UNITED STATES
NUCLEAR WASTE TECHNICAL REVIEW BOARD

WINTER BOARD MEETING
January 20, 1998

Longstreet Inn
Amargosa Valley, NV 89020

BOARD MEMBERS PRESENT

Dr. Jared Cohon, Chair, NWTRB
Dr. John W. Arendt
Dr. Daniel B. Bullen
Dr. Norman L. Christensen, Jr.
Dr. Paul P. Craig
Dr. Debra S. Knopman
Dr. Priscilla P. Nelson
Dr. Richard R. Parizek
Dr. Alberto A. Sagηes
Dr. Jeffrey J. Wong

CONSULTANTS

Dr. Don Runnells, Shepherd Miller Corp., Fort Collins, CO
Dr. Jane Long, University of Nevada, Reno
Dr. Allan Freeze, R. Allan Freeze Engineering
Dr. Lynn Gelhar, Massachusetts Institute of Technology

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Auyako Kurahara, Writer/Editor
Linda Hiatt, Management Assistant
Jonathan Dunn, Staff Assistant

I N D E X

P R O C E E D I N G S

COHON: Good afternoon. We're about to get started. Would you please take your seats?

Good afternoon. My name is Jared Cohon. I'm the Chairman of the Nuclear Waste Technical Review Board. It's my pleasure to welcome you to the Board's first meeting of 1998 here in Amargosa Valley. And you cannot hear me in the back; is that right?

HIATT: We can't hear you either.

COHON: Okay. We're working on it. Is that better, Linda?

HIATT: A little higher.

COHON: Can you hear me now?

HIATT: Yes.

COHON: I can hear me now, too. I'll continue. If it's still difficult to hear, please wave your hand again.

Again, I'm pleased to welcome you here to this meeting of the Nuclear Waste Technical Review Board.

We want you to know who the members of our Board are, and for that reason, I'm going to introduce them to you. As I do so, I'd like each of my colleagues to raise your hand or stand up; at the very least, turn around so that the members of the audience can see you.

You should know that every one of our--can you

still hear me?

HIATT: Yeah.

COHON: You should know that every one of our members serves on the Board on a part-time basis. Every one of us has another job, usually full time, and in some cases more than full time. In my case, I, in addition to chairing the Board, I'm president of Carnegie-Mellon University in Pittsburgh.

You will note that as I introduce the members, I will indicate some of them as chairs of panels. For the purpose of keeping track of and doing our work for this large and complicated project, the Board has organized itself into five panels, and you'll be hearing about them, as I said, as I do the introductions.

John Arendt is a chemical engineer. He retired from Oak Ridge to form his own consulting firm. He specializes in many aspects of the nuclear fuel cycle, of which standards and transportation are two examples only. He chairs the Board's panel on the waste management system.

Dan Bullen is Associate Professor of Mechanical Engineering at Iowa State University, where he specializes in nuclear engineering, and in particular, nuclear waste management. He chairs the Board's panel on performance assessment.

Norman Christensen is Dean of the Nichols School of

Environment at Duke University. He brings expertise to the Board in the areas of biology and ecology.

Paul Craig is Professor Emeritus of Engineering at the University of California at Davis. He's a physicist by trade, and his special expertise and research interests at present are in energy policy issues related to global environmental change.

Debra Knopman is the Director of the Center of Innovation and the Environment in Washington. She's a former deputy assistant secretary of the Department of Interior, a former scientist and science manager at the USGS, an expert in groundwater hydrology. She chairs our panel on site characterization.

Priscilla Nelson is Program Director in the Directory for Engineering of the National Science Foundation in Washington. She's a former professor at the University of Texas and an expert in geotechnical engineering. She chairs the Board's panel on repository.

Richard Parizek is Professor of Hydrologic Sciences at Pennsylvania State University, an expert in geology and groundwater hydrology. Richard will be chairing tomorrow's sessions on the saturated zone.

Alberto Sag$_{\eta}$es is Professor of Civil and Environmental Engineering at the University of South Florida. He's an expert in materials and corrosion, with a particular

expertise in concrete and its behavior under extreme conditions.

Jeff Wong is Chief of the Human and Ecological Risk Division of the Department of Toxic Substances Control of the California EPA in Sacramento. He's an expert in risk assessment, and he chairs our panel on environmental regulations and quality assurance.

The Board from time to time engages consultants for particular meetings and for other purposes, and I'm pleased to introduce to you today those who will be participating in this meeting; Don Runnells, Jane Lon, Allan Freeze and Lynn Gelhar.

Allan is a former editorial colleague of mine, and Lynn, my former teacher, so I will not be asking any questions about groundwater hydrology at this meeting.

The Board is supported by a very competent staff, most of whom are here today. I'm not going to introduce them in the interest of time. I encourage you to meet them during breaks and after the meeting.

We have a very full agenda over the next day and a half. The first day, that is the rest of today, begins with a series of updates from the Office of Civilian Radioactive Waste Management and its project managers. We're very pleased that acting director, Lake Barrett, can be with us today. He'll be talking about major events and changes that

have taken place in the program since he last addressed the Board in October of '97.

Dr. Russ Dyer, the acting project manager, will provide us with an overview of significant results obtained in the site characterization effort.

And Wendy Dixon, the assistant manager for Environment, Safety and Health, will describe the work being undertaken to develop the Environmental Impact Statement for the repository. This EIS will be part of the Secretary's decision, by the way, to recommend to the President that Yucca Mountain be developed as a site for a repository. The Board believes it is critically important that this document provide rigorous analysis of the key technical environmental issues.

After these presentations, we'll move into a somewhat different mode from the Board. We want to solicit the input from members of the audience, all of you, or any of you who care to speak, on the draft plan that the Board is putting together in response to the Government Performance and Results Act, or it's known effectively in Washington as GPRA. There are copies of this plan available, or they will be if they're not at the moment, and we urge you to comment upon them. We'll be making a presentation on this plan in the afternoon and invite your comment afterwards.

Another departure is that we're going to repeat

that performance this evening. After a dinner break, we'll reconvene, and we'll be entertaining your questions again on our plan and about anything you want to talk about, and in particular, technical activities carried out by the Yucca Mountain Program.

As this Board has shown in the past, it is interested in engaging with members of the public who have interest in this program, and in this wide ranging, we expect, session this evening, we will welcome questions on any related topics. We will either do our best to answer them or try to ask people from DOE who might be in the audience to field those questions. In any event, you will be heard, and we expect some interest and discussion.

One of the questions that's asked from time to time, especially after or during one of our meetings, is when a particular member of the Board speaks up in response to a question, is that member speaking for the Board?

As many of you know, and if you don't, you're about to see for yourselves, the Board is made up of a group of individuals, each with his or her own style, personality, interest and motives. So the answer to the question, frankly, is quite simple, they speak for themselves.

The Board conveys its findings, conclusions and recommendations in writing in the form of our formal reports, letters to Congress and the Secretary and/or the director of

the program and in written congressional testimony.

Comments by individual members, including me, are just that. Whether comments of a Board member eventually become a Board position, only time will tell.

Another matter that has come up in the past and we've discussed at these meetings is the communications and interactions between the Board and DOE. At our last meeting in October that we held in Washington, we made a commitment to provide to the DOE relatively rapid feedback following each of our meetings in the form of letters to the program director. Such letters are intended to give initial Board reactions to at least some of the key issues covered at the meetings.

We just recently forwarded a letter report to Congress and to Secretary Peña, and 10 days ago, we sent a letter to Lake Barrett, the acting director. Copies of both documents can be made available by request.

Now, finally, a few housekeeping administrative items. We ask all participants to sign in in the back, if you will. We'd like to know who comes to these meetings. And as those of you who have come to these meetings before know, they are on the record. That's why Scott is sitting here. We ask, therefore, that all speakers, whoever's speaking, whether it be a Board member or presenter or questioner or commenter from the audience, please speak

clearly, into the microphone, and before you start speaking, tell us who it is you are. You'll see that the members, Board members themselves do this.

I would also ask for those of you who would like to speak during the public comment period, either this afternoon or this evening, that you sign up at the back with Linda.

Linda, you can hear? Good. There's Linda.

If you would sign up, that would be helpful to us.

Now, with that, let me turn to our agenda. I'm pleased to introduce to you Carmen McCrae, Vice Chairman of the Nye County Commissioners. Mr. McCrae is from Pahrump, and he has appeared before this Board before, I understand seven or eight years ago. So, Mr. McCrae, we are pleased to welcome you back.

MCCRAE: Thank you very much. Ladies and gentlemen and visitors, good afternoon on behalf of the Nye County Board of Commissioners and the residents of Nye County and the community here, Amargosa Valley. I am pleased to welcome you to this community. I am even more pleased that you are here to be welcomed.

We are fully aware of the difficult appropriation experience that you have been through as a result of the Board's stand on interim storage. You should know that we have been strong advocates for the Nuclear Waste Technical Review Board on Capitol Hill. Nye County believes that you

have a critical and unique oversight role that must be sustained.

And we can empathize with your challenge of convincing Congress of the importance of your work. Nye County and other affected units of local governments have been without the funds needed to conduct meaningful or monetary oversight since fiscal year '96. We are pleased that Congress has reinstated our funding. As has always been the case, Nye County is committed to maintaining an independent oversight program of high quality and scientific integrity.

You should know that we value immensely our on site representative role in independent scientific investigations above all other work performed by our Nuclear Waste Office. We expect our technical staff to meet the highest standards of quality and objectivity.

Nye County has appreciated current and past invitations to speak to you on our science, our concerns and our ideas. Originally, and I think one of the big important issues that the meeting here in Amargosa puts forth, is five years ago I stood before the Board, and we talked about the public perception of the credibility of DOE and its work and how the public perceived the overall issue of what was happening in the Nuclear Waste Program. To be able to now say that you have come to our backyard, so the nepotism

that's out there, I'll hope that you'll now be able to appreciate personally that Yucca Mountain isn't just a vast thousands of acres of desolate desert, that people actually do live here, we raise our children here, and we expect to continue to do so in the safest manner appropriate.

Now, I ad libbed. You'll say that wasn't written there, but I added that because I personally feel that way. That's what I said seven years ago approximately, and I firmly believe that today.

We are especially concerned that all the Yucca Mountain site characteristics are fully considered in DOE's upcoming viability assessment in its waste isolation strategy. We all know that the geological features of Yucca Mountain are not what were anticipated when it was originally identified as a candidate site for the deep geological disposal. We have been on record as far back as 1990 with our concern that site deficiencies not be met by a national drive to license a repository at all costs. We have spoken of our fear that the institutional momentum will simply drive the final suitability and licensing decisions.

In light of this potential, we have even suggested that a ventilated repository is needed to overcome the deficiencies we see in a very fractured site. Yet, we have seen no evidence that DOE plans to evaluate this alternative design as part of its viability assessment or its suitability

analysis. The Board must continue to weigh in on this critical design issue.

Again, ladies and gentlemen, I just want to say welcome to Nye County. Thank you for bringing this important work and this important issue to the people who it's potentially going to mostly affect, the ones that are going to live with the decisions that you make for hundreds and thousands of years.

We look forward to our staff being able to participate in your deliberations that you have here the next couple days, and I would ask that if you have something that you need that's not supplied, grab one of our staff people, and we'll certainly see if we can accommodate you.

I'm in the middle of--we have a Commission meeting in Pahrump today, and so I'm going to have to return, but I hope to maybe be able to get back and see you again before you leave.

So thank you very much, and welcome again to Amargosa Valley.

COHON: Thank you, Mr. Commissioner.

In calling on Lake Barrett, let me introduce him at the same time, as you're making your way up there, Lake. If you don't mind, I'll do it from where I'm sitting.

Mr. Barrett holds bachelors and masters degrees from the University of Connecticut. He's been with DOE since

1985. At one point, it was at the Rocky Flats Program before he joined this program. He served as deputy director since 1993, and was appointed acting director of the Office of Civilian Radioactive Waste Management almost exactly one year ago. Lake, I'm sure you noticed. He's had many years of experience as well in the private sector. Welcome back, Mr. Barrett.

BARRETT: Thank you very much, Mr. Chairman. No, I don't keep track at all. I don't know, having so much fun, you really can't.

I've been to many Board meetings and such meetings, and I don't think I've ever been to any nuclear waste meeting with a view as beautiful as we have out here in Amargosa Valley. So I commend the Board for having this meeting here for many reasons, and in the least of that is the view we have here. It's a beautiful valley in the mountain.

Thank you for the opportunity to appear here today to provide my perspective on the program. I regret I won't be able to stay here tomorrow. I have to speak at a California meeting tomorrow, but I will be able to stay here tonight through the public meeting, so I'll try to assist in any way I can during that.

When I spoke to you in October, I noted that 1998 was an important year for the program as we complete the viability assessment of Yucca Mountain. Completing the

components of the viability assessment and the supporting documentation is a massive effort. It requires the complete attention and focus of our program participants. We are on track and will deliver the viability assessment components to the Secretary this September. Dr. Dyer, the project manager, will update you on the specific progress we have made following my talk, and I will use my time on the agenda to discuss the broader policy settings and the significance of the viability assessment to the continuation of the geologic disposal program.

Before I address the geologic disposal program, I would like to note some recent developments since our last meeting in October.

On October 30, 1997, the House passed a bill that calls for the development of an interim storage facility in Nevada. The Senate passed a bill last April with similar objectives, although several provisions are different. A conference committee may meet sometime in the next coming few months to resolve the differences between the bills. The President has stated he would veto either bill if presented to him in their current form. The outcome is certain, especially since there does not appear to be much legislative time on Congress' election year calendar.

On November 14, 1997, the District of Columbia Circuit Court ruled that the delays clause in the standard

contract between the utilities and the Department of Energy provides a potentially adequate remedy to contract holders for the Department's failure to begin disposing of nuclear waste a week from this Saturday; that's January 31, 1998. The Court denied a request from the petitioners compelling the Department to begin disposing the fuel this month, and also authorization to escrow the fees. The Court did preclude the Department from excusing its failure to accept waste on the grounds that it has not yet established a permanent repository or an interim storage facility.

On December 29, 1997, the Department filed for a rehearing, asking the Court to consider certain aspects of the ruling. In the meantime, the Department continues to explore approaches to resolving this issue in a manner that is fair and equitable to all parties.

In another court case, decided on January 13th, the 9th Circuit Court upheld the Department's decision not to make Fiscal Year '96 payments to the State of Nevada for oversight activities at Yucca Mountain. The Court found that while absent other statutory direction, the Department must provide oversight funds to Nevada. The State had sufficient funds available at the beginning of the fiscal year 1996.

The President has emphasized the importance of geologic disposal to both the long-term management of commercial spent fuel, the cleanup of the nuclear weapons

complex, now that the cold war is over. And geologic disposal also underpins our international non-proliferation policy and supports our national security objectives.

Despite our recent accomplishments, the future of the geologic disposal program is uncertain. There are those who will clearly oppose geologic disposal, and I would expect that they would use the viability assessment to try to stop the program. Some will claim that the environmental impacts and risk to the Yucca Mountain repository are too large or too uncertain and that a new unknown course should be attempted. Others will call for abandoning the expensive repository and establishing a central interim storage facility, and rely on major societal investment in a future advanced technology of nuclear reprocessing and a new generation of nuclear power generation facilities.

Both of these arguments seek to reconsider the international consensus on geologic disposal and, in my opinion, are a step backwards in the face of accumulating inventories of spent fuel, acceleration of cleanup of the nuclear weapons complex, and support of our international non-proliferation and national defense objectives.

The viability assessment will help the Congress and the President define the nation's path forward for a long-term management of high-level radioactive waste and spent nuclear fuel. The viability assessment components will

objectively describe the design, the performance and the cost of a Yucca Mountain repository based on the information collected to date. The assessment will also include a path forward for completing site characterization and developing a site recommendation and a license application if we determine that continued investments in geologic disposal at Yucca Mountain are prudent.

The debate regarding the viability assessment and geologic disposal at Yucca Mountain is likely to be contentious and polarized. The views of informed, independent parties, such as this Board and the Nuclear Regulatory Commission, will be very, very important. We want the viability assessment to be considered in the proper context. The information presented is not claimed to be sufficient for site recommendation nor licensing. Uncertainties will remain. Focusing on the details not yet fully developed, however, may obscure the national issues and the substantial progress that we have made. It could also undermine the continuation of the program.

The costs and environmental impacts of a Yucca Mountain repository should not be judged in the abstract. These issues should be viewed within the context of the potential alternatives, including the no-action alternative. There are no perfect solutions. All of us, as members of the international community, must provide an adequate, sound

high-level waste management program for our present and also for future generations.

I would also like to discuss with you your most recent report to Congress and the Secretary and the status of our related testing activities. We appreciate your recognition of the considerable progress we have made investigating Yucca Mountain. We share your enthusiasm for the well-integrated effort resulting in the timely completion of the drift scale heater test facility. As I say, I personally--we challenged the project to get that done ahead of schedule, and they responded beautifully by getting that done. And it was a tremendous task, and I do appreciate your comments to the team because they really did extra to get that done.

The construction of the starter tunnel for the cross drift is well underway, and we expect to launch the small tunnel boring machine in April, 1998. The excavation is expected to be completed on schedule in September, 1998. The testing phase will continue for several years after excavation is completed; however, visual observations and mapping will be completed as the excavation proceeds.

We understand the Board's desire to see the data collected from the enhanced characterization of the repository block initiative, which will be included in the viability assessment. We will ensure that observational

information is considered to the extent practicable. Most of the information will be considered for site recommendation and included in the license application.

The significance of information contained in subsequent testing and design activities, however, should not devalue the viability assessment. The viability assessment will help facilitate a general agreement between the program and its regulators and overseer on the remaining work necessary to evaluate the site and to complete a defensible license application.

We are also constructing a new underground facility at Busted Butte in the Calico Hills rock unit to provide an analog similar to expected conditions within and below the potential repository horizon. Tests will be conducted to validate laboratory data and conceptual numerical transport models. This testing is intended to reduce uncertainties in our assessment of the potential transport of key radionuclides from the repository area, through the unsaturated zone, to the water table underlying Yucca Mountain. The tests will also address the importance of colloid-facilitated transport of radionuclides, especially long-lived plutonium.

Underground construction began in mid-December, and we expect it to be completed next month. The test bed construction and instrumentation are expected to be completed

late this summer.

Concerning performance assessment, we recognize the importance of the support from the scientific community at large. To ensure that our conclusions are based on state-of-the-art models and appropriate data, we are using an independent peer review panel for total system performance assessment. As you are aware, this panel presented its second interim report at a public meeting earlier this month. Its final report will follow the viability assessment and influence how we proceed with the performance assessment for a license application.

Your recent report emphasizes the importance of both natural and engineered barriers to repository performance. We agree, our analyses demonstrate that the performance of the engineered and natural barriers cannot be evaluated in isolation of one another. This philosophy supports our development of a robust waste package design, as well as enhanced engineered barriers, complemented by the natural environment.

You recommend that we should develop viable alternatives to the current reference repository and waste package designs, and that these alternatives should evolve over time as our understanding of the site and the interaction between the natural and engineered systems further evolve. We agree that the repository and waste

package designs should not be prematurely fixed and other potential options and alternatives should not be foreclosed.

At the same time, however, a workable reference design is essential for the viability assessment and the rational completion of site characterization. The Chairman of the Nuclear Regulatory Commission noted several years ago that a lack of a coherent design concept had been a source of discomfort for the Commission. We recognized this concern and have developed a reference design concept for the repository system. This concept and an assessment of its performance provides the frame of reference required to evaluate the sufficiency of the site characterization data and analyses.

Your recent letter suggested alternatives beyond design add-on options should be addressed as a cost-versus-performance choice in the viability assessment. Addressing design alternatives, different from the design add-on options, will continue to be an important part of the overall design process.

For the viability assessment, however, we believe that the feasibility of geologic disposal at Yucca Mountain is best addressed by focusing on a working reference design concept. This ensures that the components of the viability assessment rely on consistent information and the results are not biased by the selection or omission of particular

alternatives.

We consider design to be work in progress. We will further evaluate various design features and concepts following the viability assessment. We expect that design alternatives will continue to be evaluated throughout the repository licensing, construction and operation. Our design strategy recognizes the need for a workable reference design to support the development and review of a license application, as well as the reality that technological advances can be expected over the decades of repository development and operation.

We are preserving flexibility to ensure that the design features identified now, as well as those that emerge with advancements in technology, can be accommodated in the repository development process. To efficiently manage the program, however, minor modifications, as well as major design changes in paradigm shifts, must be implemented through a formal design control process. Not only is formal design control a good management tool and required by our quality assurance program, it is an absolute requirement under the Nuclear Regulatory Commission regulations.

Your recent report also mentions efforts to enhance communication between the program and the Board. Effective communications are essential to ensure that the Board fully understands the ongoing scientific work and, in particular,

the viability assessment components. Given the significance and consequences of the Board's views, it is important to ensure that you have all the appropriate information on which to base your future messages.

The focus of our work in science and design this year is directed at providing the necessary information for an open and transparent viability assessment. To demonstrate our commitment to openness, we will make the results of our world-class science and engineering studies available on the Internet soon after the release of the viability assessment.

One last point I would also like to mention, is that in our effort to streamline operations, I regrettably have had to make the decision that we will have a formal reduction in force in the program, with letters going out later this month. We will be reducing 22 positions in the headquarters organization and no force reductions here in Nevada.

Overall, we will have shifted the balance of staffing from headquarters to Nevada. We will reduce the headquarters' staff by 50 per cent and increase the Nevada staff by over 40 per cent over the past five years.

In conclusion, it is clear that the geologic disposal program faces a number of challenges this year. The program is focused on completing the viability assessment, as required by Congress and the President. The viability

assessment will be a snapshot of the project in mid-1998. It is intended to help identify additional work needed to make a site recommendation in 2001 and a license application is 2002.

This milestone is important to the nation's geologic disposal program and will represent the culmination of a significant effort by all the program participants. We intend that this assessment will provide an unbiased, technically sound, state-of-the-art analysis of a potential repository at Yucca Mountain. We look forward to the Board's review of this effort.

I'd be happy to attempt to answer any questions that the Board may have at this time.

COHON: Thank you, Mr. Barrett.

Questions from the Board? John?

ARENDT: Excuse me. John Arendt.

What's the status of the recent issuance of RFP for privatization transportation of spent fuel?

BARRETT: We issued in December of '97 the--it was actually the very end of November--a revised draft, request for proposal for transportation waste acceptance services. This is our approach to use a market-driven approach as opposed to a government-owned and contractor-operated transportation system.

We issued that revised draft in December. We've

asked for comments, I believe, in February, and that is being reviewed now. It is our plan to tune that up so that is in the best available shape that can be in. And if the nation decides either Yucca Mountain or otherwise to where the receiving facility be placed, we would then kick the transportation to a higher view. We would not go forward with any actual request for proposals until that time.

ARENDT: So you'll kind of tune up the document and then stand ready for whatever needs to be done in terms of transportation?

BARRETT: That's correct. All our budget authority basically is being used on the Yucca Mountain scientific program.

ARENDT: Yeah.

COHON: Dan Bullen?

BULLEN: Bullen, Board.

A couple of quick questions, Mr. Barrett. First, when you talk about alternatives to the reference design and the importance of a formal design control process, I understand that that's a very important procedural notion for changing designs. And I guess the question that I would have is, by what criteria do you do an evaluation to determine how you change and make the alternative design change?

And as a follow-on to that, I wanted to ask about sort of the time frame that you have with respect to making

those kinds of changes? You have a real tight window of suitability assessment license application coming up quickly, and it seems that it might be very difficult to make those changes or paradigm shifts if you so choose.

Could you comment on those, please?

BARRETT: Well, the process--let me try that one first. The process is a formal process where basically the engineering folks are looking at changes in design from simple modifications of an existing design to a complete paradigm shift with a different approach. It will be handled the same way where the engineering disciplines are responsible to analyze those changes, write them down as to what the impacts are, what their costs are, and if they believe the change should be made, to submit it to the board of the project. And there's a threshold, the project manager makes certain decisions. As a threshold, I delegate it to Russ, and then some of those come to the headquarters or the directors, depending on what the threshold is. But it's the same process. And if it's a little change or a big change, the same formality exists.

The time period is, yes, there is a relatively short period of time, but we have a good team that's going to be looking at these. We're going to look at what--I believe the Board refers to them as alternatives, which some of those are major paradigm shifts in a way. We believe we have time

to look at that in the post VA period. We will probably discuss those to the best of our ability in the viability assessment in a qualitative, non-quantitative way.

One thing I do not want to do is do performance cost analyses and not do them well. I would rather not do them and do them--I'd rather not do them poorly. I'd rather just defer them and do them later. And I believe we will have time in the '99 and 2000 period to look at those.

BULLEN: Bullen, Board again.

So you're saying that that's in the plan, and that's in the budget, and that won't be an undue burden to take a look at the alternatives post VA?

BARRETT: It's the right thing to do, and we'll do it, and we will fit it in the budget.

BULLEN: Okay.

BARRETT: Now, we may have future debates about how much of this you do and that type of thing, but we will look at these design alternatives, enhancements, whatever one wishes to call them.

BULLEN: Okay. One quick change. Again, Bullen, Board.

You mentioned that the enhanced characterization repository block is underway, and you're getting ready to launch the--or to launch the tunnel boring machine with the starter tunnel. Has a true DIE been completed? I know that that's in the works and that it's underway. This question

was asked in June and probably again in October, and I'm just reiterating that when might the DIE be done, and could we see it?

BARRETT: Let me ask Russell if he might want to have somebody who is closer to these actual day-by-day engineering evaluations on that.

Let's get the answer to your question later and get back to you.

BULLEN: That's fine. I just wanted to reiterate that I'm still interested. How does that sound?

COHON: I don't think there's any doubt about that.

Debra Knopman?

KNOPMAN: Knopman, Board. Three quick questions, Lake.

I think in either June or October, I asked about whether an executive summary would be part of VA. Has that decision been revisited, and if so, where are you now on that?

BARRETT: We've made some decisions on the format. There will be an executive summary as part of the VA package. I don't know, Steve, would you want to--or Russ?

DYER: I'll talk a little bit about that in my presentation.

KNOPMAN: Okay.

BARRETT: Okay. Russ will go over that. We do have an outline now of what the VA package will be, and Russ will be

talking about that.

KNOPMAN: Okay, second question. You mentioned as part of VA, that there's some notion of sufficiency of work to be done in preparation for LA, and I'm wondering if there's specific criteria for sufficiency that will be part of VA that you've laid out; that is, how much work is enough to get to LA? I mean, that's clearly implied by the idea of laying out a work plan, but I'm wondering if there is some quantitative measures or criteria that have been specified.

BARRETT: To my knowledge, there is no quantitative criteria of sufficiency. It's what is basically the judgment of you have a sufficient information to make the site suitability decisions and recommendations to the President and then a defensible complete license application. So that's a judgmental thing that there's no quantitative criteria that I'm aware of.

KNOPMAN: Okay. And finally, just on this design question. Since the EIS, we'll hear a little bit more about that, is on a pretty tight schedule as well, and it has embedded in it alternatives, to what extent will VA kind of hone in on the alternatives that will be included in the EIS? That is, will they jive with the things that you're imagining you'll probably pick up after VA and what will have to be in the EIS and be worked on now?

BARRETT: There's always a time lag, and what we're

going to do is try to keep that time lag as short as we reasonably can and consistent with following the NEPA processes and the design of it. When an engineer has good ideas, and this Board is filled with good ideas, okay, to actually going through the processes and then actually implementing it, giving the engineer the changes made, then crank it back through the NEPA process, there is a time lag.

I believe that when Wendy talks to you about the EIS, there will be sufficiency in the design alternatives and things she's planning on doing as best she knows them, and she started this in the scoping process where this was discussed. But she will never get a one-to-one time because there are many design alternatives that we don't know about yet and won't know until really post licensing and post operation.

But the basic way I look at the design is you have a good base reference, and basically design changes are going to be better than this. We're going to be--perform better maybe cost less, or they'll have a positive performance cost ratio as you go through it, which you never can crank these all through because you don't know what they're going to be.

But Wendy will talk to you some more about that to the degree we'll be able to have all the good ideas in that because you won't have them all.

COHON: Jeff Wong.

WONG: Jeff Wong, Board.

Lake, you're currently preparing a case for continued investment in Yucca Mountain, and I'd be interested in hearing your personal views as to what you think are some of these strongest elements thus far that the DOE has to support that approach or that case.

BARRETT: Well, I wouldn't say we have a view as to-- what we're going to try to do is look at Yucca Mountain as the best available analysis of what a repository would perform at Yucca Mountain and what it would cost. If that's good enough or not good enough, I don't know. That will be EPA standards and adjudicatory processes that we haven't been through yet.

I see nothing at this point where we should abandon the effort and stop doing it, okay? So we will evaluate the best science can do to what a repository would be for a good reference design. An optimized design, no, it's not, okay? But a good basic design that you could do sketches of and drawings and show to people like, you know, former Chairman Cantlon, as here's a reference design, it's an adequate design and good design.

But I don't really have criteria, a go, no-go point, because that will be part of the process from the EPA and others.

COHON: This is Cohon, Board.

Any good rumors about an EPA standard?

BARRETT: It's always this month, but not this week. So I honestly don't know.

COHON: Priscilla Nelson.

NELSON: Nelson, Board. Hi, Lake.

I'm going to ask a question that I'm not sure I'm going to be able to frame it all that clearly and succinctly, but the question deals with the alternative concepts or at least looking towards a future, which I know you believe the finished repository, maybe--I don't want to put words in your mouth, but I think I've heard you say that the repository that finally gets built, should one be built, may not at all be the one that's proposed at the time of VA. We expect this to be a living document. We expect evolution in our understanding and some responsiveness on the part of the engineers as the repository construction may occur.

But the sense of the criteria used to look at some of the concept, the alternatives, and not only the criteria, but also the fact that different concepts require different kinds of input data and different kinds of models, which may not be captured now, or which, in fact, might represent in the next couple years in order to evaluate, for example, some of the alternatives thoroughly, you'd probably want to capture some additional data that may not be part of the core site characterization that's in the plan right now.

So not only the alternatives should be considered, but maybe also planning for acquiring the data, the information that would permit that to be evaluated has to happen very early as well in '98-'99 in order to permit that consideration to happen.

So it's not just a tradeoff alternative consideration. It's also planning to acquire the data to permit that in terms of the impact on site characterization.

So that's the question. Is there framework? How do you see that happening in terms of if you choose to think about an alternative, there may, indeed, be additional data or different data that you would want to acquire in order to evaluate that alternative.

BARRETT: It's a very, very good point. I think it's true. What we did is started the evolution. We started off this program, you know, 15 years ago, basically, looking at the national setting in a broad sense, with the 6,000-day site characterization plan, many experiments, doing many different things. We've grown to understand the mountain. Then we started to focus now on different concepts, and we now are focusing on a reference design for the viability assessment and what the performance of that design would be.

We are focusing the national science program on that design and on alternatives, other things that we know, because most of these, as the Board's pointed out, their

performance will be giving very much to water. It will give very much to stability, give very much to thermal mechanical coupled processes.

We have what I consider a very robust scientific program in that area with that information that could be used on many different types of design alternatives. I don't know of any information that we could not get in a reasonable time frame to support other alternatives based on the basic broad program that we had before. If something does come to mind, what we would do is adjust our scientific program to gather some of that information.

Now, one thing I don't want to get caught into is better is the enemy, we'll pick them up and we get there because you'll be doing iterative asymptotic analyses, and you would never reach any conclusions. That's the thing that I'm sensitive to, that we don't get into analysis paralysis and you never reach any decisions, be it by building assessment, be it site recommendation, be it a license application. I believe it can go on in parallel as we go through it.

NELSON: Okay. Nelson, Board.

But in the laying out of the site characterization plan to be continued between '98 and 2001, there's actually explicit consideration of what alternatives are going to be progressed with and what data is needed, what experiments

might be needed, what observations might be needed in order to feed into those alternatives. I don't think I've seen a layout like that, and if there were that kind of a mapping of the data input and what you'd need to consider different alternatives, that would be interesting, I think, for us to have.

BARRETT: What I believe we are going to do is we will have the fairly detailed map from the viability assessment point at the end of this year to the license application on what we will be doing for the reference design. As we look at other design alternatives, if we determine that substantial changes needed to be made in the scientific program, we'll do that through budget change.

What we're trying to do with the cost and what I believe the intent of Congress was when they passed the viability assessment, put in '97 appropriations language, was to get a handle on about how much of an investment would there be between the viability assessment and the license application.

And the understanding at the time with our projects was that was around a billion dollars. When we finish the viability assessment, we will have spent about three billion dollars on the Yucca Mountain work, and that would be another billion dollars to tune that up to get to the license application stand.

We want to lay that out in some detail for the Nuclear Regulatory Commission, for the Board and others to see. If you see that something is missing that is significant--now, what I mean by significant is we be significant in budget space--that's the time you should have some discussion. Small things, small experiments, those can be handled within the budget space.

NELSON: Nelson, Board.

I'm sensitive to some of the budget issues, but also time issues. Time becomes a budget issue as well. I mean, some of these require leave time in order to address, but if that kind of a layout is developed, that would be interesting for the Board to see.

COHON: Richard Parizek?

PARIZEK: Yeah, Parizek, Board.

I want to know a little bit more about the Busted Butte analog study you mentioned, unless someone else is going to present this to us a little later in the program because you're looking at unsaturated zone issues. Will it conclude faults and water transfer along the faults, the whole question about the colloidal experiments, and do we have a study plan that we could look at? I don't know if the Board has received this or not, but I've not seen one. I would be very interested in the details of this because some of this has to come out of, I would think, the expert

elicitation panel on saturated zone issues. There were 22 issues raised back a year ago last summer, and the question is how many of these issues might be dealt with in a Busted Butte analog study.

BARRETT: Russ, do you want to--

DYER: Dr. Parizek, I'm going to talk about that a little bit in my talk. Maybe it would be best if we cover it at that time.

PARIZEK: Thank you.

COHON: That's fine. Jeff Wong, another question?

WONG: Jeff Wong, Board.

Lake, can I ask my question again? You obviously--the DOE wants to make the case for continued investment, continued characterization of the mountain.

BARRETT: Not necessarily. I mean, if we find that Yucca Mountain has, you know, huge doses found right here, okay, or we find that it is many, many millions of dollars beyond what we envision it is, we'll blow the whistle on it and stop it. But I do not have a preconceived--we are going to justify going for Yucca Mountain no matter what. I'm going to wait and see what we have. I see no reason today that I think it's going to come out that way, but I do not have a preconceived conclusion that Yucca Mountain is going forward without seeing the output of the viability assessment. It's not a given that we're going to do a

repository at Yucca Mountain no matter what.

WONG: Well, again, then on supporting or not supporting a positive finding of viability, what are the elements that you think right now are the strongest elements for or against viability?

BARRETT: There are the environmental impacts out for the many millennia; what are those impacts, and what are the --can we design a repository and build a repository with basically no technology, okay, and what are the costs of that repository?

If the repository costs are say $100 billion to meet a reasonable performance, I don't think I would recommend going forward to the Secretary. If we have mega doses down here, okay, in short time periods of a short millennium, I don't think we would recommend going forward. If it's in the range of risks that are accepted by modern society within reasonable costs, we would probably propose to go forward, but I'm not going to prejudge what those outcomes are.

Based on the preliminary work I've seen, I don't expect any surprises, but, you know, it's not done yet. But we are excluding not in the situation where we know the answer is continued. Do our budget plans and our program plans--we are in the midst of proposing a revised program plan--show going forward to the next steps? Yes, it does,

for planning purposes, but we have to look and see what it is going to be. And the standard setting is a process that we don't control. We do not know what those standards would be yet, and we're going to have to look and make judgments. Can science and technology meet those standards as to the degree of uncertainty that the Nuclear Regulatory Commission will require? We'll have to wait and see what that is.

COHON: Cohon, Board.

The history of the viability assessment was, when we first heard about it, we wondered mightily what it meant, and then we came to realize what we thought it was. And then we were eager to be sure there would be no confusion between viability and suitability, and that all seems to be behind us now, which is good. And this Board has endorsed viability assessment as the management tool that DOE has characterized it to be.

Still, I think there's the remaining delicacy for DOE in making sure that people understand what the VA is and is not. And I, and this is purely a personal view, I'm not speaking on behalf of the Board, continue to worry that if that explanation is attempted at the time that the VA is released, it may be too difficult because you've got this big document that you're faced with suddenly, and people may not listen so carefully about what it isn't and what it is.

Is DOE pursuing any strategy so that the key

recipients, the key audiences for this report will be prepared to understand what it is and is not?

BARRETT: The only things we are doing with the key parties, and this Board is clearly a key party, the Nuclear Regulatory Commission, the State, the County, is to--and the scientific community is, is that we will have our science and engineering documented in as open a manner that we can so we can show people the sciences, the peer review process, the expert elicitations, et cetera. And then--so we'll have that be opened. So hopefully there are no big surprises of some science emerging issue, but there will be issues. I think the colloids is an issue that will come and will go, and others will come and go, also.

And then discuss with the Commission the formal settings and informal settings--with the Commission and with the Board, what we're doing here today. That's all we've done.

COHON: But what about members of Congress, key committees on the Hill?

BARRETT: Went through the Congressional testimony and then, you know, briefings that we do to the Congress. We go over what the viability assessment is and is not, standard charts that you've seen. It is not a federal decision, et cetera, because of the NEPA, et cetera. So it is a budget--it will shape the budget, as I think we discussed at the last

meeting. The President will reform his FY-2000 budget at that period. So we have gone through that with many of the key leaders.

I expect that there will be many parties who will try to make the viability assessment into what it is not one way or the other.

COHON: Indeed. Other questions for Mr. Barrett? Any staff questions?

May I suggest that questions to the audience, I think we can safely save those until the public comment period. Mr. Barrett will still be here. If you have a time issue and you can't stay for the afternoon, then by all means, please come forward. But otherwise, if you could hold your question, it would be appreciated. Is that okay? Thank you.

Thank you very much, Mr. Barrett.

BARRETT: Thank you.

COHON: Russ Dyer is our next speaker. He's acting project manager of the Yucca Mountain project based in Las Vegas. He holds a bachelor's degree from Rice and a Ph.D. from Stanford. He was on the faculty in geology at the University of Texas at El Paso before joining DOE. Before being named acting project manager, his current position, he was the deputy manager of the Yucca Mountain Project.

Welcome, Dr. Dyer.

DYER: Thank you, Dr. Cohon.

Can you hear me in the back? Are we on? Okay.

You probably have a very thick package of material. It might put you at ease, I'm not going to try to go through every word in that whole presentation. What I want to do is to hit on some of the pertinent points in there. You'll notice that the pages are numbered. I may not hit every page. For the Board, if you have specific questions, I would urge you to jump in, as you were moved, and we'll address things as we go through.

What I want to do is look at from a fairly high level what's going on in the project now, what we're concentrating on, what are some of the issues we're looking at, give you some status, some update of some of the things that are going on, and just to set the stage.

We've talked about the viability assessment, the four components of the viability assessment, and some of the things that are actually going on in the technical arena, but you haven't heard anything about the management system and processes that we've put in place to manage the viability assessment, how decisions are made and documented associated with the viability assessment. I want to talk to you a little bit about that.

I want to talk to you about the components of the viability assessment, how we're doing, what the status is of

the various things that are going on related to the viability assessment; then talk about some of the activities going on in design and scientific testing and core science activities, and then kind of review the near-term key events that we have coming up over the next nine months--nine to ten months here.

There's a lot of issues associated with the management of the viability assessment, how does one document all of the multitude of decisions that are going to be wrapped up into it? What's the process? What kinds of--who has authority to do what, is the heart of some of the questions that we were dealing with a little bit earlier. How does one determine where the cutoff between one decision maker to another decision maker to a board is, and I want to talk about that. I want to talk about the structure that we've put in place. We'll take you from the top down to essentially the day-to-day working level.

You're very familiar, of course, with the basis behind the viability assessment. One thing I would mention, and we'll talk about it perhaps a little more, is the mapping between some of the things in the viability assessment and other documents into the Nuclear Regulatory Commission's key technical issues.

I think Dr. Nelson had a question about the structure of the viability assessment. This is our current concept. It's one product of viability assessment. It has

what we'll call five volumes. Now, whether those are five separate volumes or whether we are able to get them into one enormous three-ring binder that's about that tall, I don't know. But the current concept is five volumes, the first volume of which would be your overview and summary. This is what ties everything together, gives you the executive summary, and then there are the other four volumes that are the four products of viability assessment. And then below the VA product itself are the lower tier documents, the supporting documents and information, the data, the analyses that are rolled up into the viability assessment.

And as Lake was saying earlier, our commitment is to put all of this into readily accessible form, the Internet access, soon after acceptance of the viability assessment is possible.

This is the current schedule for the completion of the components of the viability assessment. There's an enormous amount of activity going on. This concentrates on the end game, the July, August, September activities that lead to our acceptance at the project, at OCRWM and to the Secretary of the four component parts; the design, the total system performance assessment, the LA plan and the cost estimate.

The management of the viability assessment is the project business. This is a project product, and Mr.

Barrett's assigned the responsibility to the project. And authority and responsibility has been delegated down to appropriate individuals within the project.

Policy decisions are made at appropriate levels, with the highest level of policy decisions being elevated to the acting director. And we have put in place a series of management groups under formal charter with responsibilities authority delineated in the charter that assign different groups, different responsibilities, different decision responsibility. And what I'd like to do is talk about several of those groups.

At the top level, we have the Program Review Group, which is a high-level primarily policy board, and then the Viability Assessment Integration Group is a lower level decision body which can work on decisions up to a certain level. If there are decisions that exceed their threshold, they can take a recommendation forward to the top level group.

And then below that, there are the individual product teams that are working on the products themselves. And we'll talk a little bit about external communication. This goes to a question that somebody had just recently, just a little while ago, about communications with external bodies.

Dr. Cohon?

COHON: Sorry, Russ. Sorry to interrupt. This is Cohon, Board.

Just on this slide. Do the products, as in product teams, correspond to the volumes in the five-volume chart?

DYER: I'm sorry?

COHON: Do the products correspond to those volumes?

DYER: That's right.

COHON: Okay.

DYER: The four products that make up the viability assessment.

COHON: Thank you.

DYER: These are the two top level management groups, the Program Review Group chaired by Lake Barrett, the acting director of OCRWM. Members are myself, Dwight Shelor, Steve Brocoum and Bob Strickler, Chuck Metzger, and secretary is Linda Desell, who is our project person at headquarters.

The VA Integration Group, which is a group that-- this group meets when there is an issue to be addressed. VA Integration Group meets on a much more regular basis, once-- well, several times a week generally, chaired by Steve Brocoum, who I have delegated the authority and responsibility of chairing this group to. Members include both DOE staff, Rick Craun, Tim Sullivan, and contractor personnel, Dale Foust, Glen Vawter, Mike Voegele, Mike Lugo, Mike Cline. The secretary is Dan Royer, a Fed.

And the minutes of these meetings are kept. There is an agenda that is worked up. Issues are brought forward from lower level groups that need some decision made at a higher level. That decision can either be made and documented at a lower level, or if it involves policy determination, it is bumped on up.

The model for this goes back to the days of the site characterization plan. When there were many different issues being discussed, many different ideas being thrown out, we had to come up with essentially a position or a policy. And the working groups that we had established at that time provided us the mechanism and the formalism for making a decision, documenting the decision and moving on.

The management groups that support the VAIG, the Viability Assessment Integration Group, are--there are essentially two product teams, a product team on the DOE side, a product team on the M & O side. Each of these teams is charged with either managing or producing one of the four primary products that make up the viability assessment. And, of course, on the DOE side, our team leader for the viability assessment is Tim Sullivan, and on the M & O side, Jerry King is the overall manager of the viability assessment.

Now, for communication, we want to have a robust communications program. We don't want the viability assessment or the products that make up the viability

assessment to be a surprise to anybody whenever they come out.

So we have a series of various communications opportunities, of tools that we're looking at presenting over the course of the development of the viability assessment, and the overall coordination of those communications efforts are done by this group in the middle, which involves people, as you'll see, from both the product team, as well as from some of our outreach programs.

Okay. Let's talk about--I'm going to shift gears now and go into the viability assessment itself and talk about the four things that make up the viability assessment, how we're doing in design performance assessment of the license application and the cost estimate.

Lake addressed many of these questions earlier about the design. It's a performance-driven design. It is evolving now. The priority that we're putting into the design for '98 for the viability assessment are those which have no regulatory--and here are five general categories of design elements that are receiving attention at the viability assessment stage of design.

You are aware that we have an external board, the MGDS Consulting Board, which has been providing--which started out as an ESF Consulting Board. They have moved over. Now we've continued them on, changed their charter

somewhat, and now they're providing input or advice to our design group. There are two different sub panels of the consulting board, a Waste Package and Subsurface Facility Sub-Board and a Subsurface Repository Sub-Board. They have been providing ongoing input to our design group and tech management.

Some of the most recent input that we've received from them--their last meeting was in December. Some of the comments that are relevant to VA move quickly to finalize design criteria, performance goals and assumptions for viability assessment. This is a comment coming from the Consulting Board. One comment they had was, it looked like in our operational concept, one of the options we were considering was to go piecemeal in making the repository. They urged us to put in place essentially the service openings for ventilation in any underground services, ventilation, perimeter drift, access ramps, et cetera, prior to starting the development of the emplacement drifts, a suggestion that comes from the Board.

This is a status report of the components of the VA design. We are here right now. The design product due in June of '98; this is the acceptance for August of '98. These are the activities still going on. There are five major activities that are left; documentation of the design to the TSPA group.

There is ongoing design issue resolution being done either in the integration group or the higher level group, which will go on through the May time frame. We'll go through a concept of operations update. Criticality Topical Report is something we have on our plate for August, and continue with other aspects of design up to the June, '98 delivery date.

The TSPA, an enormous task this year, and if we parse out the things that are most important to getting a credible TSPA/VA in place, this is where we're putting our priorities. We're putting the computer models under an appropriate QA program, documenting the programs, putting them under controlled input and output traceability; yes, moving toward this QA pedigree. This is where we are getting a lot of comments from the Peer Review Panel and from the experience that was gained on the WIPP Program. It is all telling us that this is a very, very important thing for us to concentrate on as soon as we can.

The TSPA Peer Review, we had our second report. It was delivered in early December. A mixed report card; some things are going well, some things need a lot of focus, a lot of attention.

Let me concentrate on some of the hit-home to me, perhaps the best one. They like the process for expert elicitations, but they caution us that this is not data. It

is not a substitute for data. If data can be acquired, it should be.

There is a need to better understand where the uncertainties are, how we can best reduce the uncertainties, both in the models and in the data and put--it may be that there are some tests that need to be run between now and license application time, tests that are not currently in our program. We're going to have to evaluate those suggestions and see whether we need to modify our testing program to accommodate some of these questions about uncertainty.

Let me skip a page and go to this one because it's going to come back to something I talk about later.

More data on water chemistry are required to refine and validate existing models. This goes to the heart of something, an ongoing activity at Yucca Mountain now, which is to go back and re-sample some of the geochemical parameters in existing levels. It turns out the sampling and instrumentation techniques have improved dramatically in the decade or so since we originally acquired that information. So it's worth our while to go back and recollect EH, pH information about the in situ groundwater geochemistry.

This is where so much activity is going on because this is where all of the natural processes, the natural models, come together in the TSPA. And if you look at the viability assessment, all of the natural systems, the

attributes, characteristics and processes of the natural systems are all collapsed into the TSPA. There will be a section in design that talks about that, too, but all of these chapters, these models, the UZ transport, UZ flow, thermal hydrologic processes, all are rolled up into the TSPA.

And this is the current schedule for all of the TSPA coming up, with the final TSPA/VA document in the August, '98 time frame.

The license application plan, this would provide a link between what we know at VA and what we need to have at the time that we go into a license application. Where are the uncertainties that need to be addressed or reduced, how can we best go about this, what is the plan, what are our data needs, if you will, what is the plan for addressing those data needs, as a function of time and probably as a function of resources, also.

The cost estimate, we'll address these five phases of the life cycle of a repository system: Development and evaluation, construction engineering, the emplacement and caretaker operations, and eventually closure and decommissioning.

We've got arrangements in place for independent reviews of the cost estimates by Foster Wheeler, and this review is going to be completed in the July, '98 time frame.

That's the current status of the viability assessment. Those are the components of the viability assessment. Those are the things that will make up this product that comes up in the August time frame. As you can see, there is an enormous amount of activity going on in each of those areas.

What I'd like to do now is move on to activities that are going on in design and scientific testing, and let me provide a context or a framework for this. I think on the back tables, I believe each of the Board members received a copy of the repository safety strategy. This is a new life given to yet--it's another iteration of what was known in the past as the waste isolation strategy, the waste containment and isolation strategy. It's our iterative version of the safety case, and it's couched as a series of hypotheses. What does it take to make a convincing case for the safety of a repository system at Yucca Mountain?

Right now--this has evolved over time. If you will remember back about a year and a half, there were five elements that made up the safety case. There are now four elements that make up the safety case, and those hypotheses are limited water contacting waste packages, design containment. We design containment in long waste package lifetime. You have a slow rate of radionuclide release, and there is a concentration reduction of radionuclides during

transport; those being the four testful hypotheses that make up the repository safety strategy.

Now, if you go to the next slide, those are the four top level hypotheses, and below that there are what I guess I would call some sub-hypotheses, lower-tier hypotheses, each of which is testful. Every one of the tests that we're running at Yucca Mountain now is traceable in some way to one of these hypotheses. And that four--I know the Board staff, but over the years we have spent quite a bit of effort trying to prioritize the testing program at Yucca Mountain. What are the tests that give the most bang for the buck? What are the tests that go furthest toward reducing uncertainty? What, if any, tests are definitive? What kind of test allows you to make a determination, yes or no, on something?

These are the hypotheses. These provide the framework for the tests that we have. And for each of the four major hypotheses that I listed, these are the sub-hypotheses. They're treated in considerable detail in the report.

And the next slide shows you some of the ongoing or plan tests that explicitly address each of these sub-hypotheses.

Questions on the repository safety strategy?

And again, this is a--like performance assessment,

this is an iterative process. There will be another version of this. We will go on.

Let me talk a little bit about some of the data collection activities right now. Drilling and sampling; we have probably the most active drilling program we've had at Yucca Mountain in about three years. I was out there last week, and there are seven drill maps that I counted out there last week, and I'll tell you about some of what's going on. Some of it's workover, but we actually have two deep wells drilling right now.

The Busted Butte is going on. We'll talk a little bit about that, and I'll talk a little bit about some peer review activities on Chlorine-36.

We are drilling--let's see, let me go to this, and then I'll go to a map and show you where these things are.

WT-24 is a deep drill hole north of the potential repository block to test the large hydraulic gradient; that is, to test whether or not we have a perched water body or whether it's a contiguous water body in that area. It's located between, I believe it's G-2 and UZ-14. WT-17 and WT-3, these are two holes that we are re-sampling to look at geochemical characteristics of the groundwater at Yucca Mountain.

SD-6 is a deep bore hole being drilled with the LM-300 on the crest of Yucca Mountain at the southern half of

the potential repository block. This is the first bore hole that we have drilled in the potential repository block since site characterization started. It's part of the ECRB, the enhanced characterization of the repository block package, to provide us that third dimension of information that will compliment the horizontal information from the cross strip.

The C-Well Complex; we're entering a new phase of testing on the C-Well Complex. I know they're trading out some of the packers in there to look at a new interval.

We've got active testing going on at Alcove 3 and 4 to look at the top and bottom contacts of the Paintbrush Tuff and non-welded Paintbrush Tuff PTN. And in Alcove 6, we're looking at the permeability--I guess I can call it bulk permeability around the Ghost Dance Fault.

And the niche studies, of course, are giving us information about the movement, flow and transport of material through the fractured Topopah Spring.

This is a map, and I hope you can see it in the back. This is the outline of the ESF, the north portal here and the south portal here. Here is the current conceptual layout or footprint of the potential repository.

WT-24 is located here, north of the potential repository block. SD-6 is located here. The C-Well is here. There are several wells that we're doing workovers in for groundwater testing.

Busted Butte is located down here. I think it's about five miles southeast of the potential repository block, and I'll talk a little bit about that. The excavation we have going on at Busted Butte is on the southeast corner of Busted Butte, right down here.

WT-24, this has been an issue for a long period of time. What is the reason for the steep hydraulic gradient observed to the north of Yucca Mountain? WT-24 was put in specifically to test that gradient. We don't have answers yet. We drilled through and sampled through an upper water body we're drilling now down to the lower water body. We did run and complete a series of hydraulic pump tests from the upper water body, and that was completed in January. Maybe somebody from GS can comment, but I don't think the isotopic information or geochemical information is back from the samples that we took yet.

I think it's fair to say that it's a very low permeability zone. It may be perched water, but I don't think that there is a consensus yet that it is, in fact, a perched water body. And we are currently deepening the hole.

That's the drill rig setting up Yucca Mountain back to the right on this picture.

WT-17, WT-3 again; water level measurements, water chemistry sampling, cleaning out the wells, getting the new instrumentation in place.

SD-6; this is the deep hole on the crest that will provide us stratigraphic information on the west side of the potential repository block. We have very little in the way of control on our 3-d stratigraphic model over on the west side. This will give us information. Things were going well except when you go fishing, and as of Friday, we were still fishing. I don't know if we freed it up yet.

C-Well Complex; this is a multi-well tracer test that we have run a series of tests at different intervals, and what we're doing is going to a--we finished the testing at the Bullfrog interval. We'll be moving up to the Prow Pass and be starting the Prow Pass testing. Again, this is a multi-hole pump and injection test. We'll be starting that in February or March.

Alcove 3 and 4 I talked about a little bit.

Alcove 6; this is looking at the Ghost Dance Fault as a potential fast path. Doing the pneumatic 3-d permeability testing there is the primary testing that's going on, and the last time I was in there last week, we're still putting in some bore holes to allow us to do the straight fracture-matrix interactions study.

The niche studies, I think the Board saw activities in the niche last week. Let me talk about the transport test at Busted Butte.

Dr. Parizek, you asked about a study plan.

Somebody, maybe Dennis, can help me here. This used to be covered under a Los Alamos study plan. I remember it was worked on by Everett Springer and Bo Bodvarsson about five or six years ago. Can you help me here, Dennis?

WILLIAMS: Dennis Williams, DOE. I'm sorry, let's get this right here.

The formality of study plans we basically decontrolled somewhat over the last year or so, but this study plan has been around for a long time under a long title, Demonstration of the Applicability of Laboratory Measurements. So it's been with us for quite awhile.

The PI on that right now is Gilles Bussod out of Los Alamos, and it is a five-year plan, I believe, right now at the Busted Butte Complex to look at the transport through unsaturated zone, dominantly in the Calico Hills formation.

Someone mentioned whether or not it would have any faults in that. Probably small faults, not the very large fault that goes across Busted Butte, but fractures in the Calico Hills type of materials, small faults in the Calico, as well as matrix properties in the Calico.

DYER: Right. As of Friday, we were in about 48 meters. The intent is only to go about 60 meters. We're not driving toward the big fault that runs through Busted Butte. So primarily just looking at transport processes in the Calico Hills. This is a target of opportunity, of course, because

the Calico is at the surface. They're exposed at the surface. So we could access it with a relatively cheap, relatively cheap, relatively cheap, relatively quick drift there.

And the main things, of course, that we're looking at is to validate some of the lab data on radionuclide migration. It also allows us to test and validate the flow and transport models for the unsaturated zone. And there's some key properties associated with some of these radionuclides that have considerable uncertainty associated with them that we're going to be able to address in situ there. I'm sorry, we're not going to run those radionuclides, but we should be able to address the uncertainty associated with some of those properties.

We started this in December. We actually delayed the test a little bit, delayed the initiation, the construction based on a reconsideration of where we should locate the facility, and we think we got a better place from a technical aspect, and it will work out--overall, we'll save a little time in the overall construction.

As I said, we're about 48 meters in a drill and blast construction. We contacted the--contact between the Calico Hill and the Topopah about a week ago.

And this is just not a very good--I don't have any pictures from the inside yet. It looks sort of like a dark

hole, as most of these things do. But here's what the outside looks like right now, with shotcrete around the highwall, and we put it in in the Calico Hills.

Lake Barrett talked a little bit about the activities that we had planned for the ECRB, enhanced characterization of the repository drift. I'm trying to encourage some new language here. Cross drift is what I have been encouraging my people to talk, to refer to this feature as. It's not quite east-west. It is a drift. But it's a cross drift across the block. So if you hear cross drift, this is what we're talking about, is this feature, which is one component of the ECRB package.

We are in the process of making the starter tunnel, drill and blast operation underground right now. Everything on track for us to start--turn on the smaller TBM in April. Looking, again, at completion in the September time frame, I believe.

And we're gearing up, of course, to put in an alcove underneath the cross drift and support this test--or this excavation with the compliment of test that will follow it.

There will be a series of predictive reports associated with the cross drift. The Geomechanical or Geotechnical Predictive Report is due out in the March time frame. That is before we actually start excavation. There

are four other predictive reports: Hydrologic properties and conditions, microbiologic populations, fast-path related mineralization and isotope geochemistry, that are due out a little later. I believe most of those are due in the June time frame, which is before we should actually encounter most of these features.

A little information about the Geotechnical Predictive Report, what will be in it again. We're looking at the March time frame for the availability of that report.

We have a peer review ongoing right now, looking at Chlorine-36. Of course, that's been a topic of considerable concern over the past year, year and a half. The objective of this peer review is to provide us an independent evaluation of Chlorine-36 and the conceptual models associated with Chlorine-36 and that derive--the influence that the Chlorine-36 has on our models of unsaturated zone flow and percolation flux.

So some of the things that are being looked at are sampling techniques, the analytical techniques, data interpretations, accuracy, uncertainty and how this flows into some of our key site models.

The status of the work: The panel members met in January, had a tour of the site, and that's where we stand right now. We have not received a first report back from the peer review.

Finally, let me look at, well, my penultimate slide here. These are the major milestones that we have coming up in the next few months. You'll notice that there are a lot of things in the January, '98 time frame, and then I showed you in the July, August, September time frame, there are a lot, an enormous amount of viability assessment associated things.

These are some of the things that come up through the remainder of this month, and then between now and May is when we have worked through 20 of the viability assessment design issues. Those will be worked in the design groups or in the management groups.

This is almost like Christmas, 178 working days to viability assessment, a figure that we keep track of on a daily basis.

The commitment is still to provide a focus on sound science and engineering, not to be overtaken by the enormous flurry of activity that's going on, but to keep a credible basis for the products.

And the challenge of the viability assessment is looking at 15 years of information, putting it into a coherent package and integrating this all together.

With that, let me take questions from the Board.

COHON: Thank you. Members? John Arendt.

ARENDT: On Page 7, or Viewgraph 7 I should say, the

acceptable cost estimate. What happens, or what criteria are you using to provide an acceptable cost estimate? If I could ask you a "what if" question; if this happens to be many billions larger than maybe it ought to be, or whatever, does that mean that you stop and viability assessment will go no further? So again, I guess what do you mean by accepting the cost estimate? What's involved in accepting that cost estimate?

DYER: Primarily what we're looking for there is that the basis of the cost estimate is believable, that the independent review team concurs with the cost estimate. So we're looking at cost estimate.

ARENDT: Not the number itself, then?

DYER: No, but if it comes in way out of any target we're thinking about or considering, we're going to have re-evaluate where we are.

ARENDT: Okay.

COHON: Priscilla Nelson?

NELSON: I've got three questions, which aren't totally unlinked I hope.

DYER: Okay.

NELSON: The first one is on Page 6, you've got a listing there that shows the five volumes.

DYER: Right.

NELSON: And the preliminary design concept is Volume 2,

and Volume 1 is the site description. I would like to verify that when you say design concept, to me the repository is the mountain plus the engineered component, and so the design is the whole thing. The workings of the natural system and the engineered system together constitute the design.

Do you think of that in Volume 2 as the design where you're going to deal with how you model the natural system, the interface of the natural system with the design system to look--the engineered system to look at performance, or do you see that as the engineered excavated repository system and waste package?

DYER: Let me pass that to Tim Sullivan. Tim?

I agree with you, but I'm not sure how we parsed it out in this document.

SULLIVAN: Tim Sullivan, DOE.

Well, Volume 2 will focus on the engineered aspects of the repository, but as Russ mentioned in an earlier slide, the design work that's been done, particularly recently, is performance driven. So the process that relates the assessment of performance to the design work will be described in Volume 2 as well.

NELSON: Okay. To me, that will be important because it needs to link the whole system, it's a system, together.

SULLIVAN: And that will build toward the performance assessment volume itself. It will be in two places.

NELSON: Yeah, but the performance assessment model is-- you know, it's derived--we're not going to see the interactions in the modeling in detail of the interface between the natural and the engineered system within TSPA, I would imagine, particularly during construction.

SULLIVAN: You'll see it there, as well as in Volume 2.

NELSON: You will?

SULLIVAN: We anticipate it.

NELSON: Okay, thanks.

Regarding the Busted Butte experiment, how did you select the location, and is the Calico Hills there similar to the Calico Hills at Yucca Mountain? I understand that the experiment is being conducted to verify models in its approach, but one wonders as well about how similar or different the material are.

DYER: That's right. There's a question of representativeness. Of course, Calico Hill changes from north to south at Yucca, also.

Dennis, do you want to address that?

WILLIAMS: Dennis Williams, DOE.

We had a few choices whenever we came up with the Busted Butte locality. It had been looked at quite a bit over the years, but we were also at one point in time attempting to do a similar study in P-Tunnel. So we had looked at the bedded tuffs up in P-Tunnel as a potential

surrogate. Of course, we have the PTN, which is a bedded unit in the ESF, which was also considered as a surrogate.

When we really got down to the end, though, looking at the Calico Hills at Busted Butte and the Calico Hills in the repository--or below the repository horizon, the detailed mineralogical and lithological studies on it showed that basically what we had was just a collapsed section of what was the proposed repository. So we're out on the distal ends of all of these units. So all those sub units are represented at Busted Butte.

So we felt that instead of doing P-Tunnel or PTN or something in the Prow area, the best spot to field this test was at Busted Butte.

Does that answer or come close to answering the question?

NELSON: As you do the deep bore holes that you are doing up towards the crest, you're extending down into the Calico Hills, and there will be a comparison made of the difference in the rock and rock mass characteristics between what you're finding there and what you're finding down at Busted Butte?

WILLIAMS: Well, we've already drilled through the Calico Hills in the repository area. Some of the older holes went down through the Calico, so we know what the Calico looks like in that area, the detailed core of those holes.

But we'll be comparing that against the other Calico Hills cores that we get out at say SD-6, SD-11, SD-13.

NELSON: That will be interesting.

WILLIAMS: Yeah, we're trying to get as close as we can come to, you know, a reasonable--I won't call it a surrogate because it's really Calico Hills, but as close as we can come to what's under the repository and obviously to get a test started because this is a five-year test. There's three phases to it. If we were going to have anything for license application, we basically had to get it started now and use the best test bed that we could come up with.

NELSON: Right. And I guess what my concern is, that if we go from someplace that's not highly fractured to someplace that is more highly fractured, if that's a possibility, you may find different mechanisms predominating. And that's a question to ask about interpreting and extrapolating from test results to application.

WILLIAMS: Well, that's true, but if we went under the repository horizon, which covers, you know, a lot of acreage there, any one spot that we do a test may not be entirely representative of that whole area as well. So it's a little bit of a crap shoot, but we're hoping that the fracturing will be with us and we'll be able to get some good results out of it.

NELSON: Can I ask one more? Very short.

All right. You referred to the Geotech Report, and you note that it's going to come out as a prediction based on the geotechnical baseline reports, which is really geared towards construction application.

Part of what I was interested in from the Geotechnical Report dealt also with the geomechanics in terms of information about joints and fracture variability as seen in the cross drift. Will that be included in any way in the other aspects of what you're going to do in the ECRB predictive reports? Perhaps in the Hydrologic Properties Report, will it be included, a prediction on what frequency and characteristic of discontinuities will be expected in the cross block drift?

WILLIAMS: Dennis Williams, DOE.

I don't know specifically. I haven't seen the outline for the Hydrologic Predictive Report because as Russ mentioned, they're two reports now. Earlier in the planning cycle, it was one report, which basically would have everything in it.

Perhaps Bill Boyle, I know that he has seen some very recent materials on these predictive reports. If he would like to jump up and help us out here, that would probably be our last hope for today.

DYER: If Bill can't do it, we'll find an answer and get back to you.

COHON: It's a lot of pressure, Bill.

BOYLE: Bill Boyle, DOE.

If I understood your question, were you asking would we address a fracture frequency in the Geotechnical Report and in the Hydrology Report?

NELSON: Okay. Strictly speaking, a geotechnical baseline report doesn't have usually the kind of detail about prediction on distribution and fractures likely to be encountered. Instead, it's more geared towards behavioral general response support requirements that are necessary.

My question is, the information that you've got on the mountain right now should permit prediction of something about the discontinuities themselves that are encountered, towards orientation, frequency, et cetera, in the ECRB. And is that going to be predicted perhaps in the context of the hydromechanical properties?

BOYLE: I got the draft of the report in my in-box this morning. I haven't read it yet. But if I had to guess, and I'll find out this evening, the Geotechnical Report will probably address things such as orientation and frequency because everybody knows it's--

NELSON: That's typically--

BOYLE: --a concern to this project above and--

NELSON: Okay. Nelson, Board.

It's just when I've seen a GBR, they're generally

fairly broad, as is appropriate for their use, which is predict ground support requirements, et cetera. But the specificity of joint frequencies would be one that I would be surprised to see in a GBR with that level of detail.

BOYLE: I'll find out in the draft tonight.

COHON: Thank you.

Richard Parizek?

PARIZEK: Parizek, Board.

Are there any preliminary data coming in on the drift scale heater test? That's an immense experiment and a beautifully set up thing. We were all very excited to see that back in December when the switch was turned on the day before we went underground. But anything new? Any surprises? Any early data?

DYER: Bill, do you want to give a quick summary?

BOYLE: I was looking at the draft. I take it the question was on the drift scale test?

PARIZEK: Yeah.

DYER: Correct.

BOYLE: You'll hear a presentation on it tomorrow by Rob Yasek, but in answer to your question, no, no surprises yet.

PARIZEK: Some years ago I visited the G-Tunnel and noticed drips in the ceiling coming freely into your tunnel. And there's an opportunity to maybe look for colloids in water of that type. Has anybody reported on colloid

migration of that type in the unsaturated zone? I mean, in the soil profile you see evidence sometimes located--things that you can see go to some significant depth. But here's--you know, it used to be free water leaking on your head, and you could see whether you had colloids in it moving, you know, along with the water because I'm not sure how the Busted Butte colloid experiment would be set up.

DYER: Yeah, I am not--is there anybody here familiar with colloids? I know that we did an inventory of natural colloids in the saturated zone at a couple locations. I don't know what specifically we have in the way of tests that might be associated with Busted Butte.

The original--well, if somebody's moving forward, good, and I'll quit speculating here.

BOYLE: Was your question about the unsaturated zone? Is that what you said? Okay. I'm not that familiar with all the measurements in the unsaturated zone looking for colloids, but in the single heater test, we did collect water, and it was very close to distilled. The most out of all the waters found at Yucca Mountain out of the saturated zone or anywhere else, it was the one closest to looking like it was distilled. It was very clean water.

And as far as drips in the unsaturated zone in the ESF, there are none that collect, so the people haven't been able to look at it.

PARIZEK: Yeah, and of the new borings, none of these are planned to hit the carbonate aquifer beneath the tuffs?

DYER: No, not yet.

PARIZEK: So nothing new on that.

DYER: So we've still just got one penetration of the carbonate aquifer.

PARIZEK: Currently you have experiments underway in an alcove which shows this alteration or stress release when you put a tunnel in, and this is what rock mechanics would predict would happen, and you have days that show 10 to 100 per cent increase on air permeability within a half meter of the roof, comparing tests before the alcove is dug and then the results of digging the alcove.

If you take the east-west crossing, east-west drift--

DYER: Yeah.

PARIZEK: --drift-crossing--

DYER: All right.

PARIZEK: --and put that above say emplacement drifts, or even for that matter the ESF, there should be similar damage done to rocks that's already been done around the ESF and what would be done above as a result of this crossing. Will there be experiments in there to look at that permeability enhancement that occurs as a result of rock removal in tunneling, and if so, will the separation be

adequate enough that you don't really have permeability connections artificially generated by these two excavations? Again, it says, you know, to be concerned about this compromising of the repository emplacement drift levels.

DYER: Yeah.

PARIZEK: The issue has come up before, but exactly this stress release thing continues to be of interest to me.

DYER: Maybe Dennis or Bill can help me here. I know that we've got one niche planned right underneath the cross drift. We'll look at connection between the upper and lower level in that. And, of course, for the niche excavation, you'll have some stress release associated with that. You'll have a change in the stress field associated with the cross drift, also.

PARIZEK: Right.

DYER: I'm not aware of anything specific beyond that individual--or is there anything else, Dennis?

WILLIAMS: Dennis Williams, DOE.

One of the things that DIU looks at, of course, is that matter of how much disturbance of the rock mass, so that you can place the other--the cross drift the correct distance away from it, and I think that's why we're out at the 15 or 20 meter distance.

But one of the advantages we see to having that particular cross drift go over our existing north-south main

is we will have a niche in the north-south main right below the cross drift, and then we will have an alcove in the cross drift right above it, so we can do experiments to make measurements on what's going on with the fracturing, the induced fracturing, and also what the permeabilities are like coming from that cross drift down to those lower levels. Again, that's part of the reason for putting the niche at the lower level, putting the alcove at the upper level and having the appropriate space in between the two, which is then verified by our determination of importance evaluation process to make sure that we do the right thing and not do a dumb thing.

COHON: Debra Knopman?

KNOPMAN: Two questions. The first has to do with the confirmatory testing that you mention on Page 46, and you said that these predictions would be out in roughly a June time frame, which I think is great. The question in my mind is, once those are out, then what's your approximate guess on when you'll have some data to stack up against the predictions, and what does that time frame look like in terms of VA?

So, I mean, you've got these predictions coming out in June, and work will be completed on the--at least the construction of the cross drift by the end of the summer. So you'll be getting data during the summer that will presumably

in some cases be able to be used to compare to your predictions.

DYER: Well you'll be able to get initial observational data--

KNOPMAN: Right.

DYER: --I mean, just--right as soon as you have the opening. Some of the test--or we won't be able to field all of the test in the cross drift this fiscal year.

KNOPMAN: Right.

DYER: It's a multi-year testing program in there.

So my initial reaction is that we'll be able to get some of the information probably at the eastern end of the--like hydraulic information--at the eastern end of the cross drift. I doubt if we're going to have very much from the western end. We won't be able to get in and get the drilling program in place, get the instrumentation in the ground this fiscal year.

KNOPMAN: Right. But do you have a plan for disseminating that information, the limited amount that you might have, in a timely fashion relative to VA?

DYER: I'm not aware of a specific plan. I mean, we'll have to put one together. As the information comes out, we'll have to bounce our findings against our current models, our concepts that we have underlined in the VA models, and as much as possible, validate the models to go on.

KNOPMAN: Right, because it's conceivable that that information could be available and could be contradictory to what is in VA?

DYER: That's correct. That's a possibility.

KNOPMAN: Second is, just in terms of the practicalities of preparing for LA. Let's assume from VA this project proceeds, and you proceed in the various work products that you've laid out on the schedule that you've laid out. What we saw with VA was that you had--I mean, there was no way--you had to close the new data coming in. You had to conceal up the models in effect for purposes of VA nine months, ten months out. Where would that put us in terms of LA?

What I'm trying to get at is really how much time there is between when VA comes out and when you're really going to need to have most of your--the science that you're going to go into your licensing application with done. Is that set really just about two years after VA, or is it longer than that?

DYER: Well, if you back up to the TSPA for the site recommendation and LA, the 2001 time frame--Abe can help me here--my suspicion is that it's probably the data freeze time.

KNOPMAN: So, I'm sorry, what was the date?

COHON: When would you freeze the data for a 2001 TSPA/LA? When would you freeze the data?

DYER: That's what I'm looking for. It's 2001, but I'm not sure which month.

VAN LUIK: Van Luik, DOE.

I'm not sure what the month is either, but basically it's a one-year standoff between the product and the final freeze on data, and it glides over different times because like in the VA, some data was frozen before other things. You know, as we progress in the modeling from one phase to another, different times are freezed in different phases of the input data.

COHON: Thank you.

DYER: That doesn't mean that late data that comes in can't be evaluated. It's just in the discipline process, you've got to keep control over the data that goes into the models.

COHON: Last question, Alberto Sag$_{\eta}$es.

SAG$_{\gamma}$ES: Yes, Sag$_{\eta}$es, Board.

You refer to an Engineered Materials Characteristics Report in I think your Transparency 31.

DYER: Thirty-one?

SAG$_{\gamma}$ES: Yes, I guess of the date--and Engineered Materials Characteristics Report.

DYER: Okay.

SAG$_{\gamma}$ES: And it's 12/97, I presume that the--or is it

'98?

DYER: It is December, '98? Willis Clark, Livermore?

CLARK: Bill Clark, Livermore. That report is done, and it's going through publication right now. We're just bounding it and putting it out. You'll have it very shortly.

SAGγES: I see.

CLARK: The draft is available and has been for several months.

DYER: Okay. A typo, it should have been '97 instead of '98.

SAGγES: '97. What is the content of the report?

CLARK: That is all of the materials, selection, activities since basically 1982 that's been done on this project with all of the waste package and peripheral materials in it. It has property data, it has design-related data, and then it has like an executive summary. It's a three-volume type of report.

SAGγES: Okay, I think I see.

CLARK: You've probably seen the Rev 0 and now the Rev 1. It's updated every two years, right.

SAGγES: Okay, very good. And in a different area, again on the cross drift. I understood when visiting the facility last month that the cross drift was going to be drilled using a water dust abatement procedure that was not

used in the ESF. Is that correct, and if that is the case, I would like to know any idea as to how much water, for example, per meter or per, you know--

DYER: I don't have those details. I know there is a different dust abatement system that we've specified for the TBM. I can get those details for you.

SAGγES: All right. thank you.

BOYLE: Bill Boyle, DOE.

The amount of water would be specified in the DIE.

DYER: Right.

BOYLE: And so we can get that to you.

DYER: Well, the maximum would be.

BOYLE: Right, right.

DYER: I don't know what the operational volume that the design is.

BOYLE: And if I may, I don't want to keep Priscilla in suspense. I have the answer to the question. It's actually not the entire report. It's the chapter of interest, and it's to be incorporated in the report, and it was prepared by Steve Beason and the Bureau of Reclamation. And they do go into great detail by unit, by bore hole and by location in the ESF as to the fracture frequency, which may not be done in the typical report. But they are well aware that this is not a typical tunnel, and that's why they did it.

COHON: Thank you, and thank you, Dr. Dyer.

DYER: Yes, sir.

COHON: Wendy Dixon will now give us an update on Yucca Mountain environmental programs. Ms. Dixon is Assistant Manager for Environment, Safety and Health for the Yucca Mountain project. She has a bachelor's and master's degree from Washington State University. She's had almost 20 years of experience in the management of large projects. Welcome, Ms. Dixon.

DIXON: It's a pleasure to be here today. The presentation that I put together really focuses around our efforts on our Environmental Impact Statement for the Repository Program.

As the construct of this presentation, it includes a short discussion of the background on NEPA, the Nuclear Waste Policy Act, what the regulatory drivers are, a description of the repository Environmental Impact Statement as it relates to our proposed approach. It has in it the proposed action, approach to the development of the document, a little bit about what we're doing for the transportation analysis, the no-action alternative analysis, technical support to support the EIS, where does this information actually come from, and the disciplines to be evaluated.

We also provided you with some information on the history of where we've been and where we're going, and there's some milestone schedules in there about up and coming

major deliverables here.

With respect to our regulatory drivers, and I know you're familiar with these, but I wanted to go over them briefly, one obviously is the Nuclear Waste Policy Act. Another one is the National Environmental Policy Act. The implementing regulations to that are really from the Council on Environmental Quality, and then DOE has its own NEPA implementing regulations that we follow in the preparation of this document.

The objectives to the repository EIS, well, this EIS will accompany a site recommendation and, if appropriate, a license application, as required by the Act.

One of our objectives is to prepare this document in such a fashion that it complies with the Nuclear Waste Policy Act, CEQ regulations and DOE implementing regulations as well, and to prepare an EIS that the NRC can adopt to the extent practicable. And again, that was defined in the Act.

The Act did a lot of things for this repository EIS. Congress made a number of programmatic decisions for us that are normally not made in an EIS, and by so doing, by providing us with the road map, they basically streamlined what we would otherwise have to do as it relates to looking at alternatives in the EIS. Congress made these decisions for us. They said in the Nuclear Waste Policy Act that in our repository EIS, we need not consider the need for a

repository, alternatives to geologic disposal or alternative sites to Yucca Mountain.

As such, the primary decision that this EIS will end up supporting is the decision as to whether or not we go forward with, at this point in time, a site recommendation. That is the primary decision that we're looking at right now. And as such, the proposed action ties to construct, operate and eventually close a geological repository for the permanent disposal of spent nuclear fuel and high-level radioactive waste at Yucca Mountain. That is our proposed action.

So as Congress made a number of determinations for us and streamlined this EIS process, what we're really looking at is, is do we go forward and recommend the site recommendation or not, and then try to bound the impacts in this analysis, what we have looked at, or what we call implementing alternatives. And those are tied to the three scenarios based on thermal load objectives. There is a high thermal load, which is anything over 80,000 metric tons, and our reference case will be used for that, which is 85 metric tons; an intermediate thermal load, and we'll use a conceptual design there, 60 metric tons; and a low thermal load, and we'll use a conceptual design there of 25 metric tons.

What we're attempting to do with these implementing

alternatives is to provide a bounding analysis to preserve future program flexibility and design evolution. We want to bound the impacts through these implementing alternatives and have flexibility from small changes later on. And I think what we're doing will do just that.

Performance relies, as you know, in the interrelationship, and that was mentioned earlier, between the engineered and the natural systems. We know that spent nuclear fuel and high level waste produce heat, and heat can affect a number of different things.

So by using our implementing alternatives tied to thermal load, we can look at performance considerations, such as heats impact on the longevity of waste packages, the stability of the tunnel, the geochemistry and hydrology of the rock.

And we also know that we can look at other considerations by bounding the implementing alternatives in this fashion, and those can include things like industrial safety. If I have a low thermal load and I need to build more tunnels, I have additional opportunities to have accidents, worker risks in the process of constructing the tunnel. And they take a look at whether or not there's a potential differential between impacts and surface ecosystems from thermal load. And finally, if I'm constructing a tunnel and I have a larger amount of tunnel that I'm constructing,

I'm going to have a lot more muck, and I'm going to disturb a lot more acreage as it relates to muck storage.

So there's a number of things that can easily be bounded through looking at our implementing alternatives.

The reference design will be the design that we'll utilize for high thermal load. The EIS will evaluate the intermediate and low thermal load designs, using those elements that are common to high thermal load, that are common to all three designs, but focusing really on what those differences are between the reference design and the other two that are necessary to make meaningful impact assessments.

We'll also address design enhancements. Those will be considered as potential mitigations, and they'll be tied to whatever the appropriate package is for each one of the implementing alternatives.

Based on comments from scoping, the EIS will also evaluate potential expanded inventories of waste. There will be a base case, and the base case will tie to the site recommendation. The base case will be 70,000 metric tons of spent nuclear fuel and high-level waste, with the typical 10 per cent allocation to the Department of Energy.

Then there will be a module, we call Module 1, which includes the base case plus the remaining spent nuclear fuel and high-level radioactive waste from commercial or DOE

sources, and then Module 2, which will include Module 1, plus also adding the commercial "greater-than-Class-C" waste and DOE "special-performance-assessment-required" waste. These modules will be looked at as part of cumulative impact analysis.

The EIS will also look at transportation as part of its evaluation. There will be several different transportation options evaluated. We don't want to speculate what the exact mix will be, you know, over the decades, if this program goes forward, on transporting material to the site. We know that there will be some kind of combination of rail, of heavy haul, of legal weight truck. So again, we want to bound what those impacts might be.

And to bound them, we have looked at two scenarios, one that upper bounds them and one that really lower bounds them on the lower end. And the upper bounds scenario is using mostly truck to the repository. So in this analysis, we will use, whenever possible, truck transportation, legal weight truck transportation to the repository, with the exceptions noted for those materials that can't go in legal weight trucks, such as the Navy fuel.

On the other side of the house, we'll also look at rail to the repository, again recognizing that there are some reactor sites that can't use rail because they don't have a railhead at their site, or they don't have crank capacity to

deal with whatever needs to be done for rail. So there will be exceptions, when appropriate, tied to rail. But for the most part, to the extent practicable, it will be bound by, you know, using rail, if at all possible.

There's also some options for the state of Nevada that will be analyzed that are specific just to the state of Nevada, and that in part is because there is no rail line that exists right now all the way to the repository, a potential repository area. And if one wanted to do heavy haul, there used to be a place for an intermodal transfer from the railhead to, you know, the heavy haul vehicles. We'd need to look at that. And then we're also looking at legal weight truck shipments to the site. So there's a couple of additional scenarios that are being evaluated for the state of Nevada.

We will, in all cases, look at impacts that are incident-free and impacts that are related to accidents. We will look at impacts that are both radiological and non-radiological. Radiological impacts are cargo-related impacts, and non-radiological impacts are vehicle-related impacts, i.e., accidents that could occur, in a normal as an example, on the roads.

I don't know how easy this is to read. On the rail side of the house, we're evaluating several different rail corridors and the impacts from the construction of those

corridors in the Environmental Impact Statement. There is one rail corridor that comes down from the north and would go on up to the potential repository site. There is a corridor that goes in around Caliente and the federal land into the site--Caliente route. There's a Chalk Mountain route that looks at and analyzes going through the Nellis Range and the NTS, and then there are two lines that come in from--one from the northeast side of Las Vegas and one from the southern part of Las Vegas on up to the site. It's probably easier to see in your handout.

I mentioned intermodal transfer analysis, and there are several sites that we're looking at there as well. One is up in Caliente, and you would off load at the intermodal transfer site and then heavy haul to the repository, potential repository site. And there are several options off of Caliente, one going, again, pretty much all the way around to Federal Reserve property into the potential repository area, one going through the Chalk Mountain area. And then the one that would be a DOT-preferred route, if this one were selected, coming down, and it still goes through Las Vegas and up around.

There's also a route, or an analysis, that we're looking at for an intermodal transfer location at the Jean/Sloan area, and there's another one at the Apex/Dry Lake area.

When we mention DOT-preferred routes, the DOT, as I think some of you know, have regulations that basically tell you what to utilize, and the State has the opportunity to come up with a State-preferred route, and a State-preferred route is, you know, certainly within the hands of the State to go to the Department of Transportation on. From a NEPA perspective, whatever they do has to be less risk--no more risky than what's already done under the DOT regs. So by definition, we're bounding the impacts by what we're doing. If they come up with another route, it cannot be of a higher risk than what a DOT-approved route would otherwise be.

So in line with that right now, looking at what would be a DOT-preferred route, unless otherwise designated by the State, this is for legal weight trucks, you would end up coming in--there's a beltway that's planned that should be constructed prior to the transfer of any waste to the site. You would end up coming up 15 through 95 to the test site. And again, I underscore the fact that the State of Nevada can come up with a DOT-preferred route, but they have not yet, so this is in accordance with the federal regulations.

Okay. We'll also look at and bound impacts from operational exposure from handling materials and waste during this EIS, and to do so, we're going to look at basically two packaging options. One is looking at mainly uncanistered material, and the other one is looking at using mainly

canistered material.

And again, we don't want to speculate over the period of time of this EIS, you know, how this material is going to come in. It will probably come in in both fashions. So we want to, again, bound what those impacts would be by looking at the upper and lower bounds.

When you're looking at mostly uncanistered material, you're looking at more operations, more handling, more exposure to the workers. So that will be the upper bound of the impact analysis.

We'll also look at differences between these two as it relates to dry storage and to storage that is in pools, wet handling, and assess differences there as well. And that could also, or would also include any differences in waste stream that might come out from the two approaches.

The EIS will look at a no-action analysis. The no-action analysis provides an environmental baseline against which the EIS can compare impacts from the proposed action.

So in this particular case, we will look at the impacts from leaving the spent nuclear fuel and the high-level waste at generator sites, and there's about 79 of those out there, and analyze two scenarios to bound the impacts. One will be to maintain institutional control for a 10,000 year period, and the other one will be loss of institutional controls after 100 years.

Now, the scenario does not just say you walk away from the fuel where it is right now. It starts out with putting the material in appropriate dry storage at the sites prior to the initiation of analysis.

For the Yucca Mountain site, you would determinate your Yucca Mountain activities and do your reclamation program, and that would be the end of anything tied to the repository program.

Under the scenario that's tied to long-term institutional control, we would evaluate the radiological impacts from inspection, from handling and repackaging. So you'd have over, you know, 10,000 years, or a long period of time, impacts dealing with, you know, operational handling of this material.

You would also look at costs from facility operations because you're going to have to continue to maintain this facility. You're going to have to replace this facility from time to time. So we'll compare the various scenarios from a cost perspective as well.

With the loss of institutional control, you'll evaluate the impacts of radiologic release into the environment. And in this particular case, eventually your facility has degraded, your waste package is degraded, and you have radioactive articulates that will, you know, go through several pathways, air, surface water being two, and

maybe some from ground as well. It will be different for each site.

Where are we getting this information from? Well, we've been out there collecting data on this program now for, you know, 15-some years, and there is a plethora of information available for us to pull from for the Environmental Impact Statement.

Site characterization data is plentiful as it relates to supporting the site recommendation and a license application. We've been collecting environmental data now for a number of years as well, as it relates to requirements under the Act and requirements under other, you know, regulatory permits, programmatic agreements and studies and so forth. So there is a lot of information that is available.

We've also gathered additional data to support the Nevada Transportation options, the no-action alternative, expanded waste inventories. We're looking at other EISs that are available out there in the public domain; Fernald Research Reactor EIS, information from Idaho, spent nuclear fuel EIS, information from WIPP, the NTS site wide EIS. As you know, NEPA encourages you to incorporate by reference and utilize other material to the extent possible, and we intend on doing that.

We're also pulling data from other DOE sites tied

to, you know, their inventories that might be coming here or the no-action alternative, as well as looking at publicly available information tied to utility safety and environmental reports. We spent a lot of time in NRC libraries looking at what they have available as well.

A key challenge really is not do you have enough data available to write this EIS, but ferreting out the large amount of information that is available to what is an appropriate subset for the Environmental Impact Statement document.

There are a number of technical disciplines that are normally analyzed in an Environmental Impact Statement, and the next two or three slides really go through what those resource areas are. What's on the right are just, you know, examples of impact measurements. There are others that might be more appropriate than what are down here. We just wanted to get you a feel for how these things are measured. I'll just put them up real briefly.

Okay. Where have we been, and what path have we followed, and where are we heading? Well, we published a Notice of Intent, which really kicked off this Environmental Impact Statement process in August of 1995, and that initiated public scoping. And we conducted 15 public scoping hearings around the country. Approximately 800 people attended, and we ended up with 1,000 comment documents, and a

comment document could be something that was a paragraph or two long, or it could be something that was fairly substantive in size. So to say the least, we had a lot of interest in what was going on in this program.

I guess I would say that one of the reasons why I spend so much time on talking about transportation is when you get outside of Nevada, transportation is the issue that is of greatest interest to a lot of people out there in the general domain and is worthy of, you know, that attention.

We prepared transcripts. They were placed in reading rooms around the country. And scoping closed in December of 1995. And, unfortunately, we ran into some serious budgetary problems shortly thereafter and put everything aside for a period of time.

We decided, or believed, that our budget would look better in 1997, so we proceeded forth with getting the contractor on board. The contractor ended up being Jason's Technology. They were selected in September of 1996, and we started working again on this EIS in October of 1996, the beginning of the FY-1997.

Now, one of the first things that we did was pick up those 1,000 comment documents and started going through the comments that came out of the scoping process to assess what those comments were, how we might deal with them. We, in fact, published a comment scoping document in May of this

year.

What we've been doing principally since this point in time is reviewing existing project data, data that's available through the various sources that I've mentioned, assessing data gaps, if any, communicating data needs with dinner organizations so that we're not just going to the technical databases and trying to pull things out, but we're going to the people that built those databases and asking them for specific pieces that are appropriate to our needs.

And we've also been dealing with consultations with outside parties and getting information from them that's appropriate, such as an ELM and so on; Air Force.

Okay. Major milestones that we have coming up, the draft Environmental Impact Statement comes out in July of 1999. This document will be out for public review. There will be hearings on this document. In August of 2000, we'll issue a final EIS, which, you know, will also deal with the comments that come out of the hearing process on the draft. And in September, 2000, we plan on issuing the record of decision.

And that concludes the formal presentation.

COHON: Questions? Priscilla Nelson?

NELSON: Nelson, Board.

My question relates to air quality and the

possibility that there could be active ventilation incorporated in a repository. How is that possibility included in the work you're doing now and will be producing in your report? And was the year 2000 the record of decision? To what extent will consideration of active ventilation of the repository be considered in that document?

DIXON: Okay. Let me step back a couple of steps, and then I'll get to that.

What we intend on doing is looking at basically the reference case, which is high, and you have your two, you know, conceptual designs that are for your intermediate and low. If the design site of the house in the near term, before the FDIS gets out, and we still have time to incorporate whatever design changes exist, do something such that they incorporate into the design enhancements--and you're mentioning one, or that may be an enhancement. I don't know if it will be an enhancement or not. That's the question. If they incorporate something into the design because they've done the analysis, and they believe it needs to be done, and it becomes part of the design, we'll pick that up and utilize it.

If on the other hand, there has been no decision made to, you know, have active ventilation for a period of time or put in drip shields or do one of these other enhancement options, they're still being looked at, they're

no sure, the EIS will take whatever the design is that we're using at that time that's been incorporated, and we will look at what those impacts are.

And by definition, anything that is done beyond that, and that's what we call the mitigations, anything that is beyond that would be done to enhance the performance of the repository, not the other way around. So we will have bounded the impacts by doing the analysis with whatever the design is. Those enhancements have got to improve performance, not reduce it, or you would not do the enhancements by definition.

NELSON: But enhancements are not always only simply acting, but often are tradeoffs, and so it's a--

DIXON: Right. Let me take another step back again.

NELSON: Okay.

DIXON: Okay. Taking another step back again, if there was the potential of an enhancement that produced a significant environmental impact that had not otherwise been considered, then you would have to go back and do a supplement to your EIS. If on the other hand it changed things, but it didn't produce a significant impact in the process, it just changed things, you would not have to.

With respect to impacts in air quality, I mean, we'd have to look at that a little bit more closely to understand what kind of bounding conditions might happen by a

ventilated repository over time and if that might not already be incorporated in the work that we're already doing. I could not address that specific question right now.

NELSON: Okay. So you don't know right now whether ventilation is going to be included in the case that you're going to consider for the EIS, the year 2000 document?

DIXON: We will include in our design case whatever is coming out of--

NELSON: --the reference design.

DIXON: That's right, whatever that is. That's one of them. Again, we have two others.

COHON: Dan Bullen?

BULLEN: As a follow-up to what Priscilla said, basically a high areal mass loading in a ventilated repository isn't necessarily a high thermal output, and so you would have to balance the high area mass loading and ventilation with the--I don't have to dig as many tunnels--

DIXON: Right.

BULLEN: --to do a low thermal loading issuance. So that's the tradeoff.

DIXON: Yeah.

BULLEN: But a similar follow-on question that's outside the bounding calculation that you appear to be doing; you said uncanisterized fuel basically would have the highest

handling and the highest worker exposure. Do you have capabilities, or would you have to revisit the EIS if you wanted to do things that were even broader enhancements, like fuel ride consolidation, where you ended up with less packages and potentially less tunnels, but you had a potentially higher worker exposure? Is that a revisiting of the EIS, or do you have to--will you be able to take a look at that?

DIXON: I think you'd probably have to go out and do a supplement. If you're doing it for something that's proposed that you haven't analyzed in the EIS, you know, that would have to be looked at.

BULLEN: So a future EIS evaluation, subsequent to maybe even license application--

DIXON: Sure.

BULLEN: --if you wanted to take a look at things that would be a supplement to the performance of the container--and I guess I'm looking at long-term benefits. One of the big benefits I see from consolidation is potentially no post-closure criticality issues? If you can preclude water; you've got a tightly-packed can, and if it falls apart, granted, it could fall into an optimum geometry, but the odds of that are pretty darn small because it's pretty hard to make a reactor work anyway.

So I guess I was just wondering what the scenario

was, but you said you would have to go back and revisit the EIS and open it up to public comment and go through the entire process again, then?

DIXON: It depends. A supplement does not require going out for scoping or public comment.

BULLEN: Oh, okay. Thank you.

COHON: Paul Craig?

CRAIG: Craig, Board. I'd like to explore the no-action analysis, which appears to me--it shows up on Page 17. It appears to be a very limited no-action analysis, where you propose just to leave the waste exactly where it is now with all the reactors, and then you have these 10,000-year, 100-year guidelines.

A lot of other possibilities have been suggested at one time or another. For example, you could take waste that is at particularly unfortunate locations and put it someplace else. You could have centralized storage someplace, at Yucca or elsewhere. And you could have a situation in which the decision for Yucca Mountain doesn't occur at the 2002 timetable, but is postponed until some future time. And all of those would appear to me to be legitimate alternatives to the proposed action.

Are you going to consider any of those or others along that line?

DIXON: When we looked at our no-action alternative, we

had people that brought up all different kinds of things that might be possible.

CRAIG: Yes.

DIXON: And they included the examples that you just mentioned. And when we sat back and analyzed it again, the no-action alternative deals with no action, and every one of those things is not a no-action alternative. It's a different proposed action alternative. It is a proposed interim storage, a proposed consolidation somewhere else, and, you know, that's not really no action. No action is doing nothing, and basically that's where we are heading. We're not going to go out and propose another scenario. You know, again, like I say, that's another proposed action, not a no action. But it's not a question we have not heard before and we hadn't thought about.

COHON: Debra Knopman?

CRAIG: It's an interesting definition of no action.

COHON: I'm sorry, Paul.

Debra Knopman?

KNOPMAN: Knopman, Board.

First of all, I want to thank you, Wendy, for coming before us and giving us this overview.

You mention on the second to the last page of your presentation that one of the things you've done since you were able to start up again in FY-97 was to review additional

data collected to meet EIS needs. But I'm wondering if you could give us some idea, and I'm also, I'd just say, sympathetic with the problem of having to ferret out what's actually useful from the masses of data collected. But I guess I'd like to get a little bit more specific about maybe areas where you think existing data was weak and where you felt like--or feel like you need to pursue a little bit more effort to gather the data needed for the EIS.

I'm not sure this is right, but I would say, for example, in the area of biological resources under when the repository is getting close to a peak heating--heat load. What do you do about information of that? How do you define really some baseline of effects?

DIXON: What we do is go back to basically the NEPA provision of a sliding scale, and that basically gives you guidance that you spent time and attention on those things that are truly significant and away from those things that really aren't.

And you look at--we'll just take an example that you just gave right now. Let's look at the habitat at Yucca Mountain. Question Number 1, is this habitat unique in any way or is there a lot of it out there that looks and smells and tastes just exactly the same as what's at Yucca Mountain or very similar?

Second question is, is there wetlands there? Is it

an agricultural area? Is it critical habitat? You know, are there endangered plants or animals involved? You go through sort of the list on what is there, you know, and what are the issues.

And then the next step is--you know, that gives you a certain amount of information. And, obviously, if I don't have critical habitat, if it's not a unique environment, it's not telling me that I need to spend a whole lot of time in there for certain things.

Now, with respect to the question on thermal load, the first question we would then look at would be a question as it relates to what is the expected increase on thermal load for the high thermal load because that will be the upper-bounded case.

And we looked at what the design assumption was. The design assumption was 2 degrees C and--

KNOPMAN: At the surface.

DIXON: At the surface, right.

KNOPMAN: Okay.

DIXON: We looked at whether or not the people doing the analysis were expecting that they would come in underneath that design assumption, and they're still telling us yes from the input that we're getting.

We looked at what we have picked up as it relates to soil temperature probes. We have eight sites, eight micro

sites within the sites. The variation, depending upon elevation and aspect, runs between 1 and 7 as a mean, and up to 13 degrees C as, you know, individual sites. There's a lot of variability naturally there already. Does anything that we have seen to date indicate that we need to go out and do additional data?

So you don't just take an area and say the answer is yes or no. You've got to take, as you know, the area in context with everything else that you're looking at with the problem at hand. And you do an analysis, and then you make a determination of, with all of these things said, is this something that is important for us to spend more time on? And, you know, I mean, that's sort of an example.

COHON: Jeff Wong.

WONG: Jeff Wong, Board.

Let's see, Russ Dyer mentioned that he has 176 days left. I calculate you have 558 days. So within those 558 days, is there enough dated work planned for the EIS, like what are going to be the elements, the contents of the EIS, the time frame for completion for each one of those elements, the data sources that go into each one of those elements?

DIXON: We have an annotated outline that basically outlines the ingredients of the EIS that we're working on. We're pretty close to closure, but not there yet. And it will probably change as we start writing the chapters because

as you know, as an author, you can come up with an annotated outline, and as you start building it, it doesn't work quite right, and you've got to change it. So, I mean, but it would, you know, basically provide the elements. They might change order.

WONG: And as you go along in the 558 days, will there be periods of time or at what juncture do you think that the Board would be allowed to take a look at the annotated outline?

DIXON: You know, I don't have a problem with showing you the annotated outline, and if you give me a couple weeks or so, as long as you recognize that we might change it again, you know, as time progresses.

WONG: Sure.

DIXON: You know, I don't have a problem with that.

WONG: Thank you.

COHON: Richard Parizek?

PARIZEK: Yeah, Parizek, Board.

Just a point of clarification for my benefit. How are the linkages occurring here between the draft EIS going in, and if the review process takes longer or there's a lot of comment and you have to do some things that take time, does that hold up a recommendation of the site in the LA application? I mean, must you go through your hurdle and get approval before you go forward?

DIXON: I get reminded of that with the critical path all the time, you know? So, yeah, we, you know, are the step that's necessary before the site recommendation.

PARIZEK: You can go forward with these other two issues?

DIXON: Yeah.

PARIZEK: So that will be a hurdle, and the whole program then hinges on the success of your effort--

DIXON: Yes.

PARIZEK: --and the review process from the public.

DIXON: Yeah, well, the hearing process is going to result in--I don't have to speculate. There will be a number of comments made on the draft EIS, which we are going to have to address in the final EIS, and that will be a horrendous job.

PARIZEK: In all likelihood, then, is the time frame of 2001 and 2002, it's probably going to slip; is that fair?

DIXON: Oh, wait, we didn't say that.

PARIZEK: Well, I'm just thinking about how the real world works.

BARRETT: Lake Barrett, DOE.

Not necessarily. I mean, NEPA processes have been around--a couple of decades we've been doing these things. So there is a formal process. It is likely there will be adjudicatory actions on this, you know, afterwards. So we

must follow due process.

But there will be a public comment period, and there will be comments. Then we will--in the schedules, we will respond to those comments and follow the process. I don't believe there's anything in the EIS that we cannot meet. Yes, it's probably the critical path item out at that period, but there are many other almost critical path items as well in the licensing and everything else.

So, but Wendy is on the critical path, and I believe we can meet the schedules as we've shown them in the program plan.

PARIZEK: Now, a question about the WIPP experience. Was WIPP able to meet as scheduled in their EIS process? Does anybody know?

DIXON: I have somebody working on my team that also worked on the WIPP EIS, and I see him nodding his head. I presume that means yes, David.

LECHEL: Dave Lechel, contractor.

Yeah, I worked on the last WIPP supplement, and the schedule was met for that. There was a delay in getting their record of decision out from their original schedule out of the Carlsbad area office, but the EIS itself was, indeed, completed pretty much on schedule.

COHON: John Arendt?

ARENDT: Arendt, Board.

In making your transportation analysis, and you're bounding--or you say you're producing the broadest range of potential operating conditions, how are you using, or how are you evaluating the fact that the privatization effort that you're assuming will be used--the privatization effort, as I see it, may introduce a fair amount of variables. And I'm wondering how you might handle those variables, since you really don't know what the privatization effort is going to be?

Secondly, since there isn't apparent lack of standards, that further complicates, I think, the matter. And I'm just curious as to how you're going to bound those conditions?

DIXON: We will look at the RSA in the EIS, but there's a lot of flexibility that the service contractor can do that won't impact the NEPA analysis. You know, the DOT regulated routes are going to be there irrespective. We'll have to take a look at potential impacts from carrying many packages, but who selected this earlier, you know, it's not that important. What's important is the procurement process for getting the materials in place to do the transportation, and that will be a given no matter what. So we will look at and analyze those things in this EIS as well.

COHON: But don't you have to choose specific routes in order to do the estimates that--

DIXON: Well, that's what--DOT regulations give you a preferred route. There are 10 states right now that have come up with their own individual preferred routes, and that has already been included into the models that we're working from.

So when you do the analyses, you are required basically to deal with the DOT preferred route, you know, that takes you from wherever the generator site is to wherever it is you're going.

Now, obviously, if there are bad road conditions and things happen that are problematic, whoever the transporter is, you know, has some flexibility within its dealings with NRC and other things to deal with an alternate route. But it's fairly prescriptive. It's not a matter of saying anybody can pick any route. You know, you're pretty much driven to the DOT routes.

ARENDT: One particular area, I think is emergency preparedness, and emergency preparedness, as I understand it now, the way it's being handled in the privatization area, I honestly don't know--I think it can vary. And since that's extremely important, I'm wondering how you are considering also the emergency preparedness, then, along the routes. And, of course, this has nothing to do with routing. Are you looking at all that emergency preparedness or--

DIXON: Emergency preparedness is covered a little

separately under, you know, other things. In the EIS, you'll look at accidents, and accidents are fairly random, and you can't make a determination as to where they are ahead of time. So--

BARRETT: Lake Barrett, DOE.

The EIS process that Wendy is doing I believe will be independent of how the Department works with the states to assist them under 180-C, to assist them with their emergency preparedness. She will do the outright technical environmental analysis of what happens, just like it's in WIPP and in spent fuel and other things, the traditional NEPA way of doing analysis. Either way we do it, there will be a degree of assistance to the states to help them. And the last approach that we came out on our revised policies and procedure is to try to get all the states and tribes up to a minimum level that they would specify.

And your previous question on the RSA, Regional Services Administrator, or contractor, if it's privatized or if it is government-owned/contractor-operated, the safety standards, NRC regulatory, are still the same. So I don't expect there to be any difference in Wendy's analysis if it's a market-driven approach or if it is a government-centric approach. And the market-driven, if it doesn't work, there's always a fallback, would be a government-owned/contractor-operated system, as, you know, WIPP was.

COHON: Debra Knopman?

KNOPMAN: Knopman, Board.

Wendy, I just wanted to ask you a few questions about the methodologies employed in the EIS for analysis. Is this going to be--would some of that information be available to us in the annotated outline that you will be able to share with us? That wouldn't be in there?

DIXON: No, the annotated outline does not include methodologies.

KNOPMAN: Okay. Is there another EIS--since you're looking at other EISs that have been done by either DOE or other federal agencies, is there one that presents a set of models for you of sort of how to go about your separate analysis in--I don't know whose phone that is.

DIXON: Whoever is calling, answer the question. No. Okay. There isn't an overall decoder ring. I think that, you know, if you looked at a number of EISs, you would see a lot of comparative work, you know, that will also do, i.e., you know, habitat loss and impact on other uses, and impact on water quality, and impact on air, and have you met the ambient air standards, or, you know, is there a problem, and latent cancer fatalities if you're dealing with a program tied to, you know--radioactive issues will always be included with respect to standardized models because the EISs are very different, and you will see different approaches. A lot of

things don't have models that you use. I mean, you do a quantitative comparison, and that's all there is. There isn't a model.

Some things, for example, like transportation, there have been several EISs ablate that have basically relied on the same models, such as RISKIND and RADTRAN and Interline and Highway, and we'll do the same darn thing. You know, we'll pick up and utilize models that, you know, have been utilized in the past, and they've worked, and they're, you know, fairly standard from a NEPA perspective.

KNOPMAN: Knopman, Board.

So there are some models--you've already made some selections there in certain cases?

DIXON: In certain cases, yes.

KNOPMAN: And they seem to have to do mostly with transportation. Would it apply to--

DIXON: Well, I'll give you another one we've selected. We're going to use TSPA for--

KNOPMAN: Okay.

DIXON: We're going to pull from example--

KNOPMAN: Right.

DIXON: --the science out of the house and use all their TSPA work as appropriate.

KNOPMAN: Okay.

DIXON: And we'll have them do TSPA analysis also for

us--well, we'll do them in part through Jason and part through Steve Brocoum's people for hazardous constituents.

KNOPMAN: Okay.

DIXON: So we'll rely very largely on a lot of the TSPA database that's there, which relies on numerous models, as you know, in building its case.

KNOPMAN: Okay. Now, what do you do about your no-action alternative in terms of what do you rely on in the way of data there?

DIXON: What we've been looking at, as far as models go, NEPA for no action. Data has been received from the various DOE sites that would be sending us waste, and we have, like I mentioned earlier, spent a considerable number of hours in NRC libraries going through the environmental reports and so forth from, you know, individual utility sites around the country.

KNOPMAN: So are there NRC models for kind of failures of facilities at nuclear power sites, utility sites?

DIXON: What I would like to suggest, and really this was Lake's idea--he's going, oh, what are you going to say? Okay.

BARRETT: Be sure it's right, Wendy.

DIXON: Was that if you're interested in the no-action alternative presentation, we could put that on the agenda for our TRB session and walk you through it. I mean, it's a

presentation in itself.

KNOPMAN: Well, we probably will be.

COHON: All right. Colleagues, this will go on forever if we don't show some discipline. Paul Craig has the last question.

DIXON: Make it one I can answer.

CRAIG: I think it was really covered by Debra's, but since--the issue of what happens for the first 100 years at these individual reactor sites is of considerable importance. Ten thousand years is interesting, too, but I am--I would really at some point like to understand how you are going to look at the detailed deterioration of reactor storage at each one of the many sites. So the methodology that you're going to use for approaching that problem would be of a great deal of interest. I really would like to hear the briefing on that.

DIXON: We will leave you with a cliffhanger and promise to give that to you in the next session.

CRAIG: Good.

COHON: Ms. Dixon, thank you.

DIXON: Thank you.

COHON: Will you be able to stay for the public comment period? Will you be able to stay?

DIXON: Yes, I will, not a problem.

COHON: Okay. There's one gentleman I know who has been

waiting patiently to ask his question. I guess he prefers to do it now than wait to the public comment period.

MCGHEE: I'm Earl McGhee. I live in Amargosa Valley. Mr. Barrett and Wendy, I'm sure that you might recall, and some things are brought up here on that EIS, I take exception with the EIS I have on the test site, and I take exception with the Nye County Government. You people are all good people, and you're doing a good job. But keep one thing in mind, all the people in this valley are not substandard. They don't live in substandard. Substandard is in the eyes of the beholder. And we pay our way, where in your EIS, why the Nye County has been subsidizing this. Well, I'm paying taxes, and I'm not receiving the services that I should be receiving.

So, and when it comes to talking about your tunnel, I believe Mr. Barrett can remember when I asked the question, are you going to scrub that atmosphere bumped out of the tunnel? And these things have all been brought up at the one meeting in Beatty in 1995. I hope that you prepare a good EIS, but keep in mind that maybe people are poor. Maybe they're less fortunate, but they are a part of humanity and should be considered and the environment here, also. And I thank you for letting me state that.

DIXON: We agree wholeheartedly.

COHON: Thank you. We will now take a break and

reconvene at 10 after 4:00, by my watch, for the last part of the program.

(Whereupon, a break was taken.)

COHON: If we could take our seats. Tear yourselves away from the mountains.

Mike Carroll, professional staff member of the Board, is going to make a presentation on the Board's strategic plan. I will then come back after Mike and moderate the public comment period.

Mike?

CARROLL: Thank you. I'm Mike Carroll, and I'm the Director of Administration at the Nuclear Waste Technical Review Board.

What I'd like to do today, if I could, is just provide a thumbnail sketch, or a basic overview, of the Act, the Government Performance and Results Act, and then present the Board's draft mission statement and general goals, as required in the strategic plan.

The Government Performance and Results Act of 1993 was enacted to provide for the establishment of strategic planning and performance measurement in the Federal Government.

Now, you might be curious as to why if the law was enacted in '93, why is the Board conducting this public consultation now. Well, there's two reasons for that:

First, government wide, Congress realized this was going to be a complex law to enact and gave all federal agencies until September of this year to submit their strategic plans. So there has been a long implementation phase with pilot projects and things like that.

Specific to the Board, because of our relatively small size, we were under the impression, as was our budget examiner on the budget side of OMB, that we were exempt from the process. Well, the management side didn't feel that way. The management side of OMB notified us in November that we are, in fact, not exempt from the process, and so we're sort of doing this in a several month period, where other agencies had several years to enact it.

It was sponsored by Senator Roth and had partisan support, and also was endorsed by the President, the Vice President. They have their own service-related project going called the National Performance Review, and they dovetail very nicely to increase service and accountability.

It was enacted basically for two things: Number one, to provide accountability to the public; you know, federal accountability to the public for the job that we're doing, and also to increase the confidence that the public has in the Federal Government's ability to do its job.

Now, a critical part of the Act requires consultation in the development of the strategic plan. It

requires consultation with the Congress, the public, and other government agencies. We're here today to consult with the public, and hopefully, either today or in the near future, we'll get some very good feedback. The Congress, we're in the process right now of consulting with them to get their feedback on our strategic plan, and other government agencies involved in our program; obviously, that's the Department of Energy, the Nuclear Regulatory Commission, the EPA and the Department of Transportation. We all have a piece of this program, and we'll be consulting with all of those before we submit our final strategic plan.

John Koskanin, who last year in February testified before Congress, he at the time was the Deputy Director for Management at the Office of Management and Budget, and the OMB has the overall responsibility for the implementation of GPRA in the executive branch. And he basically boiled the entire Act down to three very simple questions: What are you doing, how are you doing, and how do you know. And that's pretty much a very concise way of implementing GPRA. What are you doing as your mission? Are you doing what you're supposed to be doing? Are you doing what Congress intended you to? How are you doing? You know, what impact do you have on the public? What are the results of your activities? And lastly, how do you know? How did you get that data? How did you get that customer satisfaction data? And those

are the three questions every federal agency needs to ask themselves as they go through this process.

GPRA focuses on outcomes. Now, in the past, historically, the government focused on outputs; how many people were vaccinated, how many people were trained, that sort of thing. Well, that's no longer the focus. The focus now is outcomes. Did public health improve because of the vaccinations? Did more people get jobs because of job training programs? So there's been a fundamental shift in how the Federal Government is going to be graded on how they do their job. What impact did you have on the public?

It also focuses on customer satisfaction and quality. I'm sure if you asked somebody in the Federal Government maybe 10, 15 years ago, you know, who are your customers? Well, you know, I don't have any customers. The IRS is finding that out now, that they have customers, and they need to improve service, and I'm sure that they will. And that will be part of the process for all of us.

There are several steps to implementing GPRA. The entire thing, the entire--the foundation for the entire implementation of the law is a mission statement, what are you doing, and everything else flows from that.

The main document in the GPRA is the strategic plan. The strategic plan is a five-year document, five years into the future, so it requires some long-term thinking.

Included in the strategic plan is, obviously, your comprehensive mission statement, and then your general goals and objectives, what you hope to achieve over the next five years.

In addition to that, you've got key external factors. Those are factors that you have no control over, but which could have an impact on your ability to do your job, to carry out your goals and objectives. And you also have to address in the strategic plan how you intend to accomplish your goals and objectives.

GPRA, obviously, is a long-term process. It forces us all to think in long term, out into the future, rather than just the next fiscal year or what's happening now, which is a bit of a change. It requires a lot of planning, a lot of consultation, which may or may not have been there in the past.

And one of the key components, I think one of the most important ones, is that it provides measurement, you know, a vehicle to measure your performance, and that leads to accountability. If we can measure our performance, we report that to the public, and they can say you did or didn't do your job, and we'd have to explain why we didn't do our job, if, in fact, that was the case.

Now what I would like to do is present the Board's draft mission statement and then general goals.

The mission statement, as I said earlier, many times it's established by Congress. So the first thing you do is go back and look at your enabling legislation and see if what you're doing is applicable to your enabling legislation. We're a relatively new organization, so we feel it's totally appropriate, and that's where we took our mission statement from.

"The Board's mission, established in the Nuclear Waste Policy Amendments Act of 1987, Public Law 100-203, is to evaluate the technical and scientific validity of the activities undertaken by the Secretary of Energy, including the characterization of the Yucca Mountain site, and packaging and transportation of spent nuclear fuel and high-level radioactive waste." That's how Congress sees our mission, and that's how we see our mission as well.

Now, as I said earlier, another key component of the strategic plan are general goals. These are your overall goals that you hope to accomplish in a minimum of the next five years.

And what we did at the Board, we sort of broke it into two steps. We saw a national goal that I think we all share in, all the participants, and then we broke it down specifically. Based on the national goal, we broke it down to two specific Board goals.

The national goal, if you will, "The overarching

goal of national waste policy established by Congress is to ensure that civilian spent fuel and high-level radioactive waste are safety packaged, transported to, and disposed of in a permanent repository. The Administration, state and local governments, and the public all have important parts to play in achieving a safe waste management system."

And this is a continuation of it: "Federal agencies with important, often crosscutting, roles include the Department of Energy, the Nuclear Regulatory Commission, the Environmental Protection Agency, the DOT, and the Board." As I mentioned earlier, we all have a role in this overall goal.

And then as a key contributor to this national waste management effort, the Board has established two general goals. They are: "To conduct an ongoing technical and scientific evaluation of the validity of the Secretary of Energy's activities related to site characterization and transportation and packaging of spent fuel and high-level waste, and, to effectively and in a timely manner convey its findings and recommendations to the Secretary and Congress. These findings and recommendations will be made available to the public."

So that's the Board's, as part of its strategic plan, its mission and its goals.

Now, what I would like to do to frame the

discussion for the rest of the afternoon, is put up two questions that we'd like you to consider and then to react to them, or you can react to any part of it.

Basically, what is the Board's role? I mean, we've defined our role, as you've just seen, and we'd be interested to hear what the public thinks of our role or what our role should be.

And, also, in developing our goals in the strategic plan, what should the Board's goals and objectives be for the next five years?

So based on that, those two question, that's how we'd like to frame the discussion for the rest of the day.

I'd also like to say that I am the official point of contact for the Board on the submission of it to the OMB and Congress, and also to incorporate any feedback from the crosscutting agencies, the public and the Congress. So there's my voice number, my fax number, my E-mail number, and there are copies for the public available in the back. There are also copies of my overheads, and a copy of the strategic plan is available on our Web site. So you can have access to the information and then communicate with me any way you'd like, and we would appreciate some input either here at this meeting or later on, over the next several weeks, before we get this in.

So I turn it back over to the chairman.

COHON: Thank you very much, Mike.

Linda, could I have that sign-up sheet, if you'd bring it up here?

Some people have signed up to make comment or to ask questions. Let me ask, though--and you will all be called on, and you will be given plenty of time to say what you like. Before I call on you, though, in order, let me ask if there are any--if there's anybody in the audience who would like to comment specifically on our strategic plan, responding either to the questions that Mike put up here or anything else related to the plan?

Mrs. Devlin?

DEVLIN: Yeah, Mike, what's your address?

CARROLL: I'm sorry?

DEVLIN: You don't have an address.

COHON: People still do write, Mike.

DEVLIN: I write, and I have friends that write.

CARROLL: My apologies. I'll provide that before the day is ended.

COHON: It's available on the back.

DEVLIN: We don't have Internet in Pahrump.

COHON: Okay. That's a fair point.

CARROLL: Yes, it is.

COHON: Would anybody else like to comment on the strategic plan? Well, we know that it was a lot to digest,

and you'll want to think about it carefully before you send us your comments. Please do. We genuinely would like to hear what you have to say.

Now, we'll turn to open comment and discussion. Bill Vasconi, I believe.

VASCONI: That's close enough, partner.

COHON: Okay. If you could identify yourself again, though?

VASCONI: Well, I wear many good hats. This one happens to be Levi, but today I'm representing myself as a concerned citizen. Maybe later on I'll like to talk as a head of something or a representative of something, if that's all right with you?

COHON: In any capacity you would like, but if you could just state your name again?

VASCONI: Bill Vasconi.

COHON: Vasconi.

VASCONI: It's Irish.

COHON: Good.

VASCONI: I heard a comment made. I'm going to comment on your reports, but I heard a comment made as I was coming in about how desolate this area was. Well, I came here in '64, and it's built up quite a bit. This is probably the most suits Amargosa Valley has seen since its existence.

The comments I would like to make are this: Number

one, Nye County, and it's a welcome concern. Don't accelerate the studies because it's popular or you're based on a time frame. That's not fair. Health and safety is a concern; health and safety to workers, health and safety to the people of Amargosa Valley, indeed the State of Nevada.

You heard the terminology keep it open for ventilation. You know, once upon a time, when this all started 13 years ago, if we would have went through the same process with Boulder Dam, there would still have been water floating down on Colorado. Anyway, keeping it open, once upon a time what we were going to do was go in there and gunnite it, concrete it, put the vegetation back to the natural state, and put a granite stone on top of it. In case somebody found it, they would know what was buried there because it was going to be written in 40 different languages.

It's a lot more acceptable, not only to the people in Nevada, but to the nation, to keep it open, to ventilate it, to have temperature probes, to have water probes, to have radiation capabilities with instrumentation. What's wrong with the word stewardship instead of permanent? Ten thousand years? Well, I've got a little more faith in the educational system than most folks do I guess. I think in a thousand years you're going to tell us whether we made a mistake. I think in a thousand years, because of our educational system, some of that may even be an asset versus a liability.

Some folks say no alternative. How ridiculous; it's almost ludicrous. What do we have now, 115 nuclear submarines? They're dropping the spent fuel rods off in Maine, two places in Virginia, Washington, Idaho, now Hawaii. Leave it where it's at. No, that's no alternative. Fifteen surface vessels, leave it where it's at? No. Sixty-one reactors in universities? No, that's not unheard of, leave it where it's at. A hundred and six reactors, commercial reactors in the United States, 71 sites you're storing it at in 40 different states, that's no alternative. You're not going to be able to find it in 10,000 years. Consolidation is the way to go.

Next one. Variation design with the end results of today's scientific and technological expertise. Well, we pretty well covered that with education. The no-action alternative, we've covered that.

One more thing, and I'll let somebody else get up to the mike, and I reserve the right to speak later. You're all talking about ways to ship it. Ten of the states have given permission to use a portion of their state as the route they accept. Well, apparently, Nevada hasn't given anybody a route to accept. Let's talk about the State of Nevada.

The geographical center in the State of Nevada is a place called Austin. Get one of your maps out one of these days when you get a chance and take a look at it. Carlin has

got two railroads going through the top of it. You can leave Carlin, come down that Smokey Valley, go between Eureka and Austin. Come down through the, excuse me, the monitors, hit Tonopah and drop in around the side and come back onto the test site. I know it's one of those ones that's being looked at.

But the other two aren't acceptable. Number one, Clark County. Hey, Clark County is as big as New Hampshire, as big as the state of New Hampshire. Do you realize that nine of the original 13 states would fit inside Nevada? Do you realize that Delaware, Rhode Island, Connecticut and Massachusetts would fit into Nye County? Nevada is now the second largest producer of gold, and gold and silver we've got a bunch of--second largest producer. If Nevada was a country, it would be the second largest producer of gold. Why not utilize that railroad system after the nuclear waste has been taken care of to foster industries opening up the interior of the state of Nevada?

Again, I reserve the right to talk a little bit later, too, but I do appreciate you listening to me, and thank you.

COHON: We appreciate your comments. Thank you, Mr. Vasconi.

Sally Devlin? Could we make that lower for Mrs. Devlin?

DEVLIN: I didn't grow.

COHON: I know.

DEVLIN: That's not fair.

COHON: Thank you.

DEVLIN: Thank you very much.

All right. My name is Sally Devlin, and I want to welcome you here. And I see so many familiar faces and many new faces. And I used to stand up here and say it is all in Nye County, and I am from Pahrump, Nye County, and we're even on all the maps now, except that the road, if someone asked me about it today, the road going by Death Valley Junction has no name. It goes right by my house and takes you right back to Pahrump. Anybody at Days Inn or Saddle West--that saves you 58 miles or 38 miles.

So again, welcome, and I'm delighted that we provided this beautiful summary and our beautiful, dry, non-windy desert weather for you, and I hope it will continue tomorrow. It's supposed to.

But I have, of course, questions for the Board, and I tried them out on Russ Dyer, and he said go ahead. And the first thing--

COHON: He can answer them, too.

DEVLIN: No, he can't.

COHON: Oh, okay.

DEVLIN: No, everybody has got to get in on this.

My first question is, again, from years of experience, and that is, is there anybody on the Board that has industrial turnaround experience and who is--or else who is a supervisor in the DOE? The reason that I say that is we are going to have projects in the very near future that have never been done before, Navy canisterization and a few dozen other things.

And I strongly feel--I am a corporate person. I own my own Nevada corporation for 23 years, and I have a tremendous business background. And I know when I didn't know something, I went to people that did. So I feel very strongly that everything has been science, and I don't feel that anything has been industry. So I would suggest somewhere along the line that this be looked into.

Now, the second thing is, again, I have a problem with, and that is I am serving and have served and attended every meeting in the world, but I'm on the NRAM committees, and we are doing the low-level waste and the water studies. And I said I want definitions of what are low-level mixed waste, transuranic and high-level waste? And guess who got four or five on each one, including DOE's and others, and what are they using and so on.

So this came up when I received my fourth INEL EIS, and I think it must have been the ROD one. Anyway, the guy says that we have 5,500 metric tons, but we want 300 to 425

110,000-pound canisters.

And I get hysterical, and I call Washington, and I talk to Captain Carlson. And I said, for 5,500 metric tons--and, of course, this was just after Dan Ryan was here talking about the canisterization. And Judy and David and I were the only ones there. This was downtown in Las Vegas. And he's telling us what goes in, how much, the cost, about three-to-five hundred thousand apiece and so on. And I said, "Why in the world for 5,500 metric tons, which is nothing, do you want three to five hundred canisters, or 425?" And he said, "Because we're going to put mixed waste in with it." And I said, "Well, what, sir, is in the mixed waste?" "It is classified."

You don't classify it with me, not at all. So this has got to be attended to. You cannot be putting things--and we're learning more and more about this classification of waste, the leakage, the different terminology. We just had the leaks from Fernald. We had all kinds of things. There is so much new science out there, that it is, to me, just shocking that local groups, whatever, that are doing things. Fernald just cleaned up what was a waste thing, and they cleaned up 90 per cent of it; 100 per cent was to come here.

Now, we're talking enormous numbers. I know you are only Yucca Mountain, and you know my contention that Yucca Mountain and the test site are one. I don't know how

you can differentiate it.

And I'll get to--where is Dr. Dixon? Wendy, where are you?

COHON: She's behind you.

DEVLIN: Oh, good. I love your new hair. I didn't recognize you.

Anyway, and I have to say this: I met Wendy many years ago when John Cantlon was the head, and she was going to save the Desert Tortoise and everybody with her life. And John said, "Have you talked to the hydrologists and thermologists and so on?" And, of course, then she went to OSHA. And I thank her for her report, and I say it because, again, it was something I read five years ago, and it said, they're not going to be one repository, they're going to be two, and you can't close the first one until the second one is filled.

Now, that was in my article, which has gone national, and the mixed waste has gone national. And I am hysterical about it because as a stakeholder, you know my position. I have nothing. The only thing I could do, like those who are against it, is write a letter and the Feds have to answer it. I was with the three attorneys who did that.

So we, as the people, are not even concerned. Why is it I'm the only one from Pahrump? Dale is at another meeting, this one's there, and so on and so forth. Why

aren't there 10 million stakeholders? And the reason is, it costs a great deal of money to go to these. It costs hotel rooms, food, you name it and what have you, and beautiful clothes and everything else.

And I read the things you send me, and I study them, and I ask the questions, and I make the phone calls because I have the time and the interest.

But there are not many Sallys, and I'm going to try and organize 44 Sally groups because we have the same vestiture in all 44 states. And so I would like these questions answered.

Wendy said something about BLM. They did a Forest Service survey with 11 alternatives on 95 to 160, and I read it, and I said, this is the first report I ever saw that gave you 11 alternatives for the public on roads, recreation and what have you. But why don't you tell me where your demarkation line is between the Forest Service land and the BLM land, and why are you not concerned with emergency preparedness because if anything happens on 95, you've got to go to Pahrump to get it taken care of. Anything happens in Amargosa, you've got to go to Pahrump to get it taken care of.

We now have EMTs and PMT, a singular. But you're hearing what I'm saying. This has been going on for 15 years. I've only been involved in five. But I want to hear

from Wendy Dixon that the Forest Service and the BLM and this one and that one have gotten together and talked about things.

The letter I got back from the Forest Service said, thank you very much for your letter. We never thought of that. Now, can anybody in this room tell me where the demarkation lines are? Where's the demarkation line from the Air Force? Where's the demarkation line from Lincoln?

So we've been into all these questions, and they are questions, and they should be answered. And I, as a stakeholder, will continue to ask them, if you let me in and you don't shoot me, because they need to be answered. Those are three major things. I want to hear what the legal definition of high-level waste is, and then I'm going to go to others and find out what transuranic and all the rest because these are a mess.

The other thing is, again, about what executive turnaround experience has got to be had in this group.

COHON: Okay.

DEVLIN: And the third thing, again, is with Forest Service, BLM, where are they, how are they, how do they communicate, or do they communicate?

COHON: All right. Let's try answering these. Why don't you stay at the mike because it might require some interaction here.

DEVLIN: Good.

COHON: On the first one, when you say industrial turnaround expert, do you actually mean someone who takes over troubled companies and turns them into profitable companies?

DEVLIN: Exactly, and who is capable of handling new situations? What do we know about the waste is the big major question.

COHON: Right.

DEVLIN: Who has done it? There are 10--I read Scientific American and everything else in the world that's sent to me. There are so many new processes and new this and new that.

COHON: I understand.

DEVLIN: And it's got to go.

COHON: Well, I'm pretty sure we don't have any industrial turnaround experts. Had we had them, I would have asked them for money by now. And so I would smelled them out. So we don't have any of those.

DEVLIN: Do you think you need them?

COHON: But what you really mean--

DEVLIN: It's a question.

COHON: Well, not what you really mean, what I take from what you're suggesting, is that we have people with minds creative and nimble enough to deal with new areas, things

that they may not have been involved with before. Indeed, some of the aspects of Yucca Mountain, its design, its operations, are things we've not encountered before in just that form. Do we have people capable of dealing with that? The answer to that is decidedly yes. I've seen my colleagues at work.

We also don't hesitate to bring in consultants in areas that we don't feel are fully covered by the Board members. So, for example, at our last meeting in October-- who's the professor from MIT who joined us?

SPEAKER: Carl Peterson.

COHON: Carl Peterson, who I guess one would call a mining expert, but he's hard to categorize because he's got all sorts of really wonderful ideas "out of the box," if you will. He was very stimulating to us and I think to DOE as well.

So in terms of the Board and its ability to deal with these new ideas, I don't think you should be concerned. That's not to say we shouldn't all be concerned about whether a one-of-a-kind operation like the repository will be designed properly. We all need to be concerned about that.

DEVLIN: Well, you heard what I said about the INEL stuff. That's a whole new project. You don't know what's in it. How do you handle classified stuff that you're going to put in something, maybe, and ship it where? Is it 1,400

miles? Well, come on.

COHON: Right, but there your issue--your concern is classification, the classified nature of the information?

DEVLIN: Well, it's in the canisters.

COHON: No, but is that your concern in that case?

DEVLIN: Well, of course, it is.

COHON: Okay.

DEVLIN: You don't say declassified to me.

COHON: Okay. No, Mrs. Devlin, there's a distinction here between concern about the classified nature of the information and the expertise of the people evaluating it. I'm trying to keep the two as just separate.

We have access to information that we need. That's not been a problem.

DEVLIN: You have it, the public doesn't. How do you keep faith of the public? How do you keep sabotaging? You never talk about these things. Have you got--I gave it to the Board last time, the sabotage on these things. This is all major questions, and you're saying you've got the information, the public doesn't.

COHON: No, no, no, I didn't say that.

DEVLIN: Well, that's what you inferred. That's a good way.

COHON: Wait a minute, Mrs. Devlin. You're too sharp for me. You're getting me all confused.

DEVLIN: Right, yeah.

COHON: The first point is, the Board does have the adequate backgrounds collectively, we believe, and the President believes, to deal with the issues that come up at Yucca Mountain. There are all sorts of other issues related to nuclear waste, some of them do no bear directly on Yucca Mountain, about which you have a fair point or fair questions. And keep conveying them to the right people. I hate to say this, but when it comes to things like the facility in Idaho, we're not the right folks. That's not our mission, as you saw it.

DEVLIN: But it's going to go to Yucca Mountain. That is your department, I'm sorry.

COHON: Any waste that is intended for Yucca Mountain is data that we have access to. Do you have access to it? I don't know. Does the public have access to all the information that we have access to on potential waste streams?

DEVLIN: Well, if you remember, two years ago October, I read the Congressional report to all the brilliant scientists who were working on the canister. And I said--and I read it. I said to John, "You say it." He couldn't say it. So he said, "You say it." So I read it to you all, that the 10 per cent DOD stuff could go in the rock.

COHON: Okay.

DEVLIN: All right. And everybody went you know what, and we didn't know.

COHON: Who knows about the classified nature or not? Russ?

DEVLIN: No hiding.

COHON: Wait a minute, wait a minute. Hang on.

DEVLIN: Anybody, anybody.

COHON: John Arendt? John? We know so much, we're having trouble deciding who should talk. John Arendt?

ARENDT: I think we ought to have Carl kind of summarize the overall--

COHON: Carl Di Bella, a member of the staff of the Board.

DEVLIN: Now, he's been around a long time.

COHON: Yes, he has.

DEVLIN: And we're old friends, and he will tell the truth sometimes.

COHON: Okay.

DEVLIN: Go ahead.

COHON: You're on the spot now, Carl.

DI BELLA: I'll try anyway. This is Carl Di Bella, Board Staff.

I'm not sure what you're referring to with the 5,500 tons, but there are 65 tons, and there will be 65 metric tons of spent naval fuel that is destined to come to

the repository from INEL, and that would require 300 containers. And, yes, there is some information about that that is classified and not available to the public.

The Navy, I think, has been gradually declassifying information about that material, but I'm sure there will be some information that never becomes available to the public. I'm not quite sure what that will be, but it will have to remain classified for national security purposes. That information is available to one member of the Board right now, John Arendt, who has security clearance, and one member of the staff, which is myself, which has the appropriate security clearance for that. I believe an additional Board member is gaining security clearance.

Now, can I handle any other questions?

COHON: Carl, yeah, while you're up there, will you handle the waste definition question that Mrs. Devlin has?

DI BELLA: The definition of high-level waste is in the law. It's also in the regulations that have been set by the Nuclear Regulatory Commission of what high-level waste is, and it is specifically material that is remaining from reprocessing spent nuclear fuel, whether that fuel is a commercial fuel or whether it is spent fuel produced for national defense purposes. But the high-level waste is the waste that's left over from processing that material.

DEVLIN: My confusion comes from the definition again,

and that is either 225 or 228 fusion bomb drops at the test site, and the rest were fission. Now, fusion is considered low-level waste. Fission is considered high-level waste.

I just read it. I'm on the committee, guys. I'll show it to you in my books.

DI BELLA: If you're talking about waste that are at the national test site, I don't think any of that waste comes to Yucca Mountain. I may be wrong, though.

DEVLIN: It's already buried, you're absolutely right. By definition--by definition, I--

DI BELLA: Coming to a mine geologic repository at Yucca Mountain is what I mean.

DEVLIN: Well, I don't think it will come in, but you see confusion, and that is--

DI BELLA: Yeah, it is confusing.

DEVLIN: It is; all the levels of waste are confusing. And I will assign you, because you're an old buddy, to send me or else get a committee together, or something that really defines the different levels of waste. We do not know, and I don't believe anybody, about what goes in these things because Nevada doesn't inspect.

COHON: Mrs. Devlin, we will be happy to send you what we have.

DEVLIN: Every bit of it. I want the laws. I want how they're applied and so on.

DI BELLA: We can do that, and we will do that.

COHON: But with the caveat in advance that you will still be confused after you read it because it is confusing.

DEVLIN: I am more confused. It is terribly confusing.

COHON: Right, and it's not--

DEVLIN: And especially TRU. And I know, Carl, when I ask these questions, it is because you are laughing about it being confusing.

COHON: No.

DEVLIN: It should not be confusing to the public.

COHON: I don't think--

DEVLIN: We should have a line, a demarkation line, from this to transuranic to low-level to mixed waste. What are you going--

COHON: Were that it existed.

DEVLIN: Yeah, okay, we need it.

COHON: Now, just your last question was cooperation with BLM and the Forest Service.

Mrs. Dixon, could you--are they cooperating with you?

DEVLIN: With each other.

DIXON: With respect to the EIS that we're working on, there are entities that are out there that we will or have consulted with, which would include the BLM, the National Park Service and the U.S. Fish & Wildlife Service and the Air

Force and the Department of Energy over on the other side of the house, and the list goes on and on. So there is consultations as it relates to this individual Environmental Impact Statement as part of the NEPA process that's going on.

COHON: And you find them cooperative?

DEVLIN: Wait, don't go away. You're talking now--when he mentioned--when Bill mentioned the size of this area, these sizes are enormous, and it isn't something you walk down the path. You're talking about thousands upon thousands of square miles, and this is what bothers me. I could tell Bill I saw the Carlin Railroad Report, and that was an old mining thing. The report cost the taxpayers a quarter of a million. It was a beautiful report with all of the topography and so on. It was wonderful. And it said because how high do you have to go? You went over Peaks 1,300--or 13,000 feet, or whatever, and they're dangerous, and they're this and that. And that's all got to be considered.

I see on the map, you know, you're looking at Pahrump again. That's how I got into this. Over my dead body would you bring the railroad through that or the trucks. I talk about all the transportation because 95 is a 9 hazard. How many times do I have to say it? Pahrump is a 7 hazard. You don't change those things. There's no emergency preparedness. There's no nothing, and you're talking 30,000 people within 50 miles. You're talking--now we enlarged the

prison to 3,500 prisoners and 300 people taking care of them. They can't be let out on 95.

So you're talking all kinds of things, and I realize what else is going on in the country. But what I rely on this Board for is to allay my fears and answer questions, what is the waste? How is it this? Why is it classified?

COHON: Right, but--

DEVLIN: Sabotage, all the rest of the stuff that people ask me and I bring to you because you are the proper forum.

COHON: Indeed.

DEVLIN: I don't have any answer for that stuff.

COHON: Right, you do not have to explain or defend why it is you're asking these questions. I want to make sure we're answering the right questions.

We hear that DOE is getting cooperation by the relevant federal agencies. We will give you whatever we can on your other questions, but please keep in mind, some of these answers will still contain confusion because it is confusing.

DEVLIN: Of course it is, and I'm delighted that you see that--

COHON: Good.

DEVLIN: --because I haven't seen any straight line, and that is delightful. You've got to remain open on all of this

stuff--

COHON: We'll try.

DEVLIN: --because it can change tomorrow, and maybe someone will come up with a pill so we don't need gasoline or it dissolves all the nuclear waste. And I love that idea, don't you?

COHON: Thank you, Mrs. Devlin.

DEVLIN: Thank you.

COHON: Judy Treichel?

TREICHEL: Well, I got thrown a curve. I was going to come in here and give you just glowing answers in the affirmative to the three questions that were in your press release because I promised Dan Bullen I would do that. And now you've asked two new questions, and we didn't have a chance to see the report, and so I'm again singing the old song about we didn't get the stuff in time. And there was probably glitches that had that happen.

But I think rather than going into the three questions that you sent out on the press release, I'll just wait and either mail or call or fax or E-Mail, or something, the whole works.

COHON: That's fine. And we appreciate you thinking about those questions, and if there--

TREICHEL: I did. I was going to be great, but I'll do it--

COHON: Oh, gee, well--

TREICHEL: I'll do it the other way.

COHON: Okay. Thank you.

TREICHEL: In responding to the presentation that was just given concerning your GPRA charge, which I think is very interesting--number one, I'll already give you good marks on this because I've never even heard about it, and it happened in 1993, until now. So I would say that the agencies that we're dealing with on a very frequent basis at least aren't asking us. They may be doing some internal forms and filling out a report card, but they're certainly not checking it with us, and I thank you for doing that.

In your mission, which I know I've seen for a long, long time, I believe that the lousy job that's being done on an EIS for this project goes right to your mission where you are evaluating the technical and scientific validity of the activities.

And I don't believe that the EIS that the presentation was made on today and that we've been involved with for so long is anywhere close to what an EIS is all about. An EIS, the whole idea of that came about the evaluation of various alternatives to decide whether or not you do an activity.

Wendy used a very nice word, which was streamlining, saying that it was streamlined by Congress so

that you didn't have to evaluate the need for the repository. Well, that's what an EIS is all about. So once that happened and other things happened that didn't have to be considered, the whole thing, as far as I'm concerned, became invalid. But we're working under that.

I also think it's a real problem for the public where there was a tremendous hiatus between the time of scoping and the time of the writing of the EIS. It's a very difficult thing.

And one of the things that I heard today that bothers me a lot, when you're doing an EIS and you're doing evaluations, we sit here in technical exchanges all the time. We hear how the repository is being designed. We hear the studies that are being done. There isn't anything really set up to study various heat loads, to make decisions about how waste would come in, canistered, uncanistered because you can hear presentations every time these things are given about what's expected to happen. And at best, when an EIS comes out, I would guess that what's happening and what's expected to happen is that that would then make valid the program that's already there.

And one of the reasons I believe that is when Lake Barrett today said that better is the enemy of good enough. Well, when you're the public who lives here, you want better, and you may not agree that something is good enough.

And I think it was mentioned by the Board that what you've got here in this EIS is the preferred plan, and it may be all different from the plan that actually happens, just as the VA may be entirely different from what you see in a license application, and what gets built may be entirely different from that as well.

But the fact that we're being hit with something that's do nothing at all, just let that stuff stay there, which nobody, regardless of how worried about a repository or how confident you are in one, nobody would ever suggest that.

So it's a real wringer that's been thrown in, and I believe this whole process has tremendous problems with it.

In Wendy's presentation, there are other things that we've all seen before, but they are just there. And I think I already mentioned it, the need for a repository, the various heat loads. You know, in the RFP that's going out, are these people being told that we're looking at these various alternatives? I don't think so. I think you'll have companies deciding how they can do it as cheap as, as fast as, as--well, I guess cheap and fast is probably going to be it.

So I have real problems with that EIS, and I would ask you to stay very diligent with them as this thing goes along. And when you see the annotated outline, I would encourage you to criticize it or take a real close look on

it. We've never been told we could see that. We asked for a long time for an implementation plan, and particularly when there was such a disconnect between scoping and the writing of the EIS, and we were turned down.

The only other thing, and I will put this in remarks, but Sally was talking about the lack of people at these meetings, and I think that's a given. There are very few people in this room who aren't paid to be here, and it's a very difficult thing to do. And part of the reason for the task force being there and the job that I'm doing is because I'm constantly asked what goes on in these meetings, and I want to be able to be at all of them so I have some continuity. But we put out newsletters, and we are an information source for many other groups, nationally and locally, who, you know, rely on that kind of thing and know that we're here in attendance at these things.

I do have one comment on your strategic plan, and it's very quick and right off the bat. But you address public concerns under the section that you have--on Page 4, the section that you have on transportation and packaging. At the end you say, "Ensure that DOE addresses adequately public safety concerns and plans for enhancing safety capabilities." You don't have a similar public concern thing addressed under site characterization, such as the same kind of wording, but that you would make sure that water quality

is maintained, you would make sure that there was a usable water source, and there's all kinds of other things that would have to go into site evaluation.

So, thank you.

COHON: Very good. That's very helpful. Thank you. Ms. Treichel, I would just like to get you to talk a little bit more about EIS. I think you quite correctly point out that a basic or a key ingredient of NEPA is the need to look at choices--

TREICHEL: Right.

COHON: --for plans other than the one you're putting forward.

TREICHEL: Yeah.

COHON: The program, DOE is faced with the fact that they have an act of Congress that says you will not do that. So from the outset, the kind of EIS they are permitted to do differs materially from the normal, if you will, or the kind of EIS anticipated by NEPA.

I don't see any way around that, so I'm not trying to absolve DOE or the Board from having to look closely at the EIS. Indeed, that's why we had the report today. But there is that basic premise, if you will, and the point of departure as defined by Congress is one that you don't like clearly, but it's one that the program must live with.

Now, is that a fair--am I correct in what I've just

said?

TREICHEL: Well, sure, but if they're given something they can't do, they have an obligation to go back to Congress and say you've given us something that we can't do, that doesn't fit, because--and I think Congress was out of line when they did this, but you may well not have a repository.

So to consider alternatives that don't include a repository should be an honest evaluation, and that came up here not too long ago, that, well, there may be regional places where waste goes. You may be able to move it a little bit. There may be all sorts of valuable things to be looking at, but not the idea that you've got waste at wherever it is, and you just throw up your hands and say, well, folks, there it is, it stays there, because nobody is going to do that.

And I guess if I had to vote between the two things that are there, I'd probably vote for that one because I would figure you've got enough communities that are going to take care of themselves and will do something about that, rather than take the risk of having a mistake made that's so serious that you may not be able to help.

COHON: Very good. Thank you.

Earl McGhee? Mr. McGhee, did you want to address us again? You're welcome to, if you like.

EARL MCGHEE: No, sir, chivalry is not all the way dead. I believe the lady I've been with for 51 years wants to

talk.

COHON: Okay. Victoria McGhee.

VICTORIA MCGHEE: I'm Victoria McGhee. I live in Amargosa Valley. I want to thank you for coming and sharing your studies with us.

Having to work under the blanket of the giant nuclear industry that is so large and fragmented that no one has any responsibility presents its own problems, the nuclear industry that has placed a low-level nuclear waste facility in a residential neighborhood in Amargosa Valley, my neighbor.

By putting the residents' health and safety in jeopardy can only cast a shadow on the future. Residents of Amargosa Valley are trying to live normal lives, bring up their children under the constant bombardment of the nuclear industry, residents who can only see the destruction of their way of life in this valley by the giant nuclear industry.

Is it really a surprise that you are viewed as the enemy, not to be trusted? Amargosa Valley is just a comma in the scenario of the giant nuclear industry across the nation, the abuses, the lack of concern, the attitude of "that's not my department, try another department," et cetera, et cetera, et cetera; has left the people, the residents, stripped of their rights.

I would say continue your studies, but understand

these studies affect the lives of real living people, not just lines on a bar graph.

Thank you for your courtesy.

COHON: Thank you, Mrs. McGhee.

EARL MCGHEE: Sir, with your permission, I'd like to add a couple of things.

COHON: Certainly.

EARL MCGHEE: I attended that meeting in Las Vegas on Fernald, a public hearing. I think I was the public. And I asked a couple of pertinent questions. What are you going to do? Are you going to process that when it arrives at the test site? The answer I got: No, we're going to bury it in a shallow grave.

And I asked about transportation and if there's any chance of accidents or so on. He said, well, no, but it's in containers where it wouldn't bother you, only if you breathe it.

And there's several other little pertinent things that I put on there.

Another thing is the poison that holds this valley back from growth, which meets the growth expectations in the EIS, the test site and with Nye County comprehensive plan. How it's held back, there's Yucca Mountain Boulevard that goes down into Death Valley Junction, is a prime example. In addressing that, at one meeting I told the County Commission,

I said, why not just build a volcano at state line with a huge ramp, and we'll march all the people of Amargosa Valley up and have them jump in, make human sacrifice?

So I'm thoroughly disgusted with this non-representative and non-servicing government here. I think you people have got to be doing a good job or I wouldn't receive a stack of books about that--if you stack them up, they're that high. And if you go through them, it's amazing. I didn't think there was that many words that you could put in a book.

But, however, there was pertinent facts that I brought up before. They mean something to me. And as I stated in Beatty, after 30 years in heavy construction, there's got to be a better way. And I'm not concerned about putting this--building the vaults, as I suggested there, at different sites in the country. Cut down on that transportation. It could be done. That's your job, to find a better way.

To bury it in the ground, I've been against burying our poisons; not only nuclear waste, but all waste. We're going to have to redo our thinking. This trash waste is something that should be considered.

I had the good fortune of seeing Casmalia before they closed it over on the coast. There's no way--the people protested there, and they had but good right to protest.

There's the PWI out in Bakersfield, and Ketterman, and USPCI in Utah, which, to me, I didn't get to see the exact disposal, but I did see the dumping process, which I thought was a little cleaner.

I don't know, it's in the hands of people, but get our values straight. Protect not only humanity, but all wildlife and the environment.

And I thank you very much.

COHON: Thank you, Mr. McGhee.

Mike Williams?

WILLIAMS: Good evening. My name is Mike Williams. I'm the chairman of the Nuclear Steering Committee in Amargosa.

My main concern is this recent spill leakage of the low-level contaminants. I've done some research, and it seems like the whole thing could have been avoided with a minimum amount of money.

The containers, to the best of my knowledge, originated in Lawrence Livermore. They were doing some transportation. The containers ended up hot, and they had to buy the containers, and they were nothing more than dumpsters.

The containers are arriving at Area 5 at the test site. The main design flaw is there is a two-and-a-half inch I-beam going across the bottom. Structurally, this would be fine, except they stopped one inch from the side of the

container from completing the well, which in effect, it's a useless support. So every time your forklift or your lifting capability, whatever you're using, lifts the container, it's going to crack the well. It's something that's very simple, very cost effective to fix.

I worked on nuclear submarines for eight years. I'm not against nuclear waste. I know we have to put them somewhere, but to have a $20 well cause a container to leak is just ludicrous.

And we've got these people, CGR Products out of North Adams, Massachusetts. I think they should be fined or held accountable. I don't know who inspects these containers. It would be nice if we had some State regulations, but at this time, we have no State regulators that can even inspect these containers. It's completely out of their hands. It's all DOE.

And these containers, who controls the transportation? Can they be compromised by hostile individuals? I mean, when they're sitting at these truck stops, like the one in Arizona, can somebody just walk up to them and drill a hole in them? Is there any security on them? I don't have these answers, but it's something that I wish that we would look at carefully because like I said, a $20 well is not worth spilling material all along the highway.

Thank you.

COHON: Thank you, Mr. Williams.

Would anybody else like to comment or ask a question?

Seeing no takers, we stand adjourned. We're going to reconvene at 7 o'clock and do it all over again.

(Whereupon, a recess was taken.)

EVENING SESSION

COHON: Good evening. Thank you for coming back or coming, whichever the case may be.

Our plan is to repeat the presentation on the Board's strategic plan, the presentation we made just about three hours ago. However, if everybody in the room was here before and heard it before, you don't need to hear it again.

Is there anybody with us right now who was not here at the earlier session around 4 o'clock?

SPEAKER: Yeah, I think there are.

COHON: Oh, okay, fine. Good, we're delighted you're here. You're now about to get a personal presentation on the Board's strategic plan.

For your benefit, my name is Jerry Cohon. I'm the chairman of the Nuclear Waste Technical Review Board. The members of the Board are sitting at this table here--these tables here, and they and I will be happy to respond to your questions about our strategic plan or about anything you would like to talk about.

With that, I'll call on Mike Carroll, our colleague, to make the presentation on our strategic plan.

(Whereupon, Mr. Carroll repeated his afternoon presentation.)

COHON: Thank you very much, Mike.

Okay. In this public comment period, we welcome your reactions to our strategic plan, and in addition, we welcome any comments or questions you would like to offer on anything related to nuclear waste. It need not have any connection whatsoever to our strategic plan.

And let me emphasize something, we're genuine in our interest and desire and hearing from the public about all matters related to our activities. And as evidence for that, I would not want you to get the impression we're doing this because the law requires us. In fact, before we knew this law applied to us, we have had a long history of holding our meetings in the communities which would be affected most by Yucca Mountain if the repository were to open there. We've had meetings in Pahrump and in Beatty, and is this our first time in Amargosa Valley? I'm relatively new at this. Bill?

BARNARD: Well, is the first meeting we've had in Amargosa Valley. We had a hearing here back in '91, I think --1991.

COHON: Okay. And we'll keep doing that, no matter how many members of the public show up.

One person is signed up to comment, but that doesn't mean they're the only person who can. I'll call on--

I'll open it up generally, but let me call on now Kenneth Garey.

Mr. Garey, please, if you would identify yourself again in any event--

GAREY: Certainly.

COHON: --because you're on the record.

GAREY: Distinguished members of the Board, my name is Ken Garey. I'm a resident of Amargosa Valley. First of all, I would like to thank you for having the meeting here in Nye County, and realizing that we are the only independent entity to conduct our own drilling program and monitor the Department of Energy's work.

I worked at the Nevada test site for many years, and I'm uniquely familiar with Yucca Mountain and the activities at the test site. Specifically, I worked on the spent fuel demonstration program, which was conducted in, oh, the middle '80s, I believe, and where we brought in spent fuel assemblies from the Turkey Point power reactor and went through characterization and studies of those fuel assemblies.

The reality is that the science to date that has been collected at the test site indicates the site will most likely be found suitable. I'm fully aware that a lot more studies need to be done on modeling and things like waste package design, thermal loading, and I applaud your efforts

in continued involvement in this project.

I'm also grateful that Congress saw fit to restore oversight funding to the affected counties. Through Les Bradshaw and Nick Stellavato's efforts, I believe Nye County is the one entity that is looking out for the health and safety of the Nevadans, and including myself as being one of the closest people to Yucca Mountain. I look out my living room window and see it every morning.

So, but I feel that Nye County is doing a good job in protecting Nevada's interest and specifically this community. It seems like the whole world is focused on Yucca Mountain, and it's an honor to be considered one of the people that the whole world is looking out to our best interest.

Interim storage or not, Yucca Mountain is a target, and all eyes are upon us. I'm interested that Secretary Peña told Congress that he knows of no show stoppers at the site. I just wish our elected officials would start some sort of dialogue with the Federal Government and private industry aimed at benefits for all Nevadans.

Again, I want to thank you for coming to rural Nevada, specifically Amargosa Valley, and we appreciate your willingness to hold your meetings here. Thank you.

COHON: Thank you, Mr. Garey.

Is there anybody else who would like to make a

comment or to ask a question?

Yes, sir. Please step up to the microphone and identify yourself.

CZARNECKI: I'm John Czarnecki. I'm a hydrologist with the U.S. Geological Survey.

I have a question that I've asked several people connected with this project since I've been on it since 1982. Although the questions didn't start until I would say about five years ago, as many in this room are aware, we had documents referred to as study plans, another acronym for SP. And not too long ago, many of the study plans were rescinded. Yet I believe that those study plans were carefully constructed, carefully thought out, and a lot of that work will never be done. And I'm wondering, with all this work that had been identified to characterize Yucca Mountain, what the Board feels regarding that work and whether it should be done.

COHON: Well, first, let me see--is it fair, Russ Dyer, to ask you to expand on this? I mean, is there enough specificity in that question for you to respond?

Russ Dyer is the program manager.

DYER: I can try to. I may need some help here. Russ Dyer, DOE, Yucca Mountain.

Study plans were a management tool that we put in place at one time to provide more specificity to the site

characterization plan. It provided us a level of detail down below the site characterization plan in lieu of any other management tools that we had in the system at that time.

Since that time, we put in place other management tools that allow us to control what the work that needs to be done is. There is still, I think, a general understanding that the data needs that we identified in the site characterization plan and in the study plans are still things that need to be addressed. The question is whether a study plan specifically needs to be a QA-controlled document that needs to provide the management tool for acquiring that information. There are other tools in place available now that we can use.

The data needs still exist. We can quibble about whether every test needs to be run that was originally in the list in the site characterization plan or in study plans, but the original data needs that we identified I think are still pretty much valid data needs that need to be addressed by whatever test or mechanism.

I hope that addresses some of your question, John.

COHON: For the Board's part, I think it's a fair statement that our major focus is on that very point; that is, what data, what tests are necessary to support a decision by DOE. And we spend a great deal of our time, both in these meetings and in reading reports, in a discussion dealing with

that. So it's very much a live issue. Thank you.

Oh, Dr. Knopman?

KNOPMAN: Knopman, Board.

I'm wondering if John might be willing to return to the microphone so he could be a little bit more specific about his particular modeling effort and what the status of that is.

CZARNECKI: Well, you'll hear my presentation tomorrow on the current model. I had a particular issue in mind when I asked the question about the study plans, and that's related to the characterization in the large hydraulic gradient, which again, you'll hear more of tomorrow.

This is a thorny issue that won't go away until we get the data required to characterize this particular problem.

In the study plan that I was involved with, which took a--it was written over a period of a couple years on and off with reviews and all. We identified several drill holes to characterize the large hydraulic gradient. And I still think--and in the process of identifying which holes we wanted, I actually had a lot more, but through different management reviews and looking at budgets and what things would need to be sacrificed if an additional drill hole were to be constructed, we ended up with, I think, about four. So far we've got one, WT-24, which is very nice to see. It's

very encouraging.

But there's much more work that could be done. And when I got the notice that the study plan was not--no longer needed or no longer considered part of the QA program, I wondered, what does this mean for site characterization.

So that's one particular issue. That particular study plan had, I think, four different activities, and all of which are not being funded. I'm not asking for funding. I'm just asking--I guess the fundamental question is, people will see the study plans, and if the work wasn't done, they'll ask why.

COHON: Why. That's a good question.

CZARNECKI: And a lot of thought went into the identification of these studies, and we thought these were important.

COHON: Indeed, DOE must be able to answer that question, why was this work not done. I think there is an answer, and quite an appropriate one--as a general matter. I mean, I'm not speaking at all to your drill holes and the hydraulic gradient. But as a general matter, this program made a major transformation from a science project to a project focused on the key question, is Yucca Mountain suitable?

I think we would all accept, especially those in the scientific community, that one could study this site, and

perhaps should, for many decades, even centuries to come, and we could still drill more holes and probably would want to, and they'd still yield more data.

DOE is in a tough position, but it is their position. That's their job to balance that need for more scientific data against the realities of limited budgets, limited time and quite appropriate pressures from the Congress to bring this thing to closure, either to do it or not. That's a tough call, and they're very much--have a difficult job of making those tradeoffs and then defending.

But you're absolutely right, and we have to keep reminding them, and you have, that they have to be prepared to answer that question why. Thanks for raising it.

CZARNECKI: Thank you.

COHON: Other questions or comments?

Yes, sir. Please identify yourself again.

VASCONI: Bill Vasconi, and I got to speak a little earlier, and I'd like to speak again. And you asked me then who I represented, and I said I was speaking as a concerned citizen. But I also sit as a board of director on the NTS Development Corporation, which is any number of individuals throughout this state that are trying to maximize the contributions not only to the community, but to the state in use of the expertise, whether it be scientific, technological, that has been developed at the test site over

any number of decades.

Another representation I do is I am involved with AFL/CIO, building construction trades, which number some 32,000 members. And although not all of them agree with some of the things I say, they have let me use their name at these meetings, and they appreciate me making comments. Naturally, it's economic with them, jobs.

I also sat on the study committee, which was the Nuclear Waste Study Committee at one time. It's now called the Nevada Study Committee. And we talk on equity issues.

No, I do not get paid by any of them, but I can use this as an opportunity to address you folks because we think you're relatively important, and we appreciate you coming to this state and giving us an opportunity to talk.

You know, Nevada here, our outlining counties, the 10 affected counties, there are economics involved directly around that test site. In 1987, we had 11,200 people working at the Nevada test site. Today we have less than 2,200.

It used to be called the Nevada proving grounds. The first device was detonated there in '51, January 27, its code name Able. Since that time, there's been 928 nuclear devices detonated at the Nevada test site. Of those, 24 was with Great Britain. Of those, only 100 was delivered by air. They were atmospheric shots. The rest of them were transported over the highways.

Another thing about the Nevada test, which our last device was September 22, '92. Since that moratorium, we're looking for other initiatives, economic initiatives, not only to our community, but to our state.

But as a Technical Review Board, you've got to keep in mind, we're also looking for equity. There's equity issues out there. We know our congressional delegation has presented the fact that 100 per cent of Nevadans are opposed to dumping nuclear waste in our backyard. Not so. Those of us that understand nuclear--and I worked at the test site for 10 years as a general foreman in the electrical department. I also worked four years in the radiological science department. I've seen things change. I've seen things come a long way.

As a matter of fact, in the early '60s, we poured Iodine-131 down some of the drill holes. I believe it only lasted about 30 days. One of my jobs was to chase through the community where the water was coming up to see if we could find that Iodine-131.

Well, today, you've almost got a DNA on where the water starts, where it travels and where it comes up at. I listened to a presentation here just a few days ago. We can identify that water by the carbons, the minerals in it, et cetera. I was amazed at that.

To get back to the equity. You know, we have

federal land transitions. 86 per cent of Nevada is federally owned. Maybe you'd like to see something done with that.

Improvements in highways, taxation. I could go on and on and on and on. But we received virtually nothing, except a little bit of oversight money.

Those equity issues will come up repeatedly. If you hear that 74 per cent of Nevadans don't want the nuclear waste, you'll also hear that 96 per cent of them believe it's coming anyway, and why shouldn't we get something for solving this nation's problems?

You know, 50 per cent of the people who live in Las Vegas, Nevada, right now have been here less than 10 years. They don't know what Yucca Mountain is. You have to explain it to them.

You know, our gambling industry, which some people think is the bottom of all this resentment, you know, they'll take the textiles from the southern states. They'll take the produce from California. They'll take the steel from Gary, Indiana. And they'll take the money right out of your back pocket. But they don't want your waste. It doesn't quite make sense, does it?

Now, we've got all the bartenders and sheet changers we need in Las Vegas, Nevada. What we need to do is keep our technical people here, give our kids in the university something to look forward to when they graduate

instead of going to another state. We're familiar with the Los Alamos National Laboratories and LLNL and Sandia and Defense Nuclear Agency. We want to keep those technologies alive. We want to see more happen to this Nevada test site.

And we can talk transportation issues. You heard me a little while ago. Clark County, ladies and gentlemen, is not the place to consider nuclear waste. When I first got there, there was 180,000 people. Now you've got over a million.

Thirteen of your 21 State senators come from Clark County. Twenty-one of your 42 representatives come from Clark County. It's going to be a hard nut to crack.

Now, we're receiving waste already, low-level waste. We received some 16 million cubic yards of low-level waste from inside the DOE complex. That's a football field 15 stories high. They also estimate there will be many more thousands of shipments of low-level waste.

And what do we estimate on our high-level waste? Unreal. The best way to do it is by rail, and again, I stand here and tell you Clark County is not the route to go.

Now, I heard a little while ago, there's programs for everything. There's a bureaucracy for everything. The WIPP project has got its own means of transportation through rail systems. Your Navy's nuclear propulsion system, INEL, has got their own set of rules. You've got your own set of

rules for EM. You've got your own set of rules for your Defense Department, your missiles, et cetera. Maybe we ought to consolidate and get the best of all of them and utilize that for our Yucca Mountain. It seems to me if it was all under roof and we add the best of all of them, some of our transportation problems would go away.

The other thing is they tell me--I'd seen it on T.V. last night. There's two things the general American public are afraid of. The biggest one is falling from great heights. The other one is getting up on a mike and talking to a group.

Now, I was in the 101st Airborne. I wasn't afraid to jump out of airplanes. So I can get up on this mike. But if you want to hear from the folks that live in a community, maybe you ought to have a little break-away session where you're not piled up in a big group, and that way you might hear how they really feel. It's a lot easier talking to a man sitting down across the table sharing a glass of water than it is to get up in one of these metal things and thinking you're going to make an ass out of yourself, right? Give that some consideration.

Now, I know you don't get an opportunity very often, but I'm hard pressed to tell you this. You know, I live in a country where I see people trying to do something about a national problem. I'm hard pressed, regardless of

what you may have heard at these meetings, to find DOE trying to get themselves in a position where they're going to get yelled at or found wrong.

Maybe 20 years ago when they had a big hammer, that was one thing. But right now, all the meetings I attended, and I'm not a shield for DOE, but they've been damn cooperative, and they've answered the questions, or they went and found the answers out.

So don't think this is a national issue and people like me don't understand it. Just give us an opportunity to address you once in awhile, tell you our convictions. If you can help us, I'll say thank you.

And again, thank you.

COHON: Thank you, Mr. Vasconi.

Is there anybody else who would like to comment? Don't be afraid of that metal thing in front of your face. We sit here and make asses of ourselves all the time.

Okay. Going once, twice, sold. Thank you all very much for coming back tonight. We appreciate having heard from the three speakers. We stand adjourned. We will reconvene tomorrow morning at 8 o'clock in this room. Good night.

(Whereupon, the meeting was adjourned, to reconvene at 8:00 a.m. on Wednesday, January 21, 1998.)