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UNITED STATES NUCLEAR REGULATORY COMMISSION'S

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

July 20, 2004

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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152ND MEETING

ADVISORY COMMITTEE ON NUCLEAR WASTE

(ACNW)

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TUESDAY, JULY 20, 2004

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ROCKVILLE, MARYLAND

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The Advisory Committee met at 10:00 a.m. at the Nuclear Regulatory Commission, Two White Flint North, Room T2B3, 11545 Rockville Pike, B. John Garrick, Chairman, presiding.

COMMITTEE MEMBERS:

B. JOHN GARRICK Chairman

MICHAEL T. RYAN

Vice Chairman

ALLEN G. CROFF Member

GEORGE M. HORNBERGER

Member

RUTH F. WEINER

Member

JAMES CLARKE Consultant

ACNW STAFF PRESENT:

JOHN T. LARKINS, Executive Director

NEIL COLEMAN

LATIF HAMDAN

HOWARD J. LARSON, Special Assistant

MICHAEL LEE

RICHARD K. MAJOR, Staff

NRC STAFF PRESENT:

MIKE MAYFIELD, Director, Division of Engineering Technology and Research

BRET TEGELER, Office of Research

ROB LEWIS, SFPOM

AMY SNIDER, Spent Fuel Project Office

DEREK A. WIDMAYER, Project Manager, Special Projects Section, Decommissioning Directorate

TED CARTER, Project Manager, Yucca Mountain Inspection Program

TIM COBITZ

I-N-D-E-X

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

(10:03 a.m.)

CHAIRMAN GARRICK: The meeting will come to order. This is the first day of the 152nd meeting of the Advisory Committee on Nuclear Waste. My name is John Garrick, Chairman of the ACNW. Other members of the committee present are Michael Ryan, Vice Chair, George Hornberger, Ruth Weiner and we've very pleased to welcome our new member for his first meeting as a member, Allen Croff. Also present is consultant Jim Clarke.

Today we'll do a number of things. We'll first receive a report from the NRC Staff on the Package Performance Study, a report from the Staff regarding SECY 040035, the License Termination Rule Analysis of the Use of Intentional Mixing of Contaminated Soil. We'll hear from NRC staff regarding the status of the plans to risk inform the Yucca Mountain Inspection System. We'll commence preparation and review of ACNW Letter Reports and we'll prepare for our meeting tomorrow with the NRC Commissioners. John Larkins is the designated federal official for today's initial session. The meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act and the committee

has received no request for time to make oral statements from members of public regarding today's sessions and should anyone wish to do so, make your wishes known to one of the committee's staff.

And it is requested that the speakers use a microphone, identify themselves and speak clearly. Before starting, I'd like to cover a few brief items of current interest. On Friday, July 9th the U.S. Court of Appeals for the District of Columbia rendered its decision on six anti-Yucca Mountain lawsuits. While the Court turned aside every other complaint filed against the White House and three federal agencies, it ruled in a unanimous decision that the federal groundwater standards for the facility must be extended well beyond the current 10,000 year time frame set by the EPA regulations.

The second item is the ACNW's staff, Neil Coleman, ACNW consultant Bruce Morse (phonetic) and the NRC Office of Research Scientists, Lee Abramson, have submitted an abstract titled "Testing Claims about Volcanic Disruption of a Potential Geologic Repository at Yucca Mountain Nevada. They have submitted this to the Geological Society of America for presentation at the November 7 to 10, 2004 meeting in Denver and the same authors have submitted an

article with the same title to the American Geophysical Union for publication in Geophysical Research Letters. This is in keeping with the encouragement for staff to be involved in National Society activities in relation to their discipline.

Another item is that the DOE certified on June 30th this year that roughly 1.2 million documents supporting a Yucca Mountain license application were not publicly available on the Internet. Such a certification is necessary at least six months before the license application is sent to the NRC. Sue Gagner (phonetic), NRC spokeswoman, stated that approximately 700,000 more documents were to come from DOE. NRC has indicated it can index approximately 150,000 documents per week. NRC is now to a point, a pre-license application presiding officer, who will address challenges and issues.

Judge Paul G. Bolwerk (phonetic), subsequently has been appointed to that position. Nevada has 90 days to post and certify documents on the LSM. And finally, the French National Evaluation Committee recently stated that unless new elements arise from ongoing research, the French Parliament should face no obstacle in deciding in principle in 2006 on a repository for long lead nuclear waste at

the Bureau of Site in Eastern France. The ACNW visited this site several years ago during the time it was going through initial exploratory activities.

The planned facility is in a homogeneous clay foundation and is planned to accommodate essentially the same 70,000 metric tons of heavy metal of spent fuel as Yucca Mountain. So with that we are prepared to proceed with our agenda. The first item on our agenda will be the briefing that we mentioned on the package performance study and that is going to be given by Bret Tegeler. Bret, you have the floor.

MR. MAYFIELD: Mr. Chairman, if I could, I'm Mike Mayfield. I'm the Director of the Division of Engineering Technology and Research and we just wanted to briefly introduce what Bret's going to describe for the committee. The PPS is an active program. It's -- as I think the committee knows, we received a staff requirements memorandum from the Commission that directed us to go do several things. One of them was to provide the Commission with a proposed test plan for their review and approval. We're not quite as far along with that as we had hoped to be so we're not in a position to brief the committee on a specific proposal.

However, what we can do is describe for

you sort of the work in progress and what we think we can and cannot accomplish with a full scale demonstration test that Commission has directed us to go do. So with that, Bret, why don't you go ahead and do --

MR. TEGELER: Good morning. My name is Bret Tegeler. I work for NRC in the Office of Research and I wanted to give you -- I wanted to give you a brief description of the outline for this morning. I have about an hour and 20 minutes or so, so I want to try to -- I have a brief time this morning so I wanted to first walk us up to where we are today with PPS and provide a brief history of past demonstration, cask studies, not necessarily comprehensive but representative studies that have been done. I wanted to briefly describe hypothetical accident conditions. These are the regulatory certification test for transportation packages.

I mentioned the evolution of PPS, how we got to where we're at today and Commission direction and our work on our proposal which is underway as we speak. And then I'll talk about schedule.

The primary briefing objective for this morning is firstly, to bring you up to date with our current progress and planned activities and we're

going to be talking this morning about demonstration testing so I wanted to mention, you're probably aware demonstration testing of casks is not new and I have a couple reports, some literature here, mainly Sandie and the UK conducted Operation Smash Hit in 1984. Very quickly, the first two tests were test of packages against rigid barriers or what we call unyielding surfaces. So we had first a rail car against a rigid barrier and secondly, a truck, a truck cask into a rigid barrier. And then we have a grade crossing accident to give a locomotive impacting casks.

UK Operation Smash Hit was really a series of tests leading up to a demonstration test. A demonstration test involved a locomotive impacting a transportation cask on a conveyance. I, just quickly wanted to give you a flavor for -- you may have seen these but to give you a flavor for what some of these tests were like. The first test to the left here is a rail cask. This cask weighs probably about maybe 150,000 pounds. You have the conveyance and then you have a rigid barrier here and let me see if I can -- this was about 80 miles an hour. Let's see, this should -- did we load the AVI files, too, do you know? They should have been on this CD.

Sorry, the second test which I'll show you in a second is a rocket -- these tests were rocket propelled to get up to your 80 miles and hour. The second test is a grade crossing impact of a locomotive into a truck cask on its conveyance which is a tractor trailer. It's one of those. I mention them both so it's either one. Okay, the locomotive and impacting, so yeah, you can -- the casks were not significantly damaged in these tests but I just wanted to show you, this is a flavor for the types of tests and what they look like in the field. Thank you very much.

Okay. Interestingly enough, the demonstration test also had accompanying analysis and scale model efforts and you can see here, there was -- for the rail car demonstration test, Sandia developed and eight-scale structural and mass representation of the conveyance and rail car which as you can see, the exploded view down here. Interestingly, some of the response you get or comparisons you get -- and this test was in the late `70s and the analytical techniques were -- for this test, primarily involved lumped mass and spring models and rather than say what we might do today, which would be full 3D finite element analysis.

So you have your full scale test and you

compare it to the lumped parameter models which are -- this is actually characterized in the report as reasonable correlation and there's probably about a 20 percent spread in producing the tests. Okay, UK Operation Smash Hit, 1984, the fly -- or the picture to the left here, I was trying to describe -- the UK looked at various accident scenarios before they finally selected on this bottom one which is a locomotive impacting the very corner edge of the flask, which is the orientation they expected to produce the most damage to the cask. Interestingly enough, this is a -- this schematic represents a tunnel entrance and again, trying to impact the lid of the cask. They tried to separate the rail bogies from the conveyance and impact this semi-rigid barrier.

Then you had a bridge abutment impact scenario where you try to again impact a corner hit onto the bridge abutment. And I just show you, these are the types of scenarios that have been looked at and again, this the one that was actually tested by the British. Notice that there is a conveyance on -- overturned on the track in this case.

Okay, this is an interesting picture. I thought this is the UK Operations Smash Hit flask and conveyance. This is the as built prototype, if you

will, of the cask and conveyance. This is actually what was tested and the reason I think it's interesting is analysis was a key part of the program and the conveyance was simplified structurally for analysis purposes, so that was an interesting -- that was full scale but it -- they made some simplifications to the structure to enhance their analytical predictions or simplify their models.

Okay, very briefly, I just wanted to cover the hypothetical accident conditions in regulations. Essentially, a sequential series of tests starting with the nine meter free drop onto an unyielding surface and the vendor should perform the tests in an orientation that is likely to cause the most damage to the package. So that could be at a -- either at a straight dead vertical drop or CG over corner orientation.

You've got another -- the next sequential test is a puncture test, essentially a free drop onto a punch, if you will, and that is embedded in a solid surface, unyielding surface. The next test, thermal test, fully engulfing hydrocarbon fire. 1475F and this is about a 30-minute fire, which I didn't mention here but it should be about a meter off the surface of the fuel. Then you have an immersion test, a 50-foot

emersion test for the package.

Okay, now, it's here I want to start with the PPS program. Our primary goal, we wanted to demonstrate the inherent robustness of the transportation cask by conducting confirmatory research and using an enhanced public participation process. Of course, PPS has been going longer than February 2003 but I wanted to start from 1768 which is the Protocols Report which was written by Sandia that documented full scale what I'll call extra regulatory tests resembling a drop and first test of both rail and truck casks.

That report went out for a 90-day public comment period ending in May 2003 and there were four dominant themes in -- within the comments. One was full scale testing to the regulatory limits, conduct a realistic demonstration test based on realistic accident scenarios, test cask to failure and terrorism. I'll say that the staff considered the first three bullets and with the -- and developed testing scenarios on the first three, but the third bullet we felt conflicted with the realism of the second bullet or the realistic -- the wish to conduct realistic testing. We think we felt that testing to failure is difficult to do on a realistic accident

scenario.

Terrorism is being addressed separately in the NRC vulnerability studies. Okay, as a result of the public comments, the staff developed essentially five test concepts. We have an extra regulatory test which dealt with impact and fire test for a rail and truck cask, essentially testing the -- these essentially would be higher drops and longer burn times for the thermal test. Again, the staff felt that that would be not necessarily realistic but we put it forward for consideration, Commission consideration.

The regulatory rail test -- or doing a regulatory test on a rail cask full scale, that this would again be the 10 CFR Part 71, the nine-meter drop and the full series, the 30-minute fire, the puncture and the 15-meter immersion. Essentially, the same test for a truck cask and then we were -- we had proposed a demonstration test for both the rail and truck cask and at the time we were considering for example, a rail car collision with a bridge abutment or a tunnel entrance.

And with a truck cask we were envisioning a -- perhaps a grade crossing accident similar to the one I mentioned earlier. Okay, in February `04 the

staff or the staff then took those tests and really developed these various sort of suites of tests if you will. You had the first extra regulatory testing and these are put forward for Commission consideration. You have the regulatory rail, a demonstration rail and demonstration truck, regulatory rail, demonstration rail, and lastly, regulatory rail and regulatory truck, and it is felt with these options we could best meet the public comments as a result of 1768.

Okay, the Commission took those under consideration and came back in May `04 and approved the -- essentially performing the demonstration test on a rail cask and authorizing the purchase of a single NRC certified rail cask and directing the staff to perform a realistically conservative test with some efficient instrumentation to collect data for validating analytical methods to include scaling. And lastly to have a full engulfing fire as part of the demonstration test.

Staff was directed to submit a test plan for approval for this realistically conservative demonstration test and that's what's -- where we're at right now. We haven't finished. After the Commission approves the test plan, six months afterwards, the staff is required to submit predictions of cask

performance and that's essentially the staff going to work modeling what we think would be a realistic accident scenario and secondly defining the metrics that we're going to measure and making our estimates for a range of values for each of the metrics.

Staff was also directed to interact with the Department of Energy concerning potential funding for PPS and the potential use of a truck cask in the PPS experimental program.

CHAIRMAN GARRICK: Now are the specifications for these casks resolved?

MR. TEGELER: Yes, with the -- yeah, we have a -- let's see. We're going to go on the street with a competitive --

MR. MAYFIELD: Bret, let me answer the question, if I could, Mr. Chairman. The staff was put together at solicitation that has at least the draft of it. For procurement of this magnitude, it requires chairman approval. That memorandum has gone forward to the chairman and is currently under consideration. Since we're going on a full and open competition, so that anybody that has certified designs that are likely to be used for transportation to Yucca Mountain, they can propose a cask purchase to us.

The -- in preparing the purchase

specification, we've tried to stay at a fairly high level so we're not excluding anybody. So we haven't been overly prescriptive about exactly what we're seeking. However, we have had some discussions with DOE about what they believe to be the more likely designs or types of designs that may be of use to them.

That will factor into the staff's consideration once we receive a proposal. So we're sort of caught between making sure we're satisfying the full and open competition requirements and being informed by DOE as they further develop their plans for casks.

CHAIRMAN GARRICK: Yeah, what I'm getting at is that third bullet, if you're going to do an accurate model prediction, you need to have nailed down the --

MR. MAYFIELD: Yes, there is a timing conflict --

CHAIRMAN GARRICK: Yes.

MR. MAYFIELD: -- in this. One of the things that the Commission has said, is we go under a continuing resolution at the beginning of the next fiscal year, we are to hold in abeyance further work on the package performance study until the budget for

`05 is resolved. While we couldn't actively do work we could at least get the proposals in from the vendors and we could have -- at least look at those and contrast them to where DOE is planning to have this. So a continuing resolution will try -- we believe will provide us -- assuming that's where we go, will provide us a little time flexibility to decide what casks we're going after and get the specific design information so that we can do those calculations.

CHAIRMAN GARRICK: Right, because if it's to be a fairly mechanistic type of analysis, those details have to be pretty well resolved.

MR. MAYFIELD: Exactly. One of the other things, there was significant interest on the part of the Commission in expanding the instrumentation package. It was unfortunate. We didn't really provide enough discussion of that in NUREG-1768. We never intended to not instrument this package. That's in fact, one of the criticisms of some of the earlier tests.

CHAIRMAN GARRICK: Right, right.

MR. MAYFIELD: So, but we didn't do a good job in describing the instrumentation package. So we -- that's something that we will do a much better job

of with the six-month product, where we will provide a lot more information about the expected instrumentation package, ranges of parameters to be measured and the uncertainties that we would expect to go into those.

CHAIRMAN GARRICK: You are -- I'm pleased to hear that you are going to take advantage of any creative ideas that competitors might have on design, giving them some flexibility on --

MR. MAYFIELD: Well, the requirement is that it be a certified cask.

CHAIRMAN GARRICK: Yes.

MR. MAYFIELD: So it has to be a certified design and it has to be one that's likely to be used for transportation to Yucca Mountain which begins to narrow the field but we are not locked into any specific design.

CHAIRMAN GARRICK: Okay, thank you.

MR. RYAN: And while you're on those bullets, could you talk a little bit more about realistically conservative test and what that means? I think it would be helpful to hear some more on that.

MR. TEGELER: Sure, sure. Realistically conservative tests -- first off, I think we want to design a credible accident scenario based on say

Federal Railroad Administration Data or Volpe's data. Conservative -- the conservatively -- realistically conservative in my mind, would be a test that perhaps challenges the cask structure more -- it's a -- I think it's an engineering -- at this point, it's been an staff engineering assessment of the likely challenge of a particular accident scenario to the cask and when I say challenge, will these scenarios say engage the impact limiters and reduce the energy that the cask sees. Will it bypass the limiter and when we get to defining whether or not the test is conservative or not, I think that's the type of metric we'll be looking at.

MR. MAYFIELD: If I could, let me take that a little further. Since the Chairman first started talking about realistically conservative kinds of things actually in the reactor context, it's something the staff has struggled to try and better define. As we've been looking at accident scenarios, we've gone back and looked at railroad statistics and these are all low probability events. When we had talked before under NUREG-1768, these extra regulatory tests, I think the committee had some clear views that went to the contrary as to what was being proposed.

So we've gone back based on the

Commission's guidance, we've gone back and looked at accident statistics, what kinds of things have happened, what's -- given that they're all low probability, relative rankings based on the limited accident statistics you have and tried to introduce realism into the scenario that we'll propose to the Commission based on things that either have happened or judged to be credible to happen.

The conservative part comes in trying to set the details of the scenario, impact speeds for example, the way you would impact the cask, what it might impact, but to set those in such a way that they're realistic, but they're, if you will, at the upper end of the credible scenario, so this isn't a powder puff impact. At the same time, the intent is not to go to the extra regulatory kinds of testing that we had previously proposed.

MR. RYAN: And I guess as I understand the presentation, Bret, you're making, you're kind of in the stage of getting that nailed down.

MR. TEGELER: Yes.

MR. RYAN: Okay, all right.

CHAIRMAN GARRICK: Ruth, did you have a comment?

MS. WEINER: I was going to wait until --

CHAIRMAN GARRICK: The end?

MS. WEINER: -- after he finished his presentation.

CHAIRMAN GARRICK: All right, thank you. Go ahead, Bret.

MR. TEGELER: Okay. Okay, at this point I will start walking into our -- where the staff is with developing the demonstration test plan. I'll start off with first defining what can this demonstration test accomplish. I think we want to provide a realistically again, conservative test of a rail transportation cask. We would like to demonstrate the robustness of this cask. I think we also want to provide sufficient instrumentation for comparison to analytical -- for comparison to analytical tools and we want to demonstrate the use of these analytical tools in making predictions of cask performance under realistic accident scenarios.

CHAIRMAN GARRICK: The compliment of robustness, of course, is to demonstrate any weaknesses.

MR. TEGELER: That's correct.

CHAIRMAN GARRICK: Yeah.

MR. TEGELER: Okay, again we're developing the proposal. a part -- essential to the development

is coming up with this realistic scenario for an accident scenario from which to base the demonstration test on. Rail accidents, in general, are low probability events, in particular cask accidents are low probability. There have been eight accidents involving transportations casks, since I believe 1960. One point six miles have been traveled.

MR. MAYFIELD: One point six million miles, yeah.

MR. TEGELER: I'm sorry, thank you. Just to break these out just a little bit, four of those accidents involved trucks and four were train accidents and of the four train accidents, one of these -- only one of them had loaded fuel and that cask was not directly involved in the accident. The train --

CHAIRMAN GARRICK: Now, this is US only.

MR. TEGELER: Correct. I'll say that that's my assumption.

MS. WEINER: What is your data base for these accidents? Where did you get this information?

MR. TEGELER: Actually, I pulled this out of a -- I'm sorry, Rob. Rob may be able to help with that.

MR. LEWIS: Rob Lewis from SFPO. The data

comes from the RMIR data base from Sandia and it's only for the NRC certified cask design so it doesn't include DOE shipments.

MS. WEINER: Thank you. I think that should be very clear because I'm quite familiar with the RMIR and there were a lot more accidents with Type B casks. That clarifies it, thank you.

MR. TEGELER: Thanks for that clarification.

MS. WEINER: And it's from 1970.

MR. TEGELER: Ah, thank you again. Okay, over 1300 spent fuel shipments in NRC certified packages have taken place in the last 20 years. Essentially, I'm trying to show that the basis for developing a realistic accident is -- involving a cask is -- it's a low probability event and the staff is essentially researching -- or performing research on what has happened and what kind of information is at our disposal to -- to develop our basis for a credible accident scenario.

One of these is a DOT Volpe -- or Department of Transportation Volpe Center study conducted recently, taking rail accident scenarios or rail accident data from 1988 to `95. This data provides a relative ranking of accident scenarios and

assigns essentially conditional probabilities of various scenario types.

MR. RYAN: Bret, you say relative ranking with regard to what, probability, outcome, severity, what?

MR. TEGELER: Yeah, this would be relative ranking of the type of accident, if you will, so you have -- if there's going to be a rail accident, it's the conditional probability that the accident is either a derailment or a grade crossing impact or collision on the track, so this --

MR. RYAN: So it's categorical.

MR. TEGELER: Yes.

MR. RYAN: Because if you can think of a ranking in terms of severity, somebody got killed, there was a fire or --

MR. MAYFIELD: Their ranking is based on probability of occurrence.

MR. RYAN: Probability of occurrence, so it's a probability ranking. Okay.

MR. MAYFIELD: But please understand, these are not -- it's because there are so few accidents --

MR. RYAN: Oh, no, I understand your problem.

MR. MAYFIELD: -- you're not getting any real robust statistical treatment.

MR. RYAN: No, no, I appreciate that.

MR. MAYFIELD: We're trying to gain some insights from the limited data we have.

MR. RYAN: I understand. Yeah. I just wanted to understand what the ranking parameter was.

MS. WEINER: You're not just looking at probability of accident when you do this relative ranking. You're looking at all rail accidents, aren't you?

MR. TEGELER: That's correct.

MS. WEINER: That's correct. So how do your event trees compare with the event trees in NUREG CR 6672?

MR. TEGELER: Actually that's the source of information that I've been using.

MS. WEINER: Thank you.

MR. TEGELER: I'm sorry, I should have mentioned that. And the event trees that you're referring to indicate that the highest conditional probability involving a train accident would be a derailment situation where you have a derailment and then a subsequent impact into either soil, a rock structure roadbed, bridge abutment, tunnel, so if you

-- the -- there's a high likelihood that if you have a rail accident it's going to involve a derailment with a roll-over -- with perhaps a roll-over into something. The staff, then developed really hypothetical accident scenarios based on that type of an event, so you have essentially cask and rail car impact with a rock outcrop, so you have -- you're simulating in this case a derailment and the cask is impacting the soil or rock. The same thing for a tunnel, derailment into the head of a tunnel, bridge abutment and finally have a collision -- a collision of a locomotive and a cask and this essentially is representative of a scenario that you have a derailment. You have a derailment and then you have a subsequent collision with a locomotive which has happened.

And so after essentially considering the derailment scenarios, the staff then makes -- evaluates these scenarios for their likelihood to address say this realistically conservative requirement and what do I mean by that? Can we get enough energy into the cask and this again, is a staff engineering judgment and we felt that impacts with soil would not -- are not likely to cause a significant challenge. Rock outcrops are a relatively

small percentage of the surface topography, if you will, along a rail route. And that's hard rock, by the way. Bridge abutments, tunnel entrances, again, we felt that these would not be likely because we felt that the impact limiters in this case would engage and reduce the energy to the cask.

MR. MAYFIELD: Bret, if I could, there was one other consideration that the committee had raised when we were talking about the 1768 scenario. And it went to how much energy would be absorbed by the conveyance and the collision itself before you manage to impart energy into the cask and if you recall, the slide Bret had where he was showing the Smash Hit scenario, sorry, I had my thumb there and then lost it.

MR. TEGELER: Eight.

MR. MAYFIELD: Slide 8, on the left you see how it's having to pick up over something and the notion that you're to go into a tunnel entrance for example, the conveyance is going to have to climb up over other debris and you're going to start absorbing a lot of energy in that scenario, so when the Commission said use a 75-mile an hour train accident, as we looked at this, that kind of scenario is going to absorb a lot of energy and the rest of the

collision and it goes back to this realistic scenario that we're trying to walk that line realistically conservative so we've struggled with this a little bit in trying to decide realistic and then at the same time something that's on the credible side of conservative in terms of energy imparted into the cask.

MR. TEGELER: Okay, the staff is facing challenges in our test plan development. The Commission directed the staff and the SRM to perform a full engulfing fire. The staff believes that this may not be -- this may satisfy the realistic requirement that the Commission has also asked for a realistic test and we're going to -- well, we're considering alternative options. An option may be to say do a tanker -- a simulated tanker car fire. It may not be full engulfing but may get at the realism.

MR. MAYFIELD: Bret, why don't we explore that just a little bit further with the committee?

MR. TEGELER: Sure.

MR. MAYFIELD: Going with the fully engulfing fire that the Commission specified in the SRM gives us well defined boundary conditions and with the instrumentation we're anticipating for this cask gives the thermal analyst a pretty good shot at

validating analysis and assumptions that go into that. The more realistic you make the scenario, first of all you start shield the cask in ways that will be difficult to define at least in advance of the test, that the presence of the ground, the proximity of the cask to the ground, the proximity of a conveyance card tied to the casks, so it's going to get a lot more complicated, it's going to be a lot more difficult analysis. The boundary conditions are much less well defined.

So it's one, not likely to be as severe a test and two, much more difficult in terms of validating analysis assumption. So this is one that we anticipate providing some options with a recommendation to the Commission as to how to go forward. We're not there yet with the committee exactly what we're going to propose but the fully engulfing fire satisfies a lot of interest but it doesn't go to the kind of scenario you'd really expect to see in a real world accident. That's one thing that we've spent more than five minutes talking about.

MR. RYAN: Well, you know, you can think out loud for a second and think about fully engulfing what and fully engulfing for how long.

MR. MAYFIELD: Yeah, yes.

MR. RYAN: Because it's not going to be for -- you know, I'm sure that's two things you're wrestling with.

MR. MAYFIELD: Yes.

MR. RYAN: Okay.

CHAIRMAN GARRICK: Yeah, I think when you think of realistic conservative one interpretation could be realistic in terms of the impact conditions and realistic would include the speeds that are achievable but it wouldn't include speeds that are not achievable. Nd then conservative could be in the actual mechanistic part of the model associated with those kind of impacts. It would be at -- at least I would guess that's the direction you're going. Okay.

MR. TEGELER: Secondly, the Commission asked us to validate scaling methodology and the staff believes this is going to be tough to get at with the demonstration test and when I say that, I mean, that strictly speaking in engineering analysis, validation involves the comparison of analysis results with well-defined experiments, well-defined being key here and usually involving controlled boundary conditions.

You want to reduce your independent variables in your experiment and the demonstration test has -- is likely to have a lot of non-linear

effects associated with say the conveyance deforming upon impact. You're not impacting into an unyielding surface, you're going to be impacting into either a locomotive or a bridge abutment which is -- both those structures are yielding. It's not an ideal situation for validating a scaled component, if you will, and so this is going to be a tough one and --

CHAIRMAN GARRICK: Makes all the more reason for the instrumentation to be very carefully thought out.

MR. TEGELER: It really does. That's a good point.

MR. MAYFIELD: And one of the other things we've been talking about is the potential for uncertainties in the measurements and uncertainties in the boundary conditions masking the scaling effect.

CHAIRMAN GARRICK: Yeah.

MR. MAYFIELD: So there's -- this one to put a lot of instrumentation on the cask and so that you can capture that and do a good job of comparing to analytical methods, we think that's viable. We've been talking, going back all along in this program about the idea of opening this up to international opportunities to do both pre and post-test analysis. So a good instrumentation package and the opportunity

for a lot of people to come and engage in the analyses, we think, makes good sense in a way and gives us an opportunity to get at various analytical methods going from the lumped mass approach that Bret had described up to fully -- pretty sophisticated 3D elastic plastic kind of analysis.

The challenge, again, goes back to the scaling and that one we're continuing to struggle with so that you don't run this experiment and simply mask the effect that you're looking for.

MS. WEINER: You -- Bret may get to this but have you looked at which factors you can actually scale and which parameters don't scale? I'm sure you must have some idea of that.

MR. MAYFIELD: We've got some -- we've had a fair bit of discussion on that. The impact limiters -- and this is something we've talked about with the Commission and I think with the committee before. The impact limiters, just by their nature, are going to be in general very difficult for scaling to work. The cask itself, depending on methods of fabrication, that one should be more or less straightforward. So these are some of the things that we're continuing to wrestle with, what we can do and what we think just -- we don't want to propose something to the Commission

that we don't believe in our hearts we can satisfy. And so that's where we're struggling a little bit.

MR. TEGELER: Thanks. Actually, Ruth, if I could -- I hate to digress but you bring up a good point. I just wanted to -- I mentioned earlier about Sandia has actually done scale modeling with demonstration tests and I wanted to just expand. You'll see this filler here. This was actually an impact limiter. And it's essentially constructed of steel struts both at full and at model scale.

This type of model, because the newer designs use advanced materials, advanced structures, honeycomb aluminum, very -- poly non-linear but very conducive to energy absorption, you're -- the chances of success for model validation are much greater when you have say a steel known material and fairly well characterized geometry versus the newer designs which are -- or more modern designs which are much more complicated to get at material characterization and structural characterization.

MS. SNIDER: Excuse me, I'd like to add something if I may. I'm Amy Snider from the Spent Fuel Project Office and one of the things that we have been grappling with as far as the scaling methodology is the Commission asked us specifically to confirm the

validity of the key analytical assumptions and methods to include scaling that are used in the certification process so one of the things from a programmatic standpoint from the Spent Fuel Project office is that the information that will be obtained we would want it to be a strong tie to the certification process and with a demonstration test we feel that that is not possible.

MR. TEGELER: Okay, very briefly, I just want to mention there will be uncertainties in this demonstration test, full instrumented, full 3D, finite element models, the state of the art analysis methods. Nonetheless, there will be a range of, if you will, a range in the measurements and -- or I should say, a range if you will in our predictions versus the full scale experiment or the actual experiment and this is really due to the complex collision dynamics that are going on in the demonstration test, things such as the cask tie-downs and when I say that, I mean, the breaking strength for example, and even just the friction involved in this problem. These are all things that are going to be tough to characterize analytically.

MS. WEINER: Where are your analysis predictions coming from? Are you going to start --

analyze starting all over again using finite element analysis or can you use any of the analysis that has been done?

MR. TEGELER: Yeah, I think it's going to be a little of both. We're -- the staff's going to be doing analysis for using the various techniques such as the lumped mass models that I mentioned earlier, ranging from that to full complex 3D analysis, engaging international stakeholders and their -- for their methods and tools that they use for analyzing a problem. I expect to see a range of techniques used and model types and that includes both the impact and the fire test.

Okay, just briefly, I'll touch on schedule. We're in the process now of generating a plan which the Commission will come back or respond with approval hopefully. We're -- we've actually sent a memorandum to the Commission requesting authorization for a cask procurement and we're waiting to hear back on that. Our current staff proposal is under development and due, I think, this month we should have it to the Commission and where will the testing be done? This is not decided. We've been exploring options. We've been speaking with the folks at Pueblo Colorado, the transportation technology

center there. They conduct full scale rail experiments there, essentially a large train track and they've done collisions for the Federal Railroad Administration, similar actually to what we're proposing. They've impacted locomotives into rail cars, into structures and into other locomotives for safely validation.

We've talked to Sandia just to explore what facilities they have and so this process is still ongoing and we'll keep you updated on that progress. Participation by DOE, as Mike mentioned earlier, we have ongoing interaction regarding contribution of funds and possible expansion to include a truck cask. And I think that's it. I am available for questions based on your time constraints.

CHAIRMAN GARRICK: Okay. Ruth, why don't we start with you?

MS. WEINER: Since I have a lot. First of all, I'd like to make a clarification. The cask that was tested the flask that was tested in Operation Smash Hit is a completely different design from anything that is used to carry spent fuel. It's a cuboid design.

MR. TEGELER: That's right.

MS. WEINER: It's got water in it and as

a matter of fact, the document says that they are not going to repeat their tests for PWR casks because those are adequately done by -- at Sandia. So that I just wanted that to be clear, because I think we're dealing with entirely different things.

Two overall questions; and the first is, what do you expect to learn from this test that you don't already know, that the predominant testing hasn't already shown you, that you can't derive from information that already exists and is well-documented?

MR. TEGELER: I'll say, I'll just start what -- my background is in analysis so I'll speak from that perspective first. I think if you look back at the demonstration tests that I've talked about, the past Sandia work and the UK Operations Smash Hit, the only local work that was used for those experiments was essentially they were analytical techniques involving lump mass or lumped parameter models and not that these techniques aren't valid, they're just different than from what would be likely to be used today for say certifications packages. We're likely to see analyses that involve complex three-dimensional models. The staff, in my opinion, wants to know how do these complex models perform. The tests -- again,

you mentioned the Operation Smash Hit. That actually the Brits actually did incorporate two dimensional finite element analysis and some three dimensional but it was very coarse meshes.

So if we step forward to designs we're going to likely see now and in the future, I think they're going to involve very different models and assumptions and I think the analytical effort that will be used for this demonstration test will be drastically different in my opinion.

MS. WEINER: When you talk about current analytical methods, you're including the current finite analysis methods of -- finite element analysis methods that were used in 6672 --

MR. TEGELER: Yes.

MS. WEINER: -- analysis methods that -- so essentially, you're back to what the original idea -- original, original idea of the PPS was, which was to do a -- do some sort of validation of these current analytical methods.

MR. TEGELER: I think you are but at a different accident, a realistic accident scenario versus the extra regulatory testing that was presented in at least --

MR. MAYFIELD: 1768.

MR. TEGELER: 1768, thank you.

MR. MAYFIELD: If I could add to it just a little bit, you asked what do we really expect to learn that we don't already know. If you will, hopefully nothing but as Dr. Garrick pointed out, what we are trying to evaluate or think we can show the robustness of these casks, the corollaries, you begin -- you have the potential of showing limitations. We're not going into this structuring a test to give -- so that we have a given result. We're going into this to structure a realistically conservative demonstration test.

One of the things we will do in advance of conducting this test and presumably will vet with this committee, are what are the success criteria, what constitutes a successful test in the staff's opinion. We'll make that publicly available well in advance so there are no surprises. It's not my intent to have to try and explain away a result after the test, "Here's what constitutes a successful test going in", and we certainly would welcome input from this committee about whether we do or don't have a credible set of success criteria. But that becomes a critical piece to this, to say to everyone up front what constitutes a successful test in the staff's opinion and then have

that on the table in advance and then we'll see where the test takes us.

MS. WEINER: Thank you very much for that response because the committee has, in previous communications said that it's very difficult, if not impossible, to learn everything from one test.

MR. MAYFIELD: Exactly.

MS. WEINER: Now, my second question is what is it exactly that you're demonstrating and to whom are you demonstrating it?

MR. TEGELER: To whom are we demonstrating this? I think we're demonstrating the use of -- we just talked about analytical methods. I think that's one of the key outcomes of the demonstration test. We'll be able to demonstrate the use of modern computational say 3D, three dimensional finite element analysis for use in performing or making cask performance estimates under realistic accident scenarios.

It's addressing a public concern from the public comments associated with 1768 to do full scale realistic accident testing. To who? Quite honestly, I think it's for -- to a large extent it's internal. It's the NRC staff. It's to provide a basis for our understanding of what could be coming in or what

perhaps will be submitted in the near future for certification and that's --

MR. MAYFIELD: If I could add to Bret's response, I think from my perspective it comes at several levels. So what are we trying to demonstrate? One level is the cask response in a complex scenario and our ability to predict that. That bit of information, I think feeds staff assessments and also fees public interest. If you go back to what got us into the package performance study, back several years was an interest from the external stakeholders to show that full scale casks could survive accident scenarios.

Then you get into well, exactly what scenario is being considered, how conservative should it be. We've used the word "we" and some of the commentors have used the word "realistic". We then hang up on definition of realistic gets to be one person's realism takes it to failure, another person's realism is bouncing off tunnel entrances. So that gets to be a struggle in terms of communication. But one level is the detail test results that can feed the analysts and satisfy that.

Another one feeds the interest of showing that full scale casks can, in fact, go through a

realistically conservative scenario without failure. And that very directly feeds the comments that we had gotten that took us into this test.

MS. WEINER: This is just a question; isn't that what the regulatory tests are intended to do, to show the robustness of the -- of a full scale cask?

MR. MAYFIELD: They're not done -- the regulatory tests are not done on full scale casks.

MS. WEINER: Well, yeah, I'm aware of that but --

MR. MAYFIELD: In principle, yes.

MS. WEINER: -- but isn't that the -- weren't the regulations written with this in mind?

MR. MAYFIELD: Yes, and I think one of the bits of feedback the staff has gotten and that the Commission has gotten is that there is a questioning attitude from many of the external stakeholders that absent full scale tests to the regulatory limits, why should we believe your analysis? And that's been a pretty loud theme that we've heard repeatedly. We -- one of the earlier sets of options that we had proposed to the Commission included tests of full-scale casks to the Part 71 regulatory criteria.

And the Commission came back and felt like

the demonstration interest was going to satisfy a broader range of stakeholders. So that was the direction they gave us was to do the demonstration test and to go away from the strict testing full scale to the regulatory limit.

MS. WEINER: So that was made in the full knowledge that what had been asked by the public was -- were two things, those first two bullets that you have there.

MR. MAYFIELD: Yes, ma'am.

MS. WEINER: Thank you.

CHAIRMAN GARRICK: Okay, Allen?

MR. CROFF: I think for now Ruth's questions covered mine.

CHAIRMAN GARRICK: Okay, George? Mike?

MR. RYAN: Yeah. This is kind of an intriguing area we're just on. I kind of wrote down three questions. You talked about what would be a successful test. I guess my view is, it's just as important to think about what is a failed test.

MR. TEGELER: Most definitely.

MR. RYAN: You should have failure criteria as well as success criteria and --

MR. MAYFIELD: That's a good point.

MR. RYAN: Because, you know, we've got to

decide, "Oh, we didn't make it. It wasn't good enough". So that's something I'd think about. Now as engineers and scientists, we're always thinking about what's the right answer. I think it's just as important in this case to think what's a bad answer or a wrong answer.

MR. MAYFIELD: That's a good point.

CHAIRMAN GARRICK: Risk analysts think that way all the time.

MR. RYAN: Well, sitting next to you, it's rubbing off. But, you know, that goes back to John's comment about robustness or weakness, so I think that's real important. The other part is, how did the public concerns get reflected in the tests? Now, I know you've addressed that we haven't seen a detail and that will come with time, but I think it's important for you to discuss that in the protocol. I Mean, "This is how we've addressed the question of terrorism. We think this addressed it or we think it doesn't". So how do you, kind of in a plain language kind of way, not so much in an engineering way, address the fact that the public comments have been addressed.

MR. MAYFIELD: Yes.

MR. RYAN: Now, whether in your view -- I

mean, your view will be that it's adequate and whether it ends up adequate or not, that's yet to be determined down the line, but I think that would be an important thing in this context of here's a successful test, here's a failed test and if we do it right and we have a successful test, it will hopefully meet these goals and objectives.

The other thing I think is important to talk about and again, as engineers and scientists, we talk about what is this test going to show? Similarly, I think you have to say what it won't show. So the boundary conditions as we talk about, you know, what it won't show are very important and I know they're not always bright lines but to make them as clear as what a test won't show is just as important in this context because of the wide interest in this particular package performance set of tests.

MR. MAYFIELD: We agree.

MR. RYAN: So I think that's helpful. And again, all three of those questions, I think, relate back to the earlier comment of how do these -- how does this new program relate to or supersede or over-arch, however you wanted to say it, the regulatory tests and why they're better and so forth.

MR. TEGELER: Okay.

MR. RYAN: So if you can lay that out in addition to, of course, the technical details which Bret, we appreciate hearing about from you and all that's going to go on and has gone on, that would be an enhancement, I think, to your documentation.

MR. MAYFIELD: The Commission did direct us to submit a plan to them for their review and approval.

MR. RYAN: Right.

MR. MAYFIELD: So there is a potential that we're not going to hit it right this time either and we'll get some additional guidance, there will be some iteration. That's a possible outcome.

MR. RYAN: Right.

MR. MAYFIELD: At the end of that, once the Commission has a test plan, these scenarios are relatively high level. Once we have something that the Commission is satisfied with, then we had made a prior commitment to the public that we would address their comments in the context of whatever test plan was put forward and that's a commitment we will follow through on and describe exactly how we think this test is satisfying their comments. So that was a commitment we'd made up front and we will absolutely follow through on it.

MR. RYAN: Okay.

CHAIRMAN GARRICK: One of the concerns, of course, that the Nevada people have is that when Yucca Mountain operates, we'll be engaging in a level of traffic that we've never engaged in before. And I guess going back to our working meeting, working group meetings, one of the things that the committee commented on quite extensively was that unlike a lot of issues associated with nuclear safety, in transportation risk we have a tremendous amount of information, information and data and so forth. And we had actually recommended that this data be integrated and analyzed to answer some of the questions better that are being asked.

One question that I would have with respect to the accident frequency and severity is whether or not there's been any analysis to try to correlate the types of accidents that have occurred with the level of traffic that happened to be going on at that time. In other words, the accidents that we have happened, were they bunched up during times of heavy material traffic or was -- or have we been able to determine any kind of correlation between accident frequency and severity on the one hand and accident traffic on the other?

MR. MAYFIELD: I think that's a very good question and I don't have an answer for you. It's something we can certainly get back to you. My suspicion is we haven't gone all the way through that correlation. We've been looking at more the bulk statistics, but it's certainly a good question and it's one that --

CHAIRMAN GARRICK: If there's any kind of analysis that could lead us to some definitive conclusions about the impact of traffic on frequency and severity, I think it would be very valuable.

MS. SNIDER: I have a comment, Amy Snider. We have looked at FRA accident reports for rails, severe accident, and one of the challenges that we faced in coming up with scenario development is that the accident reports, although have detailed information, there isn't in a lot of cases, enough information that we would like to know. So there is accident reports. There is some information about the -- how long the fire was.

For example, three days a fire burned, but what -- our engineers need more information about that because that's just not enough information. So we've tried to get as much information as we can but unfortunately, it may not exist.

CHAIRMAN GARRICK: Thank you.

MR. MAYFIELD: Mr. Chairman, if I could, let me make a commitment to you that we will go back and see if we can mine the data that are available, see what we can pull out of that and provide it either as a separate letter to the committee or in a subsequent presentation to you. I'd like us to come back and talk to you about both success and failure metrics for this and perhaps, at the time of that briefing we could tell you what additional information we've been able to glean from the accident data such as it is.

CHAIRMAN GARRICK: Okay, that's great.

MR. MAYFIELD: If that --

CHAIRMAN GARRICK: Yeah, that will be very helpful.

MR. MAYFIELD: We'll make that commitment and I'm sure Dr. Larkins will keep me honest on this. He keeps me honest on a lot of things.

CHAIRMAN GARRICK: Jim, do you have any comments?

MR. CLARKE: Just one kind of basic question; as I understand the way you've constructed this scenario, as you've looked at data on rail car accidents, and the scenario you've constructed is not

necessarily the most likely scenario but it's one that's -- I'll call it relatively likely but has a high impact on the cask. What is the most likely accident scenario? What are the consequences of that?

MR. TEGELER: Yeah, the most likely, at least based on the Volpe study I've seen is essentially derailment in the soil. You have a car derailment and the cask overturns and you have the cask now impacting soil. More than likely the impact limiters would be engaged at that point, the soil relatively soft and there would not -- that would not be a significant challenge to the cask. That's your most likely condition.

MR. CLARKE: Okay, thank you.

CHAIRMAN GARRICK: Did you have another question?

MS. WEINER: I had a follow-up comment to Dr. Garrick's suggestion about looking at the relationship of accidents to rail traffic and other parameters. Since even with transportation, the proposed transportation to Yucca Mountain, there will be relatively few trains carrying spent nuclear fuel compared to trains carrying other hazardous materials. I was going to suggest that you look at the relationship of all HAZMAT accidents to these other

parameters, just to give you some good statistics and recognizing that with the American -- Association of American Railroads' characterization of key trains, that this is another parameter that should be taken into consideration because with the identification of key trains, there's no way these things either -- a lot of HAZMAT or spent fuel is going to be transported by commercial freight.

MR. MAYFIELD: Okay, thank you.

CHAIRMAN GARRICK: Any other questions, staff?

DR. LARKINS: Yeah, I may have missed this but when you deal with the subject of a fully engulfing fire being realistically and conservative, I guess also you'll take a look at accidents that have occurred and try to put some conservative factor on the time, temperature profile for those? I mean, we had this Baltimore event that occurred and whether that's a realistic model.

MR. TEGELER: Yeah, it would be a similar exercise and looking or data mining for accidents that have occurred such as the Baltimore fire, for both fire and the collision aspects.

CHAIRMAN GARRICK: Any other questions? Rich, anybody? Okay, Mike?

MR. LEE: Very briefly. Has the staff given any thought to finite element modeling and 3D as a way of predicting what type of outcomes you're going to get from your full scale testing?

MR. TEGELER: To date, no. That's the next step.

MR. LEE: Okay, the reason I raise it is at the working group that Dr. Garrick made reference to, it's been brought up that there is some very complex analytical capabilities now in terms of 3D modeling and that would be a very -- if adopted or employed it would be a very effective way of not only repeating the experiments computationally --

CHAIRMAN GARRICK: Yeah, and that's exactly why I think this analysis are supposed to do in advance is very important because that could really signal the -- why -- what you want to get out of the study.

MR. MAYFIELD: The first cut at that is the six-month product. I can guarantee you there will be -- before we actually hit the go button on this test, there will be a lot more analysis and a lot more detailed analysis done getting to exactly your point. We agree completely.

CHAIRMAN GARRICK: Yeah. Okay, all right,

well thank you very much.

MR. TEGELER: Thank you.

CHAIRMAN GARRICK: I guess our program shows us having a break at this point, so we'll take a 15-minute break.

(A brief recess was taken.)

CHAIRMAN GARRICK: The meeting will come to order.

The next topic is the license termination rule analysis of the use of intentional mixing of contaminated soil and the member that's going to lead the discussion is Mike Ryan.

Mike.

MR. RYAN: Thank you, Mr. Chairman, and good morning.

Our speaker this morning is Derek Widmayer, the project manager for the special projects section in the Decommissioning Directorate.

Derek, without further ado, I'd ask you to give us your presentation on the LTR analysis and the use of intentional mixing of contaminated soil, and we'll, I'm sure, have questions when you're done.

Welcome.

MR. WIDMAYER: Okay. Thanks, Mike.

Is this microphone working?

PARTICIPANTS: Yes.

MR. WIDMAYER: What I'm going to present today is an update of a previous presentation that was provided to the committee on the results of the LTR analysis. We had one remaining issue that required study from the earlier paper, and we have completed that and are providing you the information today on the results of that last issue.

There will be an updated presentation containing all of the issues at a later meeting for the ACNW. I believe it's scheduled for the October meeting, and at that time all of the issues will be presented and how we're doing and implementing.

For the presentation today I'm going to discuss the background of the paper and the issue, present the issue and the expected outcome that we want from the analysis. I will provide the evaluations that we conducted, a summary of the conclusions of those evaluations, and those were formulated -- help me formulate options, and I will present the analysis of the options, the recommendations of the staff to the Commission, and finally issues for guidance development and also interest from licensees that have occurred to date.

The background on this issue is that the

Commission directed the staff in the staff requirements memo for SECY-01-0194 in June of 2002 to conduct an analysis of LTR issues.

In October of 2002, SECY-02-0177 provided the initial analysis describing the scope and evaluations for each issue. In SECY-02-0177, mixing was not yet identified as an issue.

In SECY-03-0069, the full results of the analysis for these LTR issues that were described in the earlier SECY paper were presented, and we also identified the use of intentional mixing of contaminated soil as a new issue. In that SECY paper we basically provided a brief initial analysis that was similar to the one provided in SECY-02-0177 and asked the Commission if we could provide them with a separate Commission paper for this new issue.

That SECY paper is 04-0035, developed and presented to the Commission in March of 2004 providing our results of the analysis of this new issue.

In May of 2004, the Commission approved the staff recommendations in the staff requirements memo on the SECY paper, and there was a slight modification in the staff requirements memo to the option that the Commission staff recommended, and I will address that a little bit later when we get down

to the discussion.

Basically, the bottom line though is that the Commission told us to go ahead and implement the preferred option.

So consistent with the format and the presentation of the other LTR issues that were provided in earlier SECY paper, what the staff did was present what the issue was and what the expected outcome would be, the issue being should we allow the use of intentional mixing of contaminated soil to meet the release criteria of the license termination rule.

And then if yes, how do we implement this recommended action?

The format that the previous issue papers took that we followed was the statement of the issue and the outcome. There were evaluations where there was a lot of discussion about experiences of the NRC and other organizations in the issues in the past and what led up to it being an issue; development of options with pros and cons on the options, and then a recommendation of which option to proceed with.

So this is the same approach we took in this paper.

The first thing that we did, and this turned out to be quite an extensive effort, was

basically fact finding. We tried to find policies, regulations, guidance, and experiences and any other significant information where either the use of mixing or the subject of mixing and/or dilution was used or discussed.

We concentrated obviously on the NRC's experiences and their rules and guidance, but we also looked at other federal agencies. We looked at international sources where this was discussed, and we also looked at other sources within the United States where this issue was also discussed.

CHAIRMAN GARRICK: Did you look at the WIPP experience in this regard?

MR. WIDMAYER: I did not look at WIPP experience, no. I did look at some experiences at the Department of Energy, but WIPP was not one of the ones I looked at.

CHAIRMAN GARRICK: Okay. Thank you.

From all this fact finding we identified significant issues from all the discussions and all of the experiences that we found. These significant issues we felt were important, and what we did was we included those further in the analysis as far as pros and cons, and I'll show you a little bit later how we did that.

After doing all the fact finding, then we provided options in an analysis to try to figure out whether the use of intentional mixing was something that we would recommend. Now, I kind of was confronted with a chicken and egg type of situation here. In trying to figure out what options to allow mixing, I kept running into a situation where I needed to understand a little bit more about how somebody could do this.

So I kind of took a step backwards a little bit, and I tried to think of as many scenarios as I could where a licensee or a decommissioning site could mix contaminated soil with either other contaminated soil or with clean soil to reduce concentrations in order to meet the license termination rule criteria.

So the first thing I did was I evaluated scenarios. Some of the significant issues that I talked about in the previous slide, which was Attachment 2, the SECY paper, they became influential. The significant issues became influential in whether I thought a scenario should move forward in the analysis.

Then we did an evaluation after I was able to eliminate some scenarios. We did an evaluation of

options to whether or not to allow mixing, and then, of course, finally we provided a recommendation in the paper.

From the fact finding mission and development of information experiences, the significant things that came out of studying the NRC's past experiences on this subject was that, number one, the dilution was not forbidden in any of the regulations. The other thing about the regulations they felt was significant was the license termination rule in Part 20 is performance based, which would allow flexibility to licensees and non-licensees on how to meet the criteria and to release their land.

Some of the more important other papers that we found and other experiences within NRC were SECY 86-328 on a definition of high level waste, guidance on 10 CFR Part 61, a SECY paper on the use of rubblization approach for decommissioning at Maine Yankee, responses to the States of Pennsylvania and New Jersey on specific issues regarding dilution and mixing, and there were also six specific licensing actions, where either blending or mixing of soil was an approach the licensee wanted to take or that mixing or blending was used in a dose analysis after a certain period of time for deciding whether or not to

allow a specific disposal.

Within these important references, some policies and positions of the NRC became apparent. Mixing and dilution actually were addressed many times in this slew of papers, and one thing that was clear was that dilution should not be used to change the waste classification, that is, from Class B to Class A. that's an example.

There were several examples where NRC had approved the use of a mixing or blending approach to meet disposal facility waste acceptance criteria and also for limited disposals, for example, at a nuclear reactor and at one site disposal.

Another thing that became important in the analysis was that the GEIS on the license termination rule did not address this issue.

Now, I wanted to let the committee know that I did find experiences at DOE and EPA and FUSRAP. Some of them were more detailed than others, and some of the experiences and information I found were contained in rules and guidance and also in actual cases.

And in the interest of time I was going to skip over those and head to the international slide, which is Slide 12, but I did want the committee to

know that we did take experiences of other federal agencies and also had conversations with some representatives as far as their interest in this and also what experiences they've had in the past.

The Commission was particularly interested in knowing what was going on in the international community as far as the issues that were in the license termination rule analysis. So we made sure that we identified in top level international consensus bodies any kind of experiences they had or any kind of guidance they had in top level guidance documents.

ICRP 77, the radiological protection policy for the disposal of radioactive waste provided probably the most significant guidance in this area, and that was that the dilute and disperse and concentrate and contain approaches should both be used in management of radioactive waste. They did advise that dilution for the purposes of circumventing regulatory requirements, of course, was not advised, and they were pretty consistent in saying if you wanted to approve dilution, that if you wanted to use dilution at a particular place, that a regulatory agency should approve the approach.

Now, as I indicated before, all of the

experiences and information that I discovered from NRC led us to identify several significant issues which needed to be considered in the remaining paper doing the options analysis.

The significance of the fact that the GIS did not cover this issue meant that NEPA analysis would be needed for whatever option that we chose. The staff pointed out that some high level decision making that was going on on some other subjects could be interfered with in the development of this policy. It was not so much that an issue could be interfered with as much as it was insuring that there was coordination of all the efforts, and as it turned out, it turned out to be a good time for this issue to come up to the Commission, and their approval of it indicated that they were happy with the timing, that it would be okay to make this call on this policy before we made a call on these other important matters.

The staff pointed out that there were environmental and health effects of some of the scenarios that you could think of for mixing contaminated or uncontaminated soil or mixing highly contaminated soil and lower contaminated soil that would be of more issue than others.

For example, if you mixed -- if you took your mixed homogenized soil and buried it deeper, closer to the ground water, you would have different environmental effects than some of the other scenarios that you could think of for using mixing.

The use of mixing also had some ramifications as far as public perception, and I've listed all of these in separate bullets under the last major bullet.

The controversial with the public bullet came primarily from the information that was available on the use of rubblization at Maine Yankee. When this approach was proposed, there was quite an up road as far as two aspects. One was that you'd be creating a disposal site where the people around Maine Yankee understood that all of the rubble was going to be removed, and the other aspect of it was simply that there was, you know, a reversal of what the people understood what was going to occur, and it just was like, "Okay. You told us one thing and now you're telling us another thing."

I think that actually the committee had a presentation on that several years ago.

As a last part of the evaluation of these issues, I tried to put a flavor on this that not

everything was negative as far as using this as an approach to meet the license termination rule criteria; that the strategic plan performance objectives that were in place at the time, it looked like NRC would be meeting those performance objectives to primarily maintain safety and common defense, protect the environment because we would be providing a viable option for restricted release and alternative criteria of the LTR, and that was one of the things that the Commission had specifically asked us to do, was try to find a way to make those particular provisions of the license termination rule a little bit more viable.

Also we felt that since the license termination rule of Part 40 was performance based, that we would be providing a chance for more risk informed regulation. This approach was obviously more flexible, and it also provided a viable option for situations where funds might be limited, and there was some question as to whether the planned decommissioning could be completed.

And a third performance objective of NRC of reducing the burden on the stakeholders, we considered that blending could facilitate license termination in difficult cases.

Some of the difficult cases that we thought of I mentioned in the previous bullet, which was that limited funds could be situation were some sort of alternative approach could be helpful.

In addition, a place where a path to disposal was not available. That might be a difficult situation where this could provide a solution.

Now, the staff also pointed out that the fourth performance objective in the strategic plan at the time might not actually be met, and that was the performance objective to increase stakeholder confidence. We pointed out that there was a chance that that was something that would not be achieved through this approach.

Now the strategic plan objectives have been changed. Increasing the public confidence, the performance objective has basically been replaced by a maintaining openness with the public. The staff believes that we can meet that performance objective with this approach because any proposed mixing would have to take place in the license termination plan or the decommissioning plan, and that provides a chance for stakeholders to give their views on the proposed approach.

So they would be able to tell us whether

they liked the proposed approach that included mixing or not.

Okay. Having done all of my fact finding and decided what were the significant issues that needed to be considered in deciding what to recommend to the Commission, I broke down -- I tried to think of reasonable scenarios that a licensee or decommissioning site could use, and basically they broke down into three major scenarios, and then there were subscenarios underneath of these.

Essentially Scenario 1, which had two subscenarios, would be that the volume and footprint of contaminated material that was originally at the site would both be reduced, and that essentially is mix and send off to a waste disposal facility because you can now meet with WAC.

Scenario 2 had three subscenarios, and they were all where we reduced the footprint in some fashion, either by use of contaminated soil or by use of clean soil.

Scenario 3 also had three subscenarios, and that was if you wanted to take an approach where you increased the footprint, and they all involved spreading the material over some portion of the facility, and in that sense you can reduce the debt.

So the staff did an evaluation of all of these scenarios, tried to reduce the ones to a reasonable number to help us decide whether the option is something we'd like to recommend to the Commission. Well, based on the information that we developed in the previous presentation and the Attachment 2, as I said, there were a lot of significant issues that were pointed out that were influential.

So what the staff recommended to take forward in further analysis was to eliminate the options where the footprint would be increased. The reason the staff recommended this was there was a preference for reducing the area of contamination in the LTR, the license termination rules, statements of consideration.

In addition to that, there's operational guidance that NRC has that basically you should not spread contamination when you're performing operations. So to be consistent with both of these, we eliminated the options where a footprint would be increased.

We also eliminated the options where the use of clean soil would be used. The previous attachment had provided a lot of information on policies and positions of not only the NRC but other

federal agencies that basically the generation of waste should be minimized and that one way that that's almost always done is to not utilize clean material in meeting your waste management goals.

So to be consistent with that, we eliminated scenarios where clean soil was proposed to meet the LTR.

Staff recognized that there was one of the subscenarios under Scenario 2 that in a last resort the use of clean soil might be the only way that the license termination rule criteria would be used. So staff pointed out in the Commission paper that that one scenario might be something that would be considered acceptable, and then that was discussed further in the SECY paper, and I'll get to that.

So next, once we had the scenarios whittled down to basically three or four scenarios, it was a little bit easier to determine options that were available for either allowing this approach to take place or prohibiting this approach, and we came up with these five options, and they went from Option 1, which is the most prohibitive, to Option 5 which is the least prohibitive.

Option 2 would be continuing the current practice which was we found that there were examples

already where NRC had allowed mixing to meet WAC and for limited disposals, but the recommendation was that we would not extend that to meet license termination rule requirements for leaving material on site.

In Option 3 we said there would be limited circumstances under which we would consider the option of leaving material on site after intentionally mixing it, in addition to allowing the current practice to continue.

Option 4 and Option 5 both also allow the current practice to continue, but in Option 4 we would allow restricted release criteria only to be used if you wanted -- to be met if you wanted to use intentional mixing, and then Option 5 would be that any criteria in the license termination role could be met with approach using intentional mixing.

In Option 4 and Option 5 -- in Option 3 we said there were limited circumstances. We worded it allow limited, case by case use. In Option 4 and Option 5 we would not have any limitations. Any licensee or anybody decommissioning could propose mixing and NRC would review or approve. In Option 4, only for restricted release; in Option 5, for use of any of the criteria.

Staff recommended Option 3 to allow the

intentional mixing to meet the release criteria under limited circumstances on a case-by-case basis and to allow the current practice to continue.

The limited circumstance under which the staff proposed was that the mixing needed to be part of an overall approach to the site clean-up, which includes the application of ALARA principle and considers only case where it can be demonstrated that removal of soil would not be reasonably achievable.

These words actually were already in a policy. Actually it was in a position that NRC had provided to the State of New Jersey. New Jersey had specifically asked NRC to comment on a rulemaking of theirs where they proposed that mixing could be used, and these are the words that NRC gave to them and comments.

So that's where the staff started with as far as what limited circumstances would mean, and then we carried forward the scenarios, the evaluation of the scenarios and said we would consider approving only cases where the resultant footprint would either be the same or smaller than the footprint before decommissioning began and that clean soil from outside the footprint would not be mixed to meet the license termination rule requirements.

Now, this is where I wanted to address what the staff requirements memo said that was different. In the case of use of clean soil, the staff envisioned the case where the use of clean soil might be the only option. If you had a footprint where you needed to -- where clean soil could be used, if you mixed clean soil within the footprint and met the license termination rule criteria where there was simply not enough funding to ship, there was no other option, then NRC said in a case which we considered to be very rare, we would ask the Commission for approval for the use of clean soil under this one case.

And actually the staff requirements memo came back and said no thanks. The staff can make that decision consistent with the rest of the paper; that staff was proposing something that the Commission considered to be a reasonable alternative and that we did not have to come to them for approval if that case came up.

So having decided on Option 3, we recommended that implementation actions for this option basically be rolled into the implementation actions of the previous LTR analysis. So we proposed that we include the results of this analysis in the regulatory information summary that was to go out on

all of the issues, and this went out on May 28th, 2004. The RIS-04-008 contains all of the issues including the results of the mixing issue, and that the other proposed implementation action is that we will include detailed guidance for the use of intentional mixing in guidance that we planned for several of the other issues under the LTR analysis.

Right now the draft of that is scheduled in September of 2005.

MR. RYAN: Are you planning any information gathering sessions or anything of that sort on that?

MR. WIDMAYER: When I originally scoped this out, I thought that maybe two or three workshop type of things would be the right approach, and I don't know where we are right now on our implementation plan on guidance, and I'm not sure that we have enough time for that many workshops, but that was an approach that I thought would be good when I initially was thinking about this.

I proposed some funding to conduct such a workshop or two.

MR. RYAN: You know, I guess -- excuse me for interrupting at this point, but there's a lot of the devil is in the details here, you know. I mean,

things like what's contaminated, what's clean soil, what is mixed and what isn't mixed, what's sitting on top of what's mixed.

MR. WIDMAYER: You mean like this kind of stuff?

MR. RYAN: Like that kind of stuff. So a lot of folks who are perhaps licensees looking at decommissioning or others who are in their business of trying to support licensees who are doing decommissioning, it would be a shame not to have at least one or two workshops where they could participate and, you know, give you some practical insights.

So go ahead.

MR. WIDMAYER: Yeah. Well, one of the things that became principle was obviously we would need to involve stakeholders in any kind of attempt to even develop guidance on this issue, not to mention an actual application of it at a facility.

So one of the things that became an issue for us was how do we involve stakeholders even in a development guidance. So we included in the Commission paper the fact that we would include stakeholders in the development of the guidance. The Commission asked us to do that on one of the other

issues.

So we answered back to them that we would take the same approach.

Some of the things that you already mentioned, what definitions. We attempted to provide a definition of clean and contaminated soil in a Commission paper, and we couldn't even do that for the purposes of making a policy call. It was okay not to have specificity, but we recognized that that was something that we would have to do.

Also, the meaning of what do we mean by footprint. We say the footprint has to remain the same or become smaller. So how can somebody draw a footprint. You know, can they draw -- can they have their zone of contamination we their entire site to start off with. Well, then it's easy to achieve reduction of the footprint.

And then probably one of the stickiest things was the last part of the statement on what our limited circumstances would be, and that was that removal of soil could not be reasonably achievable. So we would have to provide a lot of guidance in what staff meant by that. When does removal of soil become not reasonably achievable, and not just from a funding standpoint, but from a dose standpoint and from

whether or not there is cost aspects of that.

You know, if you need 10,000 shipments, is that unreasonable compared to leaving it in place?

MR. RYAN: Derek, as you mentioned that, you talked about ALARA, and you know, I can envision a dose tradeoff. Dose to work is doing the excavation versus some theoretical future dose to a recipient or some kind of receptor.

MR. WIDMAYER: Right.

MR. RYAN: But how about the other aspects of risk management? You know, 10,000 trucks versus none, you know, things of that sort. I mean, is your thinking wide enough that you'll include all elements of being risk informed and performance based or --

MR. WIDMAYER: Yeah, exactly.

MR. RYAN: Okay.

MR. WIDMAYER: And, in fact, the very last slide we might get a chance to talk about that a little bit, but all of those aspects came into play as far as, you know, what do we mean by reasonably achievable. I imagine that we got these words from an earlier NRC position, and of course, they hadn't really addressed any of these kinds of specificity in there.

It was an answer to New Jersey in a

proposed rulemaking, and when New Jersey answered that letter and then NRC said, "Okay. We don't have any more issues with whether or not you guys in New Jersey want to implement such a policy," they didn't ask us at that time what reasonably achievable was nor any --

MR. RYAN: Have they done any yet, sites in the mixing?

MR. WIDMAYER: I don't know.

MR. RYAN: Boy, that would be an interesting thing to ask.

MR. WIDMAYER: yeah.

MR. RYAN: Sorry.

MR. WIDMAYER: That's okay.

We already knew that we had decommissioning cases where there was slat that somebody might think, "Okay, I've got this slag. If I could bust it up or if I could ground it up or if I could do something with it and mix it, then I might be able to achieve the goals, my clean-up goals," and in addition to that, perhaps non-uniform materials or other non-soil materials.

We realize that in getting the policy from the Commission that it wasn't going to be -- we weren't able to limit it to just soil already knowing what our real situations were with some of our

decommissioning sites. So we would have to address that. If it was going to be totally prohibited or if we were going to come up with some sort of approach that, you know, they could use it for materials other than soil.

We suggested in some of the scenarios that a disposal cell kind of type thing would be something that would be left on site. So we have to address what we mean by that, and if there's already existing NRC guidance that should be followed for what the final design of this thing should look like.

We also recognized that we needed to address what do we mean even by mixing and how do you do mixing and what controls need to be on mixing. What needs to be in your radiation control program as far as doing mixing, and also what NRC inspectors would, you know, need to do or warned to do as far as overseeing such an operation.

We also recognize that if you were going to use release under the restricted or the alternative criteria that we might think that additional controls would be a good idea if you used mixing, and so we would consider that in the guidance, address that situation and say, okay, if you were going to leave some source term on the site, that under other

scenarios you would be removing it from the site. Does NRC think that additional controls needs to be in place?

And then also, given that we were going to be using the case-by-case approach, what information needed to be in the DP or the license termination plan for NRC to review and then what criteria NRC would use to review and approve these approaches.

Last but not least, I probably got a phone call like three days after the Commission paper went up as far as I'm ready to mix my stuff. You know, what do I have to do?

So the Whittaker Corporation, which is a Region I licensee was the first to suggest that they wanted to use this, and what they've done is they've submitted a license application to Region I where they want to crush and blend slag material to reduce the source concentration so that it's below the unimportant quantities and then ship it to a waste control specialist.

This is a stage towards license termination, but they're going to maintain their license, active license and do it under that, and then once they have a lot of stuff removed, move to license termination and they'll have very little source term

left.

So this is going to be the first licensing action under this SRM, and we don't envision too much difficulty because we've had already experience in approving such an approach for meeting WAC, specifically at waste control specialist. So the licensee actually has two dose analyses that they can use to show what NRC required and was approved.

Of more interest probably was a meeting we had with Molycorp in June where they came to us with some of the hard questions that you are posing. How big can I draw my initial footprint, therefore reducing it significantly, and if I mix, I meet all of your criteria.

So they listened to our initial answers just based on the analysis that we did in the Commission paper, and they were determining whether -- the ball is in their court right now -- they're determining whether it's feasible to implement mixing as something that could save them money or save them shipments or whatever, and there, again, decide after their internal management discussions and decisions whether or not to approach NRC.

Their initial approach to NRC will probably be a letter that asks for a couple of policy

calls, one of which is their site is not going to be meeting the license termination rule criteria. They're an SDMP or former SDMP site. So one of the questions will be, okay, you did all of this work and you made a ruling on meeting license termination rule requirements. What about us? Can we do this, too?

So we don't know at what juncture they are on their analysis, but they're going to let us know whether they are going to submit a letter that first asks for policy calls, and then if we grant the policy calls in their favor, they'll probably submit a proposal. They'll amend their DP to include mixing.

And that concludes my presentation, and I'll be glad to answer any further questions.

MR. RYAN: Just a couple of quick questions. Have you heard from any smaller licensees?

MR. WIDMAYER: No, I haven't heard from smaller licensees. I have answered phone calls --

CHAIRMAN GARRICK: Six foot, seven?

(Laughter.)

MR. WIDMAYER: Oh, is that what you meant?

MR. RYAN: It's good to have help from the Chairman. Instructive at every turn.

MR. WIDMAYER: Licensee interest to date have been large. They have, you know, significantly

large amounts of material that -- and they're looking for ways to save money.

MR. RYAN: Interesting. I had just two comments on different slides. Slide 15, that was the slide where you talked about increasing the footprint. It's interesting to note that land farming of oil field waste, which of course they're not regulated by the AEC, Atomic Energy Act, AEA. That's the way they do it.

I mean the EPA allows land farming of radium bearing oil field wastes as a routine matter of how they manage it. So I throw that out to think about. There are examples where that's done.

MR. WIDMAYER: Some of the specific disposals the NRC has approved spread the material over part of the back 40.

MR. RYAN: Right.

MR. WIDMAYER: The difference is we're not addressing that in license termination yet. It's -- I don't know how that's going to go when these particular facilities decide is it okay for us to leave.

MR. RYAN: Yeah, I'm not saying I think spreading or increasing the footprint is good or bad, but there are examples where in natural radioactive

the material world that's really routine. I think even in some of the mineral sands industries and others that some wastes do get farmed out in that way.

MR. WIDMAYER: I think that would be useful information to develop when we do the guidance.

MR. RYAN: Yeah, yeah. Okay, and then I think you answered this question already in 17, which was the nonradiological component of risk. You know, we think about managing a decommissioning, and very often we kind of overlook the fact that occupational injury, transportation accidents and injury, all of those kinds of things are also part of being risk informed, and while we don't want to bump up against any public dose or the 25 millirem in the LTR, it certainly to me is in the mix to think about these sorts of other risks when you think about should I leave some of this behind or not.

And I think you've agreed that's within what you're thinking about for guidance.

MR. WIDMAYER: Right, and the Whittaker Corporation, part of their situation is they have hazardous material that they're dealing with in their cleaning up their site. Part of --

MR. RYAN: So they have a dual hazard.

MR. WIDMAYER: Yeah. Part of what they

want to ask is this land is going to be, quote, unquote, you know, less useful than the land -- if we were going to make it pristine, we can't do that. We're not achieving, you know, a source reduction down to zero on this nonradioactive material. So can we consider that land as part of our footprint?

In a meeting, of course, we couldn't answer that question, but we said, you know, that's an interesting aspect of it that you could think about as far as, you know, meeting these criteria.

MR. RYAN: Well, a case by case makes your work load high, but it sure gives you the opportunity to develop, you know, well informed guidance as these cases come along.

MR. WIDMAYER: Well, hopefully. We thought ideally that if we could develop some guidance and get it on the street first, then licensees could approach us, but like I said, it was probably three days before somebody said, "Hey, you know, I want to save some money. What do I have to do?"

You know, so they're way ahead of us as far as guidance. It's going to be a little bit, you know, by the seat of their pants for these first couple of cases, but they'll help us develop the final guidance.

MR. RYAN: Somebody has got to be first.

MR. WIDMAYER: Yeah.

MR. RYAN: That's great. Any questions from members?

Let me go to my left. Allen?

MR. CROFF: Couple. First, on the slide on the board, what are the radioactive materials in question here? A slide from what? What does it contain?

MR. WIDMAYER: Somebody help me out here. It's long-lived, right? It's uranium.

PARTICIPANT: Most of the slides ar thorium.

MR. WIDMAYER: Thorium slides.

MR. CROFF: Oh, okay. Not tailings, but processing by residues from thorium. Oh, okay, okay. Didn't know Atlanta coal is slag.

Is it the same in Molycorp?

MR. WIDMAYER: Yeah.

MR. CROFF: Okay. I think the only other comment that I'd like to make is to reinforce what Mike said, and that is that, you know, the devil is in the details, especially in the criteria and how they're applied, and you know, this could get to be very broad and very difficult, I think, at some point

depending on how far you expand this definition in terms of the material being covered.

And it's pretty hard to say anything else without seeing the details.

MR. RYAN: And that's not necessarily a bad thing at the beginning. I mean, you know, if you look, for example, at other cases like how do you handle irradiated hardware when there's a broad range of radioactivity concentration per unit length of a control rod blade or whatever it might be, you know, that again after a while, I mean, it got to the point where it was fairly regular and pretty well prescribed after various issues got touched on.

So it's a caution. It's not necessarily a significant barrier, but you know, I think Derek is, you know, obviously one of the folks who have been through a number of these kinds of implementation questions, and you know, you're right. The devils are in the details, but if you know that up front, you can hedge your bet.

MR. CROFF: I agree entirely. I think it would be interesting to see how it's going in a year or something like that, what cases come in and how they're decided.

MR. RYAN: Derek, I think that's a formal

invitation to cut back.

MR. WIDMAYER: Understood, yeah.

MR. RYAN: That's great.

Ruth.

MS. WEINER: You mentioned that you would have to involved or should/would involve stakeholders in both the guidance and any case that you're looking at. Could that be done since you're going to have to do an environmental assessment, it seems to me, on each of these cases, either an EA or a full scale EIS, could you wrap the public involvement into that? Because those processes require public input.

MR. WIDMAYER: Yeah, and in fact, one of the reasons that we chose case by case was for specifically that reason.

Option 4 and Option 5 kind of leaned us towards having to do some sort of generic analysis, which we didn't think was as useful as handling it on a case-by-case basis, and we pointed out in the pros and cons that an individual NEPA analysis would have to be done, and that would help us involve the public.

MR. RYAN: George.

MR. HORNBERGER: Thanks, Derek.

I have first a comment and then I do have two questions. The comment is it's interesting to me.

You mentioned the two main paradigms, if you will, dilute and disperse and concentrate and contain, and to a certain extent, it seems to me that you're actually trying to mix and match. You're trying to dilute in concentration, concentrate in footprint, and contain.

It's not a dilute and disperse classical approach. That is a comment.

My question, environmental scientists or soil scientists on the science end of things now, I know, for example, if we're interested in doing experiments with the soil and we dig up a few kilograms of soil and want to parcel it out to different experiments, we want to mix it and homogenize it so that each sample is representative, and there's quite a protocol where you split the sample and mix it and split and mix it and split it and mix it and split it and mix it, and I could go on.

MR. WIDMAYER: Right.

MR. HORNBERGER: It's actually quite hard to homogenize the soil, and my question then is as you go forward with this, is there a measurement component. Are people actually going to have to do some measurements to gain some idea of how well the mixing has gone on?

MR. WIDMAYER: I think so, and that was part of what I mentioned in the development of the guidance, and I didn't provide any specific details of the kind of things I was thinking of, but how you actually do the mixing, what's going to be required for the mixing operation, and then like I said, what the NRC inspectors would need to do to confirm that the mixing had taken place in accordance with the operation, yeah, we recognize the difficulty in actually homogenizing something, and that would definitely -- we'd have to address that in the guidance, and that would be part of, I think, the decision that the licensee would make as far as whether it is worthwhile to do this.

And so, you know, these licensees having come forward, you know, they've beaten us a little bit to the gun as far as thinking those kind of things, and they'll have to, you know, play along with us. They might be burdened with a little additional work where you ask them to do something, we do some sort of measurements and we say, "Okay. We don't think that's enough. We want you to do something additional."

MR. HORNBERGER: But, I mean, typically there would be some kind of sample taken and brought back to the lab and measurements made.

MR. WIDMAYER: Yes.

MR. HORNBERGER: Okay. So this then also feeds into my other question, and that is it strikes me that this must be radionuclide specific in terms of when you might want to do it, when you might not want to do it, and that also, of course, would tie back the measurements because I would anticipate that a lot of these sites would have a real mixture of radionuclides, and then what is it you would be measuring?

MR. WIDMAYER: Well, I think that what we were looking at, and one of the things we did do that I didn't describe in any detail is we thought that there were four specific decommissioning sites that we were dealing with right now where this could be an approach that we should talk about at least, maybe not consider, but look like from different aspects that there might be some advantage to approach using mixing either for some of the waste or for all of the waste.

And all four of those cases tend not to have much of a mixture of radionuclides. You know, the long-lived radionuclides, uranium and thoriums, are the sites are the sites that are having difficulty coming up with a solution.

But you're right. If somebody wanted to

mix something that had a short half-life, it doesn't make a lot of sense to then leave it there. So we should be addressing that also in the guidance.

MR. HORNBERGER: Thanks.

CHAIRMAN GARRICK: What really complicates this problem in my mind is out failure to really understand the health effects of low levels of radiation, and you know, I can imagine a parametrics study of various scenarios and the risk of tradeoffs like Mike was talking about earlier, such as the handling risk in the dilution or mixing process versus no mixing and as well as the release criteria or the waste acceptance criteria.

It may turn out that the best gains in terms of risk would be some changes in the waste acceptance criteria if this were analyzed in a certain way.

I think you said that there have been tradeoffs made of different scenarios between the risks associated with mixing operations versus no mixing. Have these also included tradeoffs between different waste acceptance criteria itself?

MR. WIDMAYER: Not that I'm aware. The two cases that I'm most familiar with, the waste acceptance criteria were both WCS facility in Texas,

and what they were trying to do was achieve maximum amount of waste that they could send to that facility as opposed to EnviroCare or other facilities because they could mix and reduce it down to be below the -- to be an unimportant quantity of source material and, therefore, get it into WCS, which I haven't done any cost analysis, but apparently it's much, much cheaper to dispose of it that way.

So they had a specific waste acceptance criteria that they were trying to meet.

CHAIRMAN GARRICK: Right, bit it would be very interesting to see a parametric study on variability in waste acceptance criteria and what the impact of that would be, for example, on different mixing strategies.

Anyway, that's all I have.

MR. RYAN: Jim.

MR. CLARKE: I'm sure you've thought of this, Derek. I'm thinking of some scenarios. You gave an example which is very consistent with the way this is done under other regulations where you wouldn't want to use a mixing process to change the classification of the ways, for example, to take low level B to low level A.

What about mixing soils that would have

different waste classifications? You know there may not be any realistic examples of those, but I'm thinking of the soil that might be classified as hazardous under EPA because it fails its leaching criteria with a soil contaminated with radionuclides.

I might be classifying another. Is this an area?

MR. WIDMAYER: I didn't really think of that when I was developing the scenarios. In fact, the Whittaker Corporation sort of introduced that subject at the meeting, which was, you know, some of our soils are contaminated with hazardous material. You know, how much freedom do I have?

Didn't have a good answer for them at the time, but I think that would be something that --

MR. CLARKE: I guess you'd be generating a mixed waste, would you not? And then you'd maybe be under another area.

PARTICIPANT: Where there are no regulations.

(Laughter.)

MR. CLARKE: But, you know, this is routinely being done in DOE site clean-ups where containment soil is being put into new disposal cells with waste acceptance criteria that are designed under

RCRA regulations. So it's really mix and match now in this case.

MR. WIDMAYER: Well, you know, we were trying to provide more flexibility, but the hazardous and radioactive mix was something that I hadn't thought about before, and I think it probably would have complicated some of the pros and cons if I hadn't just stuck to --

MR. CLARKE: Sure. No, I understand.

MR. WIDMAYER: -- you know, what --

MR. CLARKE: It just got me thinking about mixing different waste classifications.

MR. RYAN: Just a couple of follow-up points to close out. One is changing waste class, I always think about what if I'm 1.01 of Class B versus A, and my other containers, all 130 of them, are below A. So, you know, again, I think there is room to where that's not exactly a bright line. You know, it's done in hardware all the time and done now. So that just gives me something to think about.

The other is the bottom end of this. At some point when you talk about what you leave behind, you're going to bump into the developing clearance rule. Any thoughts there?

MR. WIDMAYER: Well, as I indicated

before, we knew that this was touching on that issue and that what we needed to do was make sure that the efforts were coordinated. That's one reason why we wanted to delay the risk and get this issue into it and make sure that guidance development is --

MR. RYAN: Is actually going along side by side.

MR. WIDMAYER: That's what our attempt is. Now, of course, again, these licensees, you know, three minutes after I issued a paper, hey, this is a way to save money. So, you know, they could care less about development of some other.

We pointed out to some Commissioners that, you know, we want to try to make sure we do this on a coordinated schedule.

MR. RYAN: Sure.

MR. WIDMAYER: And the clearance matter, the disposition of solid materials matter is one of the other issues that was starting under the LTR.

MR. RYAN: To kind of address Jim's point, you've got the EPA exemption process ongoing over on the EPA side. So --

MR. WIDMAYER: And that was something the SRM pointed out, was to make sure we stayed coordinated with that as well as our internal matters.

MR. RYAN: Case by case makes a lot of sense at this point.

MR. WIDMAYER: Yeah.

MR. RYAN: Any other questions or comments? Yes, Mike Lee and then Richard.

MR. LEE: My recollection of economic geology tells me there's thorium sand mining across the country, well, particularly, I think, still in Australia beach sands, and there may be some value in checking with the USGS commodity geologists who could put you in touch with the minerals attache at one of the embassies to find out how they deal with tailings.

MR. RYAN: Thank you.

Latif.

MR. HAMDAN: Yeah. I'm intrigued by the information you have on Slide 12 about the information experience, a much easier question than others we have here, and that is can we have one characterization for the international experience or for this information represents different experiences by different countries?

MR. WIDMAYER: This primarily was from ICLP 77. So it's an upper level guidance type of document. I did look for some experiences in other countries, and generally they were pretty negative

about the use of dilution, but there wasn't a lot of detail in what their position meant.

MR. HAMDAN: The reason I ask is Item 2, it seems to be inconsistent with the first one and the third one.

MR. WIDMAYER: Well, I think what the document was, the document was alluding to the kind of thing where like EPA, for example, doesn't allow dilution to avoid a waste treatment process. You still have to do the waste treatment process, and that was the kind of thing they were talking about.

I mean, dilution is one of the processes that they recommend could be used, but not to avoid some other regulatory requirement that's already in place.

MR. HAMDAN: And yet the third bullet says the agents should not approve any uses. So it seems inconsistent.

CHAIRMAN GARRICK: Latif, you don't have your microphone.

MR. HAMDAN: It doesn't seem to be consistent. That's all.

MR. HORNBERGER: Yeah, I think you're misreading the last bullet. I don't think that that was meant to approve any request. It's just to

approve anything that came along, not unilaterally, but just to make sure that it was checked. That's what the intent is.

MR. RYAN: Yeah, any use should be prior approved. That's what it means.

Derek, thanks very much for an informative and interesting presentation.

MR. WIDMAYER: My pleasure.

MR. RYAN: Any other questions or comments?

(No response.)

MR. RYAN: Mr. Chairman.

CHAIRMAN GARRICK: All right. We're going to adjourn until 1:45.

(Whereupon, at 12:36 p.m., the meeting was recessed for lunch, to reconvene at 1:45 p.m., the same day.)

AFTERNOON SESSION

(1:47 p.m.)

CHAIRMAN GARRICK: This afternoon we're going to start off by hearing about the risk informing Yucca Mountain inspection system, and we have two NRC staff members with us today, and they can tell us -- we know them, but we're going to ask them to tell us who they are and what they do anyhow.

Welcome back.

MR. CARTER: Yeah, good afternoon. My name is Ted Carter, and I'm the project manager for the development of the Yucca Mountain inspection program.

MR. COBITZ: I'm Tim Cobitz. I started after I left from ACMW. One of the first things I had was developing an inspection program for Yucca Mountain. So I'm in the process of turning that over to Ted, but hopefully I can answer any historical questions you might have.

CHAIRMAN GARRICK: You were always good at turning over stuff.

(Laughter.)

MR. CARTER: Well, I assure you I will use him as best I can.

Okay. Let's see. We can go to the next

slide here.

The purpose of this presentation is to inform the ACMW of our progress involving the development of the Yucca Mountain inspection program.

First, I want to say that this program has been evolving, and we are continuing to look at the input or look for input on our approach to the development and implementation of the program.

Okay. To help you understand how we arrived at this point, I would like to give you some background information. The development of the Yucca Mountain inspection program is a joint effort between headquarters, Region IV, the on-site representatives located at Yucca Mountain Program Office, and the Center for Nuclear Waste Regulatory Analysis.

Headquarters will provide overall direction for the Yucca Mountain inspection program, including development and implementation of policies, program, and procedures.

Region IV will implement the program, while our on-site representatives will continue to monitor ongoing activity at the site. The inspections will be led by certified inspectors out of Region IV and headquarters. The teams will consist of qualified inspectors, technical reviewers, and technical support

staff from the center.

I will describe the inspection process later in the presentation.

Now, as a note, there is a formal training program in place and described in NRC manual Chapter 1246. It includes on-the-job training, formal courses, and specialized courses that the participants need to satisfy in order to certify as inspectors.

Our initial approach was to develop the program or in developing the program was to develop the NRC manual chapter that would describe the program and inspection procedures that would guide us through the process.

Our basis for developing the manual chapter and the inspection procedures were the Yucca Mountain review plan, 10 CFR Part 63, and the DOE quality assurance requirements and description document known as the QAD (phonetic), which is their QA program document.

As a result of this approach, we developed and issued manual chapter 2300, and it is currently in its first revision.

We also identified 31 inspection procedures that would take us through the licensing application process up to construction operation.

At present eight inspection procedures have been developed and issued. The others have been developed and are in the review process.

Our goal at the time was to make sure that we had an inspection process in place that was for the licensing review process.

Let's go to the next slide.

Now we are taking another look at reevaluating our work done to this date. As I said before, this program is evolving. Our current approach is to categorize or group our inspections into two phases.

The first phase is called Phase 1 field reviews. Phase 1 field reviews will be performed during the license review process and will assess the validity of data used by DOE to support its conclusion in the LA.

Phase 1 of the inspection program will consist of plan and reactive field reviews. Plan reviews, field reviews are the assess the validity of data in technical documents selected based on RIS insights. Reactive field reviews may be needed to evaluate the traceability and validity of data for technical documents under review.

Now, these inspections are not your

classic inspections that evaluate activities and conditions against enforceable requirements. they are essentially a portion of the license review conducted in the field.

One may ask why are we looking at data. Well, because it is one area of known concern.

Next slide, Tim, please.

Phase 2 inspections are inspections of design and procurement activities prior to construction authorization. Phase 2 inspections are to be risk informed and performance based inspections of DOE technical activities which are important to safety or important to waste isolation.

These activities include such areas as design control, procurement of materials and control of vendor operations.

The risk informed and performance based inspections will emphasize observing activities and the results of technical activities. An example of a Phase 2 inspection is an inspector may observe the fabrication of a prototype waste package being built at a DOE vendor facility under DOE QA standards and specifications. This is to determine the effectiveness of DOE's procurement and vendor supply oversight program.

In order to efficiently focus NRC resources applied during implementation of the inspection program, the inspections place emphasis on those areas identified as significant to the safety performance of the repository. The NRC staff, together with the center, currently is developing a Preclosure Safety Analysis 2 that the staff will use to support its review of the preclosure safety issues.

Okay. Let's go to the next slide.

Earlier I mentioned the inspection process. A master inspection plan will be developed to provide a list of inspections that should be conducted and will serve as a resource loading tool.

DOE will be notified to a scheduled inspection and provided with information related to the inspection, such as dates of the inspection, scope of the inspection, and the inspectors assigned to the activity.

DOE, there will also be an entrance and exit meeting conducted for the DOE inspection. the entrance and exit meetings will be open to the public.

Public completion of the inspection an inspection report would be issued. Findings that are identified as violations, notice of deviations, unresolved items and open items will be tracked for

closure.

Findings will be categorized as practice in accordance with a similar method used in the risk insights baseline report where the risk and significance is categorized as either high, medium or low.

As I mentioned before, this program is evolving. For the third time I said this, and we continue to look for input to risk informing our program or our approach.

In summary, the Yucca Mountain inspection program will rely on risk information to implement a risk informed assessment process, to focus inspections on risk significance. We anticipate that the inspection program will start upon receipt of the license application.

Are there any questions?

CHAIRMAN GARRICK: How long has this been in the making? How long have you been working on it?

MR. COBITZ: It started back around 2000 where they came up with the shell of it, and then it kind of sat.

CHAIRMAN GARRICK: And where did that emanate from? Where did the shell emanate?

You indicate in here what the basis

documents are. I'm trying to figure out what the origin is. What is the real driver here for this?

MR. CARTER: It's actually parts -- in 63.75, it speaks to inspections and it basically says that the DOE shall allow the Commission to inspect the premises of the repository, so forth and so on.

MR. COBITZ: John, to answer, what we're trying to do with the first part, you know, the inspection program is going to be broken into several different parts over the review of the application. If we granted construction authorization, construction of that, the first part, during the review of the LA, we just want to help the staff determine whether or not a construction authorization should be issued.

Hence, the Phase 1 where we're actually -- I don't know how to make this thing stop from going.

PARTICIPANT: I don't know either.

(Laughter.)

MR. COBITZ: So hence, I mean, that's why we're looking at the Phase 1 where we would just be using like the risk insights document and trying to find what are those things that have a higher risk associated with them that we'd want to go validate the data. Look at some of the AMRs and that that were relied on for the conclusions in the application.

Some of that was done, you know. We had an evaluation last year, last fall or whatever, that identified some problems with traceability and that of some of their data and what we would be doing is following up on that, and that relieves some of the burden from the technical reviewers to just be able to focus on the license application where the inspection program can look at the validity of the data that's being fed into it.

Next, once you're getting closer to construction and things, there's going to be a point where they might start procuring, you know, long lead items. They're going to be doing a lot more design work, such as, you know, coming up with their actual fabrication or construction drawings.

So that's where we would start looking at, okay, what's in the SAR. Are they using a process to adequately transfer that design information into the design drawings that they're going to use for fabrication of the facilities, the waste package and that kind of thing?

So Phase 1 really kind of focuses more on post closure. Okay? Phase 2 is going to start getting into some of the pre-closure and that kind. Does that answer your question?

CHAIRMAN GARRICK: Yeah, yeah. You said that these inspectors are going to be certified. What does that involve?

MR. CARTER: Well, we have a program in place now that the participants will maintain a qualification journal which tracks their progress along the way.

Along the way, they're put through formal training, specific training.

CHAIRMAN GARRICK: Will that be existing staff that will be trained or will you be hiring --

MR. CARTER: Existing staff.

CHAIRMAN GARRICK: -- specialized people?

MR. CARTER: Existing staff. As a matter of fact, we have one of the on-site representative, both of the on-site representatives are being trained. We have a couple of participants in Region IV being trained, and we have one or two people here in headquarters being trained, and it looks like a one to two-year process based on the person's, the individual's background and experience.

But we have, I think, two individuals who have almost completed.

MR. COBITZ: And you have to keep in mind it's not that we're just pulling somebody off the

street or just making some of the inspectors -- you know, Bob Alata (phonetic) who's out there, he's an ex-senior resident inspector. Tom Matula, he's been inspecting Part 72 for ever.

So it's more just getting their qualifications up to focus on Yucca Mountain.

CHAIRMAN GARRICK: Is the reactor inspection program kind of the model?

MR. COBITZ: As we get closer to construction. One of the things that's unique about what we're doing now is that during license review, you haven't had a lot of inspection activities go on, and that's why over the last year this has really developed, you know, as we try to decide what is it that we want to get our hands around, what is it that we want to inspection.

And that's why I was mentioning earlier we're going to focus on 6131. How do we help the staff and management make a decision whether or not to -- 6331 -- to issue a construction authorization or not? Validity of the data is the one part where we can look at moving close there.

CHAIRMAN GARRICK: Well, I think you add a lot of clarification when tips indicated that these are really not inspections in the classical sense or

extensions of the license review process.

MR. COBITZ: During Phase 1.

CHAIRMAN GARRICK: Yeah, during Phase 1.

Okay. Mike, have you got some questions?

MR. RYAN: No, no questions. Thanks.

CHAIRMAN GARRICK: George.

MR. HORNBERGER: So I guess I'm now trying to grapple with this. So Phase 1 as I understand it now is I might characterize it as traceability studies. That's basically what the inspections are going to be, tracing back through the AMRs, back to the data, making sure that everything is traceable.

Now, it strikes me that to do this somebody has to have some specialized knowledge in terms of the scientific engineering areas that they're looking at, and I guess my question is: how do you coordinate this with the experts who are doing the actual license application review?

This is something separate, on top of the LA? It's something that's coordinated? Do you pull people who might otherwise be doing a review of the license application?

I'm not quite clear there.

MR. COBITZ: I think the way we would envision it, John or George, is looking at the

complexity of whatever document we're going to be looking at. Like I say, Tom Matula led an evaluation, but it was very in depth, where we did take a lot of technical resources to look at that.

Obviously one of the things we're trying to do is get away from that so that we can leave these people to do their technical reviews. So tracing the data back, we should be able to do with an inspector now -- that means that he'd still have to go and talk to, you know, the technical reviewers.

One of the things you'll see is we're not looking into issuing big, formal inspection reports or anything during this. We want to make something simply to feed back that information to the technical reviewers. So it's our hope that we wouldn't have to get them out. Maybe for some of the more difficult issues or for ones that that individual requests a review. Like we said, there's going to be planned and then reactive.

Certainly on the reactive ones we might consider taking technical reviewers out, but it's going to be our intent to minimize that to the max extent.

MR. CARTER: Right, and e also are going to have the center is also involved in this as our

technical support.

PARTICIPANT: I guess that I would just add that in looking at how to use inspection resources to support the license application review we feel that qualified inspectors are well positioned to do data validity reviews, much more so than they would be to look at models or software where you need the more in depth technical knowledge.

So we try to divide the work load up to maximize the use of our resources, and we're pretty confident that inspectors can look at data validity without tying up the other resources.

So then going to Phase 2, so you say that or mention this is to be risk informed performance based. So I guess I'm struggling a little bit to figure out exactly what that means.

So that you have now the surface facility being constructed. How do you use risk insights to help you figure out what you're going to inspect?

MR. COBITZ: Sir, like we say, Phase 1 is going to focus more on post closure. Phase 2 will focus probably more on pre-closure and that, but what we're going to to have to rely on, George are the documents we get from DOE for review and then our analysis of them, our SER.

We talked about this. We haven't started the construction part of this program, but there are certain things that we're going to want to look at, say, for the waste package. They're going to be fabricating some mock-ups, say, to prove out their systems. Well, those are all quality affecting things.

So we would go look and make sure that they're fabricating mock-ups in accordance with what the design basis was and that. But we'd be using the SAR and their items important to safety. They've got a Q list. We'd be focusing on those things that are listed on there, you know, procurement of different parts, maybe cranes, whatever, whatever they list in there as ITS that we ultimately either agree with or, you know, we think should be added to through our review and our SER. That would be what we would be selecting from or that group, similar to what we do in inspections of other facilities.

MR. HORNBERGER: So is the anticipation that the NRC staff would actually do work to develop their own risk insights for the pre-closure facilities?

MR. COBITZ: We're going to look at what they do, I mean, because that's part of what I do in

my other job, is pre-closure, and we're going to go through and look at what they identify as hazards, as event sequences, as consequence, and then ultimately they have to develop a list of items important to safety.

We're going to perform, you know, some sort of an independent verification of that to make sure we agree with what they've got.

CHAIRMAN GARRICK: Ruth, do you have any questions?

MS. WEINER: George asked my question for me.

CHAIRMAN GARRICK: Good. Allen.

MR. CROFF: No, thanks.

CHAIRMAN GARRICK: Jim. Oh, John?

DR. LARKINS: Well, Jim first.

MR. CLARKE: Just to clarify, you're calling this inspections. Would it be fair to say it's really a quality control? At least in Phase 1 your emphasis is on looking at data validation, as I understand it, and traceability for those processes that have high significance of --

MR. COBITZ: You know, we're not performing quality insurance inspections per se. What we're looking at, you know, the programmatic

implementation. We're going to be looking at the science, if you will at Phase 1 and with, you know, the meat, the engineering with Phase 2, but we're going to be looking to get the technical stuff.

Now, you can say, okay, this design didn't get adequately transferred from the SAR to the drawing. We would identify that.

Now, some where it's probably because their QA program broke down, they either didn't follow it or something like that, but these aren't QA inspections per day. Do they have a program? Are they implementing a program?

No, we're looking at are they taking the design and actually putting in the drawings and, you know, they're constructing to those drawings eventually.

MR. CLARKE: Okay. I think I understand that, but your focus is on data validation and traceability not for everything, but for those thins that have come out of risk --

MR. COBITZ: I was just using, you know, the risk insights document and --

MR. CLARKE: High and medium as well or mainly on high?

MR. COBITZ: We haven't gone that far that

I could say it's still under development. We would probably focus on high, but depending. Again, we're going to be looking for input from our technical reviewers on that, too.

MR. CLARKE: Sure. Okay. Thanks.

DR. LARKINS: Yeah, I was going to ask a similar question. Have you thought about what your metrics? You said you're going to be making findings of high, medium and low.

MR. COBITZ: No, we're not going to be making findings of high, medium, and low. We're going to be looking at those things that, you know, according to, like I said, the risk insights have a higher significance associated with them. We would be looking at during the procurement. We would be looking at things that are important to safety,but we're not going to be categorizing findings as high, medium, or low at this time.

DR. LARKINS: Okay.

MR. COBITZ: Again, some of that is still going to develop. Some of the processes are going to be just like you do with reactors and that, when we get into construction.

DR. LARKINS: I understand. That's why I was trying to see what your metric was in order to

make these findings.

DR. LARKINS: No, No.

MR. CARTER: And that's going to be part of the enforcement process, the decision that we put together.

DR. LARKINS: Well, but then you need metrics for that because in order to get your severity levels, you have to have some kind of metric.

MR. COBITZ: And that's something that we are talking to OE about. You know, we are not going to need that kind of thing until later in the stage, you know, until we get into the Phase 2, that we would be coming up with a supplement as to what's a four, what's a three, what's a two.

But there is already precedent out there with the reactor program in construction there.

DR. LARKINS: Are there going to actually be qual. boards for these inspectors?

MR. COBITZ: Yes.

DR. LARKINS: Okay. Is the inspection program just going to be an NRC program or are you going to have other agency involvement, like OSHA or others, or have you thought about that?

MR. COBITZ: We wouldn't do probably anything differently than we do at the reactor sites

or that's the way we're looking at it now, where you know your senior resident -- I guess there's a memorandum of understanding.

Now, do we have that kind of thing in place with OSHA and that now? Not that we know of anyway, but that's a good thought.

DR. LARKINS: One last question. In the master inspection program have you thought about what mix you're going to need of engineering inspections, electrical, I&C?

MR. COBITZ: Absolutely. In fact, that's one of the things that we've been in discussions with Region IV about, is that they're still going to probably add an on-site resident inspector or whatever they ultimately are called, and we're looking at what kind of mix do we need from that.

You know, Region IV, again, they have inspectors that have done Part 72 which allowed them --

DR. LARKINS: Right.

MR. COBITZ: -- but we are looking at also are we going to need more concrete specialists or things like that.

MR. CARTER: And a good thing about this core group that we have in place is that most of the

people in the group are former inspectors that are on the NRR side of the table even in commercial industries. So we're trying to bring all of that knowledge and experience together, the program together.

MR. COBITZ: Yeah, Mike?

CHAIRMAN GARRICK: Mike?

MR. LEE: I have two questions. One, so from what you've described, the Phase 1 process, inspection process, needs to be complete before the staff issues its SER and goes to the licensing board. Because as you've described it, what you're going to do essentially is confirm that the data that DOE has committed to collect or states that it has collected and has somewhere in some file or computer whatever is there and is appropriate for its intended use.

MR. COBITZ: I think there's two ways of looking at it. One is that complete is awfully finite, and I wouldn't say it's going to be complete. We are still looking at just, you know -- we're still finalizing the program, but I guess I could always see, you know, after the SERs are issued and that, there still might need to be some Phase 1. I don't know whether it's to support hearings or whether it's, you know, if something comes up. I couldn't say that

we're just going to absolutely finish it there, but there would be a recommendation up to that point made.

MR. LEE: Okay. Well, that kind of leads me to the other shoe dropping. This inspection program really can't validate that information. You can verify that the information is there and you can certify that it's appropriate for its intended use, but in the first instances the license or the potential licensee, and it's incumbent on DOE to validate that the information that it's using is scientifically appropriate for its intended use.

Those words aren't used in Part 63. I think there's other words to the effect that DOE has confidence or something, words to that effect, because previously the staff has written a white paper jointly with Swedish nuclear power inspector about model validation, and they get into a little bit of data validation there.

So I think that validation word can get the staff into trouble because that implies that the data is many things. You're not --

MR. COBITZ: Yeah, I think we're in agreement with what you're talking about.

MR. LEE: Okay.

MR. COBITZ: We're in violent agreement

with what you're talking about.

CHAIRMAN GARRICK: Any other questions?

MR. LARSON: Well, you said it started in 2004 and then it went into a hiatus. Now you have finished eight out of 31 procedures.

MR. COBITZ: Right.

MR. LARSON: Working on the master plan, but you're going to start the inspection program in December. So I guess you'll have all of the procedures done by then or you're going to start your second --

MR. COBITZ: Well, first off, we're probably not going to start the inspection program until we've gone through the exceptions review.

MR. LARSON: Okay.

MR. COBITZ: Which probably would be in what, March or whatever?

MR. LARSON: All right.

MR. COBITZ: And if we accept it, unless there's other -- you know, I don't know -- other follow-up before that, but I don't think so.

The procedures for the validation of data, we're still development that procedure. That's just going to probably be one procedure, and I think we've got a couple other procedures that we're going to

amend into doing that.

So to answer your question, I think, is when we're ready to start inspecting, we will have all the procedures in place.

MR. LARSON: Okay. I'm just saying you've got a lot to do.

MR. COBITZ: We don't have as much as it sounds like.

MR. LARSON: Okay. Then you can have enough qualified inspectors even though it takes a year or two to qualify them.

MR. COBITZ: Well, we're still talking. During the Phase 1, during the validation, which really isn't technical inspection, we may just use the people that are, you know, in training and that. We'll have to see. You know, we still have to work that out.

MR. LARSON: I guess it follow onto John's question. Suppose you, you know, look at the high risk things and it's in a terrible shape. What can you do? Do you just tell DOE that it's in bad shape and you fine them or what?

MR. COBITZ: That gets fed back into the review process. It can get fed into REIs and, you know, write the REI, and if they still can't answer

it, I mean, you don't issue the -- you know, we don't recommend issuing construction authorization.

MR. LARSON: That's the thing. Okay.

CHAIRMAN GARRICK: Any other questions from staff or anybody in the room?

Okay. Thank you.

MR. CARTER: Thank you.

CHAIRMAN GARRICK: At this point we were going to have a discussion on our trip to Japan. That trip has been deferred. We regret that we're not going to be able to hear from our friend from Japan on the trip, but we hope we can have a similar opportunity in the future.

And not to avoid missing an opportunity here, the committee has issues from time to time that they keep wanting to find space to talk about them, and so we're going to pick up on one of those issues and talk a little bit about the subject of high level waste definition and waste incidental to processing.

And I'm going to ask -- I guess we don't need the recorder for this, do we? No, I guess we don't need the recorder for this session, for the rest of the day as a matter of fact because we're going into the discussion of our reports as well.

(Whereupon, at 2:17 p.m., the meeting was concluded.)