specify a sequence that you'll follow?

MR. CIOCCO: For the safety evaluation report?

MEMBER CLARKE: Yes.

MR. CIOCCO: To the extent that we could do it. I mean, right now, the approach we're looking at is over the 18 months is we really need to begin the review -- writing and reviewing the application and writing these individual sections in parallel. It's hard to do a lot of sequential work when you have a very short timeframe to get these five phases done.

To the extent that we could do certain areas first, we'll certainly entertain that and do other areas later. But a lot of work gets done in parallel. There is a lot of interdependencies amongst the group, and that's where we're trying to identify the staff utilization over the entire period of this 18 months.

MEMBER CLARKE: Okay. Thank you.

MR. CIOCCO: You're welcome.

CHAIRMAN RYAN: I think, you know, you've touched on a number of different ways the layering. You know, you can think of a project as being a linear thing. It starts here, and ends there, but this is probably a layer of -- I don't know, pick a number -- 500 or 1,000 individual projects that are all not only, you know, left to right but they are in and out, too.

And they're all connected in time and

scope, so it's clear that you guys have worked hard to produce a system that will help you make sense out of all that, which is really your goal.

Thanks for your presentation and your discussion today.

Other questions from staff? Mike?

MR. SCOTT: Yes, please. Jeff, in the reactor world, typically there is a document issued partway through. They used to call it a draft SER, and then they changed it to an SER with open items.

MR. CIOCCO: Correct.

MR. SCOTT: I'm curious. I don't see that here, particularly for a first of a kind project. Why not go that route?

MR. CIOCCO: You're absolutely right, Mike, and I know I meet a lot with and try to leverage as much as I can through the license renewal folks and the NRR people. And certainly they do issue an SER with open items that goes through the ACRS.

This project doesn't have that same process, mainly because, you know, we have to follow what's laid out in the Appendix D milestones of Part 2, and it talks about issuing -- issuance of a safety evaluation report.

So there isn't -- so we're trying to look

at it in chapters, in logical areas of the safety evaluation report, but there isn't a provision, as they have in either the 22 months or 30 months where license renewal, for example, produces their safety evaluation report. Actually, it's 22 months, excluding the hearings. You're right, there isn't a provision.

I guess in some cases in the Part 50 or Part 52 framework it mentions specifically that document. In other cases it doesn't, but I think the staff has frequently found it useful to get a document out there that has the areas that are not yet fully resolved for everybody to look at. And they also have the draft text out there to sort of --

CHAIRMAN RYAN: Lean in a little, Mike.

MR. SCOTT: -- on finalizing the document.

CHAIRMAN RYAN: Lean in to the microphone.

MR. SCOTT: Sorry.

CHAIRMAN RYAN: You have to get it closer to your face.

MR. SCOTT: I was just suggesting that in some cases it's specified in the regulatory framework. In some cases it's not. It just -- it seems like particularly where we had a first of a kind activity, it was a good context for helping the staff getting it

-- helping the staff gets its act together.

MR. CIOCCO: Yes, yes. Thank you, Mike. I certainly appreciate and understand what you're saying. To the extent that we had to look at the constraints of the Part 2 or the Appendix D schedule and lay out a framework to get this done in 18 months, we certainly considered that. It just wasn't there.

MR. SCOTT: Okay. One other question if I might, unrelated. On slide 11, I think it's 11, it refers to the regional support.

MR. CIOCCO: Yes.

MR. SCOTT: Is there one particular region that has cognizance, or are you going to tap all of them?

MR. CIOCCO: Region IV.

MR. SCOTT: And that's where you're going to go to get your resources for this?

MR. CIOCCO: Yes, sir.

MR. SCOTT: Thank you.

MR. CIOCCO: You're welcome.

CHAIRMAN RYAN: Okay. John Larkins?

DR. LARKINS: Yes. Just a quick question. When you do your labor rates and you look at the resource utilization for these various activities, have you identified some where if you add additional

resources or people that you can speed the process up, or have you also looked to see if there is a loss of certain knowledge, skills, and abilities in the staff, in the adverse impact of that? There's sort of two parts there.

MR. CIOCCO: Yes. I mean, the first part of your question, are you talking about the productivity rate of the staff?

DR. LARKINS: Yes. You assign a certain amount of -- a team a certain amount of time to get a task done.

MR. CIOCCO: Correct. And then we look historically at the productivity rate of a particular staff, team, division, whatever, and apply those type of FTE hours, if you will, whenever we try to fill in the resource utilization for a particular task.

DR. LARKINS: Have you assessed if you had additional resources the impact, whether things would get done quicker or -- or it's a matter of resource leveling is what it --

MR. CIOCCO: Yes, I think we have to certain areas. And I talked a little bit about trying to shave off some of the peaks or fill in some of the valleys in times where we know we're going to have a lot of work, particularly early on in producing these

draft SERs and draft RAIs. So I think we are looking at putting -- you know, putting the -- not just the amount of resources but the right resources in the right areas.

DR. LARKINS: Yes. And there are certain areas, I guess, where there are critical what I call KSAs -- knowledge, skills, and abilities -- if something happens in those areas. This goes back to Ruth's question about contingency planning to supplement the staff.

MR. COLLINS: On that, John, I would offer, you know, to the review teams that where we have those critical areas, where we do have the people with the depth and experience, and then we put some people them with less depth and less experience, that are going to be working with them along the way in the even that they become unavailable.

Right now, we have them planned, but, of course, we can't predict the future. So we understand.

DR. LARKINS: Thank you.

CHAIRMAN RYAN: I'm sorry. Ashok? Pardon me.

MR. THADANI: Thanks, Mike. Let me commend you. I think what you presented is truly

outstanding, very well-planned program execution that you're considering.

One issue that you may have considered, and would be interested, that could have an impact on how you go forward -- and that's you will need access to some very specialized expertise. Do you have all of that expertise in-house? Are you counting on getting some consultants?

And in the case you go out and seek some consultant support, have you looked carefully at potential conflict of interest issues? See if that might have an impact on the license.

MR. CIOCCO: Yes. Well, the answer is, as we're putting together our teams and we're looking at -- they have to identify the individual and the particular area of expertise. And these teams -- these are joint NRC and the Center for Nuclear Waste Regulatory Analysis teams.

So if it's either an in-house expertise that we have, or it's an expertise at the Center in San Antonio, or it's a consultant, which may be employed by the Center in San Antonio -- so we're -- we're definitely -- by doing kind of a bottoms-up approach to this project planning, and having the team leaders and individual project managers look at the

tasks that they have, they need to know what those activities are, what work they have to do, and who is going to do the work.

So it isn't just a project manager like myself sitting up here saying, "You need this, this, and this." It's really at a lower level -- Level 5, Level 6 of the work breakdown structure identifying who those resources are, and what specific level of expertise.

And it's not just within our Division of High-Level Waste Repository Safety. There could be other staff within the NRC that aren't part of the adjudicatory employee program who could also support us in our licensing review.

MR. COLLINS: Ashok, I would just add the point you're making is right on the money. There is a number of areas of specialized expertise that we don't retain in-house on NRC staff, yet this is where -- this shows the value of the Center for Nuclear Waste and Regulatory Analysis we have in San Antonio.

They came into existence a number of years ago, and we've taken overt efforts to preserve them from conflict of interest, and also maintain that technical capability. So we will have them when we need them to do our work with the application review.

MR. THADANI: Thank you.

CHAIRMAN RYAN: Any other questions? Again, I think it's important to note as we finish that you've been developing this plan and its tools and capabilities for 18 months or so now.

MR. CIOCCO: Correct.

CHAIRMAN RYAN: And I think as Ashok pointed out, the quality of the work is showing through, and we appreciate your being here with us today.

MR. CIOCCO: Thank you, Dr. Ryan.

CHAIRMAN RYAN: You're welcome.

With that, we are -- the next item on our agenda is actually two. There's two elements. One which will be very short is the ACNW's low-level radioactive waste White Paper, a brief status report. We're actually going to take up a bit of that discussion on Thursday, in our session Thursday.

But I'll briefly mention that what the ACNW is trying to do is put together a White Paper that examines the regulation of low-level waste, its history, its connections in this for the Rosetta stone, and its linkages to other regulations past and present, and how the definitions evolved as they have evolved, and so forth. And then, are there any

opportunities to better risk-inform that or to address issues that are out there in decommissioning or other topics?

And we're pretty much finalizing over the next weeks the factual part of it, which is, how is it all connected? And, you know, what is the history, and what are the dates, and when did something change? And what does pre-'78 versus after '78 mean? And things of that sort, just from a structure of the regulations and laws standpoint.

And then, the second part of that, which we'll be preliminarily discussing, is what does it tell us where the opportunities are to do a better job or to risk-inform the process or to recognize where something isn't risk-informed, for example, and go from there. So that's kind of where we are, and we'll be taking that up Thursday.

The next and final item for the day is the subcommittee report, the ACNW subcommittee report on the DOE probabilistic volcanic hazards analysis, the PVHA workshop. And, Professor Hinze, would you lead us in that report, please?

MEMBER HINZE: Well, I'll make a few comments, and my colleagues that were at the meeting - Bruce Marsh, our consultant, and Neil Coleman -- can

add their points. This --

CHAIRMAN RYAN: Once again, Bill, just drag that just a bit closer, so everybody can hear you, if you don't mind.

MEMBER HINZE: Okay.

CHAIRMAN RYAN: I'm sorry I keep bugging everybody.

MEMBER HINZE: I'll chew on it.

CHAIRMAN RYAN: It's in the interest of good communication.

MEMBER HINZE: Okay. The objectives of the workshop were to present to the panelists of the expert elicitation on PVHA update the new data and the compilations that had been prepared by the DOE. In addition to that, there was the identification of the panelists' approach to the volcanic hazard modeling, and particularly the definition of the igneous event, as well as the individual panelists' approach to the temporal and spatial modeling of the volcanic activity that is anticipated over 10,000, and now we hear over a million years.

The status of that program -- one of the things I was going to mention in this report was the 10,000 and one million year, because I think that's an important change in the program that the committee

should be aware of, but we've discussed that and so we can move on.

In terms of the status of the program, the expert elicitation team has met with all of the experts, and so they're on their way. There has been drilling of the geophysical anomalies that has begun, and that Russ mentioned to us.

There is a -- somewhat of a delay in the program. The next workshop is now planned for April of 2006, as well as a fourth workshop in September of 2006. The report preparation, as I understood it, at the -- and Eric can correct me on this -- but as I understood it, at the PVHA was that the report preparation was during '07, and the drop dead date on that is September of '07. That is a slight delay of about three or four months according to my recollections.

One of the quotes that I have is that they hope to have the results of the PVHA-U shortly after the submittal of the license application. There was even some discussion of the program going into a slumber mode, which indicates that there has been some delay in the program.

The drilling of the geophysical anomalies began with drilling of a magnetic minimum in the

northwest corner of Crater Flat. This is a drill hole that the DOE anticipated would be -- not be associated with basalts. And the basalts, of course, are the important thing in terms of being -- using the historical record of basaltic activity to predict into the future, and the detection of the hidden volcanic -- basaltic volcanic rocks.

The DOE did not anticipate in this hole that they would run into basalt, but that the -- rather, that the anomaly would be associated with some faulting of the tufts.

They did, however, discover the basalts in that hole, as I have it, at about 140 meters. The petrology and the location of these basalts indicate that they probably are old basalts -- that is, that they date from the early opening of Crater Flat, roughly 11 million years ago.

And as Russ mentioned, they have not been dated yet. There is going to be a reconnaissance dating, and I think that was one of the advancements that came out of the PVHA-U. There is going to be reconnaissance dating by potassium argon, and that should be available in a couple of weeks.

Other new data aspects -- one of the more interesting reports was on analog studies of the dikes

and dike swarms, as well as the events associated with studies being made by the DOE and its contractors.

The limitations in the knowledge of the processes, the geological and physical processes, makes these analog studies terribly important, and will be very useful to the panelists.

There are a number of conclusions that came out of that. I won't bore you with those at this point.

Another very significant thing is that we learned about this magma dynamics AMR, and we're looking forward to seeing that.

Another point that I should make is that the 30 August 2005 article in EOS by Gene Smith of UNLV, a contractor to the State of Nevada, published a paper entitled "Yucca Mountain Could Face Greater Volcanic Threat," and this was the lead article in EOS, which has a distribution, as I recall, of about 35,000, something like that, in the geoscience community.

Gene has a -- has published similar types of material before. It's largely based upon the linear arrangement of observed volcanoes from Crater Flat up to the Reveille Range some 120 kilometers or so.

The conclusion from the panelists I'll try to summarize briefly. But, really, these are at a temporary stage. They are still in the -- in a process of developing the techniques that they are going to use for their own determination of the probability of volcanic hazard.

One of the things we learned was that there is a reliance on these analog studies for event definition, and they -- they do provide some very concrete evidence regarding the processes that are going on.

There was concern raised by the panelists, though, that it was difficult to obtain sufficient analogs. The DOE is going to take the panelists on a field trip of some of those, and I think that will be extremely helpful to them.

In terms of temporal models, one of the more interesting presentations was one made by Bruce Crowe. Bruce took time slices of past time and the volcanic events in the greater Yucca Mountain region that occurred, and then tried to predict what was going to happen during the next million years.

I don't want to quote or put words in Bruce's mouth, but basically he found that it was very difficult to predict into the future on the basis of

past events. For example, at seven million years, the events that occurred between 11 and seven million years, and then try to predict from seven to six million years. And this is a very difficult thing to accomplish.

In terms of spatial models, there were a number of things that came out that are of a more technical basis. I won't go into them. I will mention one, however, that I thought was particularly interesting, and that was one by Rick Carlson of the Carnegie Labs.

And Rick suggested that there -- the distribution of post-Miocene, that's post 11 million year-old basalts, were centered on the Caldera, that gave rise to the volcanic rocks that the repository is to go into -- were centered on this Timber Mountain Caldera to the northwest of Yucca Mountain.

And that with time, he had two different scenarios, one in which there was a shrinkage of the basaltic volcanic activity towards -- from the outside in towards Timber Mountain Caldera. The second scenario was the possibility that the volcanic activity, the post-Miocene volcanic activity, was concentrated along a more linear segment, a north-northwest linear segment, that is associated with a

structural feature or stress patterns.

And, you know, that's just one of the panelist's ideas, but it does -- it is an interesting conjecture. And it's, frankly, one of the newer ones.

One of the things I didn't hear at that meeting was the possibility of a floater model, like in the Midwest we have a -- we have a 5.5 or a 6 magnitude earthquake that we can float anyplace in the mid-continent region, because, frankly, we're ignorant of the detailed processes involved and the controls.

And one possibility is that, indeed, there is a model that you could develop that would suggest that you have a floater of volcanic activity that would occur any place within the greater Yucca Mountain region.

Was that fast enough?

CHAIRMAN RYAN: I'm riveted, Bill. That's great.

(Laughter.)

Are you done?

MEMBER HINZE: I'm done. I'll pass it to my colleagues.

CHAIRMAN RYAN: Okay. Great job.

MEMBER HINZE: If you wanted another half hour, I'll be very happy.

CHAIRMAN RYAN: Yes.

(Laughter.)

DR. MARSH: I might just enlarge a little bit on some of these comments. The analog studies are very valuable for DOE, because if you go to an area like Crater Flats or Lathrop Wells you can see what's happening on the surface, but you don't know what's going on below the surface.

So in terms of when you're counting events over various periods of time, you have no idea whether these are all on the same sort of fisher or dike, and they actually could be all the same -- one large event or you break these up. And it kind of comes down to the fact, you know, in researching whether people are bunchers or -- you know, or splitters, or whatever.

But when you go to an analog area where you can actually see the system has been eroded through, of course you don't see everything on the surface, but you do see a subsurface where things have been venting. And so you can see if one vent is related to one dike, and there's another dike that's not related, or another swarm that's related perhaps. And so it really helps a lot to look at these analogs back and forth.

In the world, there are sections like this

throughout the world, and more emphasis on this -- a lot of this information is readily available. It really helps get a better picture for the probability estimates.

And in that same context, in tying in with what Bill was saying about Rick Carlson's stuff, the estimates that have been used so far when you use these probabilistic methods and these Bayesian approaches, and things where you actually just take the volcanism as it stands today and use a certain area of influence, and then come up with a number, there are attempts, then, to add in other things, like gravity minimums, topographies, stuff like this.

Well, we made the point, actually, that this material is already -- all of these other influences are already in the -- what you see on your service -- in other words, when the volcanism comes up. That was influenced by n number of things, and that is the final outcome.

However, it would be very good and work is going -- is starting on this I think from Chuck Connor -- is starting with a clean slate for the whole United States, for example, and saying, "Let's build up an assessment -- a probability model based on, let's say, first where there's been tectonic activity, where the

upper mantle has slowed in terms of seismic velocities, where we have certain valleys, ridges, faulting," etcetera.

Let's build up and build up and build up and see what you get in the end, see if you can approach what the actual volcanism looks like. So that's something that is probably in the wings of what may happen.

So there are some things that I think are quite positive coming out in -- that will take some time to nurture perhaps but will be valuable.

MR. COLEMAN: I'll just add a couple of things, what Dr. Hinze mentioned about the reconnaissance dating. This is very important, because using a method that may have less precision but can still quickly categorize any new discovered basalts, as Miocene, Pliocene, or Pleistocene, this information is very important for the panelists to have as soon as they can get it.

There was a new data set introduced at the meeting -- the free air anomaly map, which is derived from gravity data. And they obtained an estimate of pressure differentials at depth, and I believe the depth they were using was three kilometers below sea level.

And this -- the patterns in this map were very interesting in that they seem to coincide fairly closely with the post-Miocene basaltic activity in the region, something for the panel to be considering in their future deliberations.

There was one question that came up from a panelist about the Lathrop Wells volcano, the youngest one in the region, approximately 80,000 years old. And the question was: how can the panel assess, was this the start of a new pulse of volcanism, something that would be of concern in the region?

And I had an opportunity to speak to that, and said that our paper published last year in Geophysical Research Letters, in December of last year, directly addressed that question and found that to be unlikely, based on the evidence that we see today.

That's all I would add.

CHAIRMAN RYAN: Thanks. I think we're looking forward to Dr. Marsh's presentation tomorrow on an approach to the modeling of magma/repository interactions. I think that will further illuminate the topic and give us the benefit of Bruce's insight, so we look forward to that.

MEMBER HINZE: We will be preparing a trip

report, Mike --

CHAIRMAN RYAN: Yes.

MEMBER HINZE: -- for the committee. So we can -- that will flesh out the details of the rather rough --

CHAIRMAN RYAN: That's fine, Bill. Thank you for the update here.

We have some time this afternoon -- I spoke earlier with a couple of our participants today who would like to speak tomorrow. I'll speak to that schedule in a minute, but there's an opportunity now if anybody wants to make any comments or address the committee.

Yes. Judy, would you like to do that?

MS. TREICHEL: Is this working? Hello? Hello?

CHAIRMAN RYAN: Just get right on top of it.

MS. TREICHEL: Okay.

CHAIRMAN RYAN: Thank you.

MS. TREICHEL: I'll probably die of a shock here.

The question was asked earlier about information going into the LSN, and I think it was a good one, and I wish that Ruth had been as hopelessly

involved in this as we have for so long, because that's a question that comes up all of the time.

And the DOE has very great turnover, and they have for a long time. And as Russ answered the question, everybody is told, you take all of your documents and your correspondence and anything that's relevant, and you turn it in.

Well, a lot of people are gone now, and you may- -- at this time, the problem may be getting less, because you have computers left with people's files and correspondence, and so forth, so you've got that. But with people who were there before, you may not. And even like the e-mail scandal that came up, it was through somebody else. Those weren't turned in -- I don't suppose -- by the same people. I don't know.

But there is so much to go through that it's unclear how they will know whether or not they've got everything.

The other thing I wanted to say was that if DOE had started out with Yucca Mountain with their site characterization plan, with something akin to what Jeff had presented here, and stuck with it, you wouldn't be facing the sort of dilemma that you've got now, and you wouldn't have the kind of project risks

that he talked about in such great numbers.

I suppose there's always uncertainties, but these terrific concerns or things that keep you awake at night are huge. And I would guess that they are, and the question was a great one -- what happens if you turn down the license application and you don't feel comfortable giving a construction authorization?

Well, fine. I would assume that when a kid comes in and threatens people with a car, that the guy that's looking at him for the driver's license would say, "No. You can come back when you know more, or with something else." So I don't think -- I feel uncomfortable if you're uncomfortable with their failure to get a license.

As a member of the public, and particularly a Nevadan, where we would hope that that would happen, it's lousy to hear that it might be unacceptable for there not to be a license given. But the risks belong with the applicant, not with you. I don't think you should be that worried.

Yes, there is a time table given in the Nuclear Waste Policy Act, but there was a time table for the first EPA rule, too, and that ran years and years and years. EPA didn't start making a time schedule until they threw out the most horrible

thing that we've seen in a long time, which is this latest up to the million year thing with 350 millirem.

But I don't think the time table rules. When you're talking about something for a million years, it's up to the applicant to have a scrupulously-prepared license application and to know all of these things. And I don't -- I don't think that you should feel that worried. I think NRC should worry about the way in which they review what they get, and it seems to me that with this plan you're in pretty good shape.

CHAIRMAN RYAN: Well, I think that's our focus is to make sure that the staff has a tool, and is prepared to do a -- as I think they both indicated, a thorough and detailed review of what is submitted. So our focus is on that aspect, not on the outcome so much.

MS. TREICHEL: But if they give you a lousy application, don't lose sleep. They need to lose sleep.

CHAIRMAN RYAN: They won't give it to us.

(Laughter.)

We'll give it to them. And, again, our focus is to make sure that the process of review is as competent and as thorough and well established as it

can be and needs to be.

MS. TREICHEL: Yes.

MEMBER WEINER: I'd like to get back to Judy's first comment, which was -- which she said to me a little offline. A lot of people have left the Department of Energy and have left documents behind, and there is a need to get all of that captured in the LSN. And I -- that is -- I think that is a concern with the License Support Network, that we -- that everything that has gone before when the person may no longer be here is a very long project to be captured.

And, April, I see you getting up. Can you enlighten everybody about that?

MS. GIL: Yes, Dr. Weiner. April Gil, Department of Energy. Let me expand on what Russ Dyer said earlier, and he just went over it in passing. He didn't emphasize this point.

The Department of Energy, in addition to being under the Licensing Support Network requirements in 10 CFR Part 2 Subpart J, also has federal records requirements that we have always had to operate under.

Even if we weren't working on an NRC license facility, because we're a federal agency, we have to maintain federal records. So for years, since I started on the program in 1989, we have always had

a records system, and we have had specific procedural requirements that flow down from the quality assurance requirements document to put records in the records system on a specific schedule.

We have complied with those requirements religiously. We've been audited, because it's a QA requirement to make sure that we were in compliance with those procedural controls.

Now, Russ Dyer mentioned, in addition to each individual being asked on a regular basis, "What records do you have in your -- or what material do you have in your possession that could potentially be LSN-relevant under the requirements of 10 CFR Part 2 Subpart J, in addition to the guidance that we've gotten from our OGC on what is relevant material, what you have in your possession?"

We also have the records system that was screened for LSN relevancy. So the records system has been in existence, as I said, for years and should have captured the bulk of that type of material.

In addition to the records system, which would capture hard copy material, we also have our Legacy e-mail, all the electronic e-mail that everyone has sent going back in perpetuity as far as I know, from the beginning of the program, has been screened

by contractors working under the auspices of our Office of General Counsel. And that's where some of the material came out that you're aware of with the USGS.

I think that was relatively recent, 1998 or 1999, but the e-mails have been screened going way back. And we have traditionally used the e-mail system for comments on the program. So between the records system and the e-mails, and the updates that we're being asked to do on a regular basis, I have very high confidence that the documentary material will be captured for the Licensing Support Network.

I hope that's helpful.

CHAIRMAN RYAN: Yes. Thank you very much.

MEMBER WEINER: Thank you very much.

CHAIRMAN RYAN: Any comments? I may look ahead to schedule, just to plan ahead for tomorrow. We have a break scheduled 3:15 to 3:30. The ACNW subcommittee will make a report on its visit to Savannah River and the Barnwell low-level waste disposal facility. That will be shortened up from 3:30 to 3:45.

We have a continuation of the discussion of possible letter reports. I crossed off the ones we finished today, and that we can shorten up to mainly

Allen's discussion from, say, 3:45 to 4:30.

And then, my suggestion is at 4:30 we offer the opportunity for additional public comments at 4:30 to 5:30. There won't be any other miscellaneous items for the committee to take up, and that gives everybody a chance who is here during the day. And then at -- we have an outreach session scheduled at 6:00 to 8:00 p.m., which we can take additional comments, but I just offered that for the folks that might want to make any statements tomorrow afternoon. We'll make that time slot available. Does that suit everybody that's interested in making comments?

Sir? Steve, maybe you could use the microphone, if you don't mind, just so everybody can hear you. Thank you.

MR. FRISHMAN: Steve Frishman, State of Nevada. My comments were largely going to be in relation to the presentation on the '95 NAS report. And I'd -- if possible, I'd like to be able to comment at that time, hoping that Bob Fri would be able to stay around.

CHAIRMAN RYAN: At what spot on the agenda?

MR. FRISHMAN: After the 8:40 to 10:40

presentation.

CHAIRMAN RYAN: Oh, the morning session. Let's see if we can make a slot there.

MR. FRISHMAN: I won't take more than just a very few minutes. I'd like to have Bob here.

MEMBER HINZE: Excuse me, Steve. Dr. Fri will be here by telephone only.

CHAIRMAN RYAN: Why don't we work it in right after his presentation.

MR. FRISHMAN: Okay. I'd appreciate that.

CHAIRMAN RYAN: And we'll deal with it at lunch and the break if -- to fit it in there. How's that?

MR. FRISHMAN: That'll be fine. Thank you.

CHAIRMAN RYAN: Okay. Great. So that'll work for everybody's needs, and on we go from there.

Any other comments or questions or items for today? Mike?

MR. SCOTT: Mike, just after you let the meeting go, I'd like to ask that the staff have a short meeting up here. We have a little bit of logistics to settle for tonight. So if the ACNW staff could meet with me here right after you let us go, I'd appreciate it.

CHAIRMAN RYAN: Okay. Great. Anything else? Any other comments?

Thanks everybody for your participation today. We'll look forward to seeing you tomorrow. Today's meeting is adjourned.

(Whereupon, at 5:01 p.m., the proceedings in the foregoing matter were adjourned.)