UNITED STATES OF AMERICA

DEPARTMENT OF ENERGY

PUBLIC MEETING
PROPOSED PLAN FOR
REMEDIAL ACTIONS
AT SILOS 1 & 2

WEDNESDAY, MAY 3, 2000

NORTH LAS VEGAS, NEVADA

4:35 PM

REPORTER'S TRANSCRIPT OF PROCEEDINGS

Reported by: MARK I. BRICKMAN, CSR, RPR, CCR
Nevada License No. 605

A P P E A R A N C E S

FOR THE DEPARTMENT OF ENERGY: Moderator - GARY STEGNER

TERRY HAGEN

Formal Comments: Page 43

BE IT REMEMBERED that, pursuant to notice of the Public Meeting, and on Wednesday, May 3, 2000, at the hour of 4:35 PM, at 232 Energy Way, North Las Vegas, Nevada, before me, MARK I. BRICKMAN, CCR No. 605, State of Nevada, there commenced a public meeting.

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MR. STEGNER: Good afternoon, everyone. My name is Gary Stegner. I work in Public Affairs for the Department of Energy at Fernald. I want to thank you all for coming here this afternoon.

With me are Nina Aksunduz. She is the Silos Project Manager for the Department of Energy - Fernald. Gene Jablonowski. He is Region 5 EPA, Fernald Program Manager for US-EPA there.

Terry Hagen, for Fernald and also Dennis Nixon.

Since Nevada stakeholders could potentially be impacted by the course of action we choose to remediate Fernald silos, we figured we would provide the same public involvement opportunities for you as we did for our own stakeholders last week.

What we did then we hope to do tonight is two distinct segments of a -- a meeting.

First is an informal review of the program that we're proposing, and that will be followed by informal question an answer session, which combined should take about thirty minutes.

We would ask you to hold your questions until the presentations are over. That will be -- consist of a video, which you guys have requested we produce, which we have done, and also a short presentation by Terry.

Then that will be, as I say, followed by the

informal question and answer session.

If you want clarification on any aspect of the project, that's the time to raise your questions at that time.

That will be followed by a formal public hearing where we will be exclusively in a listening mode. We will not be responding to anything at that time. We will simply be taking your comments on the Revised Proposed Plan Silo Project.

Your comments will be transcribed and be part of the official public record on the silos project.

We will respond to any and all comments received by Nevada stakeholders through formal responsiveness summary document which will be provided to all commenters and will also be placed in your public reading room and public information center. Those will be placed here and also at Fernald.

If you would rather submit your comments in writing to me, you can certainly do that. You don't have to speak on the record tonight. Those comments should be postmarked by May 18th if you want them to be included in the formal record.

As I said, the project overview will be presented in a video form which was prepared by request of the Nevada stakeholders, and following the video, Terry will offer a short briefing, after which you can ask your questions.

At the conclusion of the question and answer period, then we will go into the formal public comment period.

So with that, if you could queue the video and we'll get started.

(Videotape is being shown at this time).

MR. HAGEN: What I'd like to do is move this clip down. So to briefly summarize and supplement the data in the video against the criteria that EPA mandates for consideration when you make a decision in the CERCLA, and they're the same ones that were -- that were presented in the video.

I apologize for the font size there. I know it's a little hard to read, but you've got it in your handouts. Maybe you can follow along.

We'll talk about all nine of these, and real quickly, you see the bottom two don't have an assessment; rather we felt that there was a favoring for vitrification and chemical stabilization, either/or.

The state acceptance and community acceptance, that's evaluated based on the results of these public involvement forums, so actually I'll be talking about seven of the nine.

The first criteria is called overall protection of human health and the environment, and this is what's called a threshold criteria under CERCLA, which means that the EPA requires that before you can select a remedy, you must demonstrate that it adequately -- again I apologize. We were

trying to make this readable. That it adequately addresses this particular criterion.

What we concluded is that both stabilization and vitrification do pass this threshold. The protection is provided by a combination of removal at Fernald, treatment to address the RCRA metals in the waste and also treatment to meet Nevada Test Site waste acceptance criteria and performance assessment requirements and long-term stable disposal at the test site.

The second threshold criteria is called compliance with applicable or relevant and appropriate requirements.

Our conclusion again was that both technology families met this threshold criteria.

The primary ARARs that we're concerned about -- we're concerned with all of them and we have to meet all of those, but the ones that really drove the analysis, number one, are the NESHAP sub-part 2 radon flux limitations, and what we found is is that both technologies when combined with their packaging met this ARAR, and then second, of course, are all the Department of Transportation requirements for transportation.

Again the analysis -- and we'll talk a little bit more about those Department of Transportation requirements, but our analysis is that both alternative families, technology

families meet this threshold criteria.

What that means under CERCLA is that once you screen your potential alternatives against the threshold criteria, some get screened out.

Those that -- that pass through that screening are then eligible for a comparative analysis against five balancing criteria. Those are the next five that we're going to go through.

The first one is long-term effectiveness and permanence. Our evaluation along with US-EPA was that both technology alternatives performed at approximately the same and performed adequately.

The basis for saying that both provided adequate long-term effectiveness and permanence is really the same argument that went with the first threshold criteria; that is, removing at Fernald, treatment to meet regulatory requirements for the leachable -- RCRA leachable materials in there, also to meet the waste acceptance criteria at the test site and performance assessment requirements and then stable disposal, long-term disposal at the test site.

Again, equal -- equal and adequate performance by both technology families.

The next of the balancing criteria is called reduction of toxicity, mobility or volume through treatment.

In this criteria, it was our assessment that

there was a distinct advantage to the vitrification technology, and that primarily relates to the treated waste volume, and at the end of the presentation, I'm going to present a couple of slides that are intended to directly address some questions we got from the Transportation Subcommittee of the CAB, and there's also another one coming up here in just a second that show those volumes, but there's -- there's a lot more volume associated with chemical stabilization than vitrification, and that's the primary basis. We'll cover all of these sub-components.

Basically chemical stabilization produces about three times the amount of waste than vitrification, and hence the basis for the advantage to vitrification.

About 12 to 1,300 -- depending on which particular iteration of the chemical stabilization technology, between 12 and 1,300 cubic yards -- cubic feet -- I'm sorry. It's -- it's 1,300,000 cubic feet -- sorry -- of material that would require disposal at the test site versus 3 to 400,000 for vitrification.

For secondary waste volumes, you'll see those were approximately equal. The secondary waste associated with vitrification are a little bit more difficult to deal with than those associated with chemical solidification. Some of them are mixed waste.

Also because of the nature of the high

temperature operation, it tends to drive off more gas type materials and more gaseous emissions that have to be dealt with.

So we do believe there's a slight advantage to chemical stabilization relative to secondary waste, but not enough to undo the significant increased volume there for chemical stabilization.

Short-term effectiveness is the next balancing criteria. Short-term effectiveness basically consists of a couple of subcomponents.

Worker risk, risk to the workers associated with actually removing the material and treating it as well as the workers involved in transportation, and then again those workers also at the test site who would be involved in disposing of these materials, and then the -- the last subcomponent is how long it takes to complete the remedy, time to protectiveness.

Our evaluation here was that there was an advantage for chemical stabilization, primarily driven by the worker risk issue, and we'll talk about each of these sub-components here.

Relative to radiological dose, which is what a lot of people have -- have historically assumed would drive the worker risk, that's about the same for the different alternatives.

The difference comes in the fact that -- and we've got an overhead here coming up to demonstrate those hours, but there are a lot higher number of working hours required to complete the project under vitrification than for chemical stabilization, and statistically what that results in is a higher probability of some kind of accident for the workers in implementing that technology.

Also, vitrification is a high temperature, high power, high voltage operation which has some inherent risk to workers associated with those issues versus chemical stabilization, which is an ambient temperature batch type, room temperature batch type operation.

And then finally both of these technology families would be implemented remotely, but for maintenance of the system, that would be done by contact; in other words, workers going in and actually maintaining, fixing, et cetera, and again for some of the reasons associated with the high power, high temperature, we think there's a greater risk to workers during maintenance operations.

Relative to transportation risk, there is an advantage to vitrification, and that links directly back to what I talked about a while ago; that is, there's three times the volume of material to be handled, to be dis -- to be transported and be disposed for chemical stabilization.

Statistically that equates to about three times

the transportation risk.

Now, a couple of points to be made: One is is while there is a clear advantage to vitrification, CERCLA/US-EPA requires us to do a number of evaluations of what are the risks associated with transporting this material under an accident free scenario, but also what are the risks associated with this material in the event of an accident to the general public, response workers, et cetera.

What we found was that those calculations were well within what the CERCLA process, at least, considers to be acceptable risk to the public, transportation workers, both under routine circumstances and in an accident scenario.

And then the second element of that evaluation was that there actually were higher -- acceptable, but higher risk to emergency response workers through the vitrification technology.

The reason being is vitrification basically concentrates the waste, whereas the -- the clearest way to state it for chemical stabilization is by adding the -- the various things that bind the contaminants together, you're diluting the waste, you're diluting that radioactive source.

So there's actually a higher source term because of the concentration of the waste with vitrification than chemical stabilization. So that's the basis of the -- of the last conclusion.

The other issue -- I don't have an overhead for it -- was time to protectiveness.

Based on data that we received from the vendors that were involved in the proof of principle testing that was referenced in the video, that data said that we could implement chemical stabilization approximately a year quicker than vitrification.

So that coupled with the increased worker risk was the basis of saying there was a -- an advantage to chemical stabilization in this balancing criteria.

The next balancing criteria is implementability, which is pretty much what it sounds like, your ability to successfully with a reasonable degree of certainty implement this technology.

It was our conclusion that there was an advantage to chemical stabilization. Again we'll talk about some of these things.

The first one is scale-up. We rated that neutral. The reason we rated that neutral -- in other words, no advantage in one direction or the other -- is is that there are examples, albeit very, very limited for vitrification that we're going to discuss in a second.

There are examples for both technology families, however, of -- of facilities operating at the scale that we would require at Fernald to complete this project in a timely

basis. So we rated that neutral.

From this point forward, we feel -- for the reasons I'll go into here in a second -- that there is an advantage to chemical stabilization.

The first one is commercial demonstration which EPA requires us to look at. If you go out, which we did, and look at hazardous and radiological contaminated sites throughout not only the United States, but also the world, we found many, over a hundred instances to where chemical stabilization had been selected and selec -- successfully implemented to manage waste under CERCLA sites through CERCLA records of decision, through NRC response actions, in some instances through corrective actions under RCRA.

There was a very, very limited database of -- of applications of vitrification, and what that translates to is not that vitrification won't work. It translates to it's just not proven to the same degree of chemical stabilization, which is a factor that again EPA requires us to look at.

The second aspect is operability. The video basically talked about the differences in the technology, and what this boils down to is the number and the complexity of unit operations.

To successfully implement vitrification requires a number of steps, technical steps -- again, as briefly discussed in the video -- that are more numerous and more

technically challenging than chemical stabilization, which is basically an ambient, fairly low-tech operation.

That's not to say there aren't challenges since we have to do this remotely, because there are. It's not a slam dunk we're going to go in and do that successfully.

The point is that it is a simpler operation, and that's fundamentally the basis of our conclusion that there was an advantage for chemical stabilization.

The other thing that you saw up there was two other points, contractibility, which links directly to what we just talked about.

We show an advantage for chemical stabilization because there are more unit operations, more complex equipment to put in, and in particular the melter itself with its refractory lining, it's something that has to be done to very tight tolerances and has to be done at the site. It's just harder to build, hence an advantage for chemical stabilization.

The other one is something we called ease of acceleration. I think the -- the best way to show that is -- is to reference the number of hours we talked about a little earlier in the presentation that it requires the number of -- of unit operation hours that each technology family would require to finish this project in three years, which is arbitrary, but for illustration purposes, it shows a significant difference.

You're talking about anywhere from 7 to 10,000 operation hours for chemical stabilization depending on which specific tweak of the technology you use versus 16,000.

That means it's just a lot harder to get done quicker with vitrification.

It also introduces more possibility for equipment failure just through routine wear and tear and things of that nature. Again the basis of the conclusion under ease of acceleration that proves an advantage for chemical stabilization.

The last of the balancing criteria is cost; not a big difference. CERCLA requires that this stage in the process, the feasibility study phase of the process before you go into de -- detailed design that you develop cost estimate -- cost estimates for these technologies to an accuracy of plus 50, minus 30.

We think we're a lot tighter than that, and what it shows is is there is a slight advantage for chemical stabilization, maybe a ten percent difference between the two, which within that range of accuracy that I talked about isn't particularly meaningful.

So, again, very slight advantage for chemical stabilization, but not a real driver in our mind for the decision. Important, but not a differentiator between the two.

The other two criteria -- again, state acceptance

and community acceptance -- will be based on these forms with you all, the public hearing that we had in Ohio as well as comments from the Ohio Environmental Protection Agency.

That really wraps up the comparative summary among -- against the two alternatives.

What I want to do is give a couple of additional pieces of information, and this is based on questions that came out from the transportation subcommittee of the CAB last week. Some of our people were here talking to them.

Wanted to know a little bit more information about transportation, which presumably is the primary concern of -- of this group of people. I don't want to presume too much, but we'll just get to this point.

Silos 1 and 2 material are LSA or low specific activity II solid material, and what that means is we have to use a particular type of container, which I'll get to on the next slide, and there's also limitations on the rad field that can emanate from the material shipments, and you see what they are here.

200 millirem per hour on contact with the container at conveyance, 10 millirem at 2 meters from conveyance, 2 millirem an hour to the driver, and just to put it in perspective, what is the untreated field coming off the silos material? Up to 900 millirem per hour.

With packaging, both technology families perform

about the same, and that is approximately 50 millirem per hour on contact with the container or about four times less than what the regulatory limit allows and conversely about four times under these other limits, as well.

Relative to the package itself that we will be obligated to use, the container has to be the Department of Transportation 7A type A container, which means that it has to be certified, and it has to be certified using these tests.

The water spray test which basically is water can't get in or can't get out, to put it at its simplest. The drop test, three foot drop test in a manner that causes the maximum damage.

That's to simulate what happens to it in an accident scenario and it's got to maintain its integrity and its ability to hold the material in there.

Penetration test, also looking to judge the stability of the container in a particular type of accident scenario. Compression test the same.

We have a certified container that -- when I say "we," I'm talking about Fluor Fernald at the site, and I'll put up an overhead about it here in a minute.

Whenever we do this project, it is the current intent to give the vendor the ability to propose a specific kind of container.

So it could be different than the one we've got,

but if it is different than the one we've got, they're going to have to certify it and they're going to have to certify it against these particular tests.

Another question is relative to the total volume of material being generated from the Fernald cleanup, how much is coming here, how much is staying there, and I presented this to -- to some of you I think in December.

Three-quarters of the material being generated from the Fernald cleanup are staying at Fernald in a -- in an on-site disposal facility. Roughly two and a half million cubic yards of material.

About sixteen percent of the materials according to current plan will go to Envirocare.

For those of you who have been to Fernald before, that's primarily our waste pits project, about 700,000 cubic yards -- actually a little less than that, but on that order.

Eight percent of the total material to be generated by the Fernald cleanup will come to the Nevada Test Site.

Now of that eight percent -- you see that this goes back to 1985. Of the eight percent of our total volume, about seventy-five percent of that material is already here, okay. It's already here and in the ground.

So the remaining waste stream to come to the Nevada Test Site is primarily what we've been talking about

tonight. Most of our legacy waste is already out of Fernald and safely at the site.

One last point. It is the current proposed plan that the treated materials from Silos 1 and 2 come to the Nevada Test Site.

That is because right now there is no commercial disposal facility that has the disposal capability and/or is permitted to take this particular type of material.

Envirocare has voiced a number of times -- for those of you who are familiar with that commercial disposal facility up in Utah, that they are going to be pursuing some, I guess, liberalization -- that's my own word -- of their permit that might allow these materials to go to Envirocare.

If that's the case, it -- it would be our intent to explore that option, or if any other commercial disposal facility became available to us, we would explore that option, too, and if it was safe and cost-effective, we'd go there, and what's the probability of it being cost-effective compared to NTS?

Right now it's cheaper for us to send the material to Envirocare because we've got the ability to send it door to door by unit rail train.

Of course, that capability is not test for the test site so we've got to send it in individual trucks.

My point is if -- if we ever have the ability to

go somewhere like the Envirocare, in all likelihood, we will.

I apologize. I probably got this a little bit out of order, and I'm going to -- I think I get most of it.

I mentioned earlier that we do have a container right now that is certified, and we got it from the SEG Corporation.

This is -- this is that container, and our baseline, our current plan assumes use of this concrete container for transportation of the stabilized material to the test site.

Again, we will give other vendors the opportunity to optimize design of this box, this container, but if they don't use this one, they're going to have to certify it according to the standards that I mentioned on the previous slide.

That sums up my presentation. I'm going to waltz back to the back table and we're open to take any questions that you might have prior to the formal public hearing.

MR. STEGNER: If you have any questions right now, we'll take those and answer them prior to the formal comment period. Once we start taking your formal comments, we'll sit and listen.

AUDIENCE PARTICIPANT: With regard to the last statement you just made, the gentleman here, you have the certified container.

To whom -- what certified it?

MR. NIXON: It's the Department of Transportation.

AUDIENCE PARTICIPANT: It's not certified by the NEPA or any other agency?

MR. NIXON: It's not.

MR. STEGNER: Terry put up a slide on the Department of Transportation it's a 7A type container and what's required to certify that through the Department of Transportation. That's the material.

AUDIENCE PARTICIPANT: Can you tell me who makes it again?

MR. NIXON: It's a commercial container that was developed by SEG for commercial use.

MR. HAGEN: The answer to the second part is yes.

AUDIENCE PARTICIPANT: Do you have to have a special vehicle to haul these? Are you going to have any kind of markings on the trailer on the outside?

MR. NIXON: It would be placard

MR. HAGEN: LSA material. Yes, sir.

MR. CLAIRE: Don, would you use your mic so we can all hear and we won't ask the same question a second time?

AUDIENCE PARTICIPANT: Can you hear me?

I've got several other questions, two or three.

Okay. So we have the certified container going down the highway assume like flatbed trailer, two of these containers per tractor trailer.

It's parked by some McDonald's and the driver wants to get a hamburger or something. If you took a rad meter and went out and surveyed that -- the outside casing of that, what type of radiation amount would we get on the --

MR. NIXON: In contact with the container?

AUDIENCE PARTICIPANT: What are we talking about? How many millirems?

MR. NIXON: 70 millirem per hour is what we designed the process that's proposed for -- the chemical stabilization process would be -- result in about 70 millirem per hour on contact with the package.

AUDIENCE PARTICIPANT: That's the two containers together?

MR. NIXON: That's direct contact on the container itself. As you go away from it -- from the container, it would be significantly less.

AUDIENCE PARTICIPANT: All right.

MR. NIXON: And Terry put up a slide which had the require -- what the Department of Transportation requirements are.

It's based on 200 millirem per hour on contact with the container.

Our design is -- is much less than that at 70 millirem per hour. So it would be very conservative.

AUDIENCE PARTICIPANT: My next question, other than the nuclear test site, what other avenues of disposal has Fernald looked into?

MR. HAGEN: We've looked at number one, commercial disposal, and there is no commercial disposal available at this time that is within the constraints of the license that have the ability to take this material, number one.

Number two, we looked at leaving it at Fernald. We do have an on-site disposal facility that our stakeholders and regulators agreed to.

There were waste acceptance criteria established for that material based on the fact that their sole source of drinking water for Cincinnati is the aquifer underneath of the on-site disposal facility and created a number of contaminant specific waste acceptance criteria, and this material is significantly above the waste acceptance criteria for the on-site disposal facility.

So that ruled out on-site disposal at Fernald, and again, no off-site commercial disposal facility that has the -- the licensing in place right now to take this material.

Our Silo 3 material, which was referenced at the beginning of the video, is going to -- in all likelihood will

go to Envirocare, because that is material that is within the constraints of that license.

AUDIENCE PARTICIPANT: In New Mexico, that hasn't been --

MR. HAGEN: Are you talking about WIPP?

AUDIENCE PARTICIPANT: Yes.

MR. HAGEN: This is low-level material. WIPP as I understand it -- I'm not terribly familiar with the internal workings of WIPP, but that's for transuranic storage and other materials. A low-level waste is not technically envisioned for disposal at wipp and this is a low-level waste.

AUDIENCE PARTICIPANT: Okay. That concludes my questions. Thank you.

MR. HAGEN: Thank you.

AUDIENCE PARTICIPANT: I have a couple of comments and then a couple questions.

Firstly, from the standpoint of Nevada, you know, the cost difference between your two alternatives is minimal, especially within the kind of, you know, estimates that we're talking about today, and if you use vitrification as opposed to chemical stabilization, we're going to have less volume of junk coming to our state, number one.

We're going to have less of a problem transporting because there's less volume, right? You said that yourself.

I guess that makes a problem for me. Why should we take your waste when you have an alternative which is not going to cost that much more for you, but might be costly to us?

My other comment, I used to live in Tennessee and worked at Oak Ridge. We were working on vitrification in the 1950s.

Do you mean to tell me -- I heard you say, "We don't know enough about it."

How could you not know enough about it? How can you not know anything about it at this point in time? That's forty years ago.

Those are my comments.

Question: What happens -- I assume you're using filter presence, right?

MR. NIXON: Yes.

AUDIENCE PARTICIPANT: What happens to the filtrate? Number one question.

MR. NIXON: Treated on-site.

AUDIENCE PARTICIPANT: How? That's going to be really concentrated. You're going to have to do something with that. That's going to be another probably worst waste than you have in the solids, possibly, anyway.

MR. NIXON: Well, it's going to go through wastewater treatment at the site and then we have an advanced

wastewater treatment before it's discharged to the -- to the river for radium.

Primarily we will be removing the radium at the processing facility.

Now how -- how that will be designed will be again dependent on the vendor to design on how they propose to deal with that aspect of it. That has not been --

AUDIENCE PARTICIPANT: That can be -- that could be a real problem in terms of wastewater treatment. You're going to have some real problems getting rid of those heavy metals in a way that doesn't affect the environment, so to speak. Some river. Cincinnati, Ohio.

The other thing is I guess it bothered me that you're going to use either an oxide or some metal, iron -- I don't know what your precipitous is going to be. You're either using iron, aloe, lime, whatever. Those are all going to result in a higher pH; that is, your solid matrix.

If you bury that in the ground according to all the nuts, the environmentalists, you're going to have more and more acid rain, right? As acid rain filters down through the ground, what happens to all these metals?

I know what's going to happen to them. If, in fact, that happens, and we do have some rain here -- not like Cincinnati, but there's a little bit of rain here.

Is -- is that a concern?

MR. NIXON: It certainly is a concern. The process that is proposed here using a trisodium phosphate as the stabilizing agent for the lead compound to make the lead compound immobile.

AUDIENCE PARTICIPANT: Yeah, but it's still tied up with a high pH environment.

MR. NIXON: Exactly.

And then after the lead is stabilized with the trisodium phosphate, then cement and in one paste fly ash would be stabilized or solidified with the cement in the fly ash for final disposal.

Now the waste acceptance criteria at the Nevada Test Site is based on the TCLP analysis where we actually take the stabilized waste and we grind it up and we do this analysis, and the analysis is meant to essentially mock what happens in the environment under infiltration of acid rain.

It's counteracted with an acidic solution over time, and then that solution is analyzed for its constituents, and that's how we meet -- demonstrate that we meet your waste acceptance criteria through that testing.

So it's essentially the test. The TCLP analysis is there to mock up exactly what you had defined, the infiltration into a landfill of acid rain.

So if we meet that TCLP analysis or meet the -- the leachate is below the TC limits, the regulatory limits,

then theoretically that would no longer be an issue in nature.

AUDIENCE PARTICIPANT: The bottom line of my question or comment is that from the standpoint of Nevada, we would recommend -- I would recommend -- and I'm a registered engineer. I would recommend using -- using vitrification.

I know it will cost you ten million dollars more dollars in Fernald, but using that much waste coming into our state, why not? Well?

MR. HAGEN: Do you want a response or is that a --

AUDIENCE PARTICIPANT: I want to ask you a question that's relative to that.

AUDIENCE PARTICIPANT: Let him respond first.

AUDIENCE PARTICIPANT: Well --

AUDIENCE PARTICIPANT: Let him respond to the question. I want to hear his response.

MR. HAGEN: Okay. One thing I probably should have spent more time with, you know, relative to your comment about you've been working with vitrification since the '50s.

The simple fact is for waste streams like this, nobody has gone out and done it very successfully.

There are a couple of instances to where it's been done, Savannah River. I got a feeling you know as much about it than I or more.

Nowhere with the technology that we're talking

about in a radioactive remote environment has it been done, not once at the scale we would require for Fernald, and where it has been done at lower scale, significantly lower scale, the fact is is that it was very difficult to get where they were.

I think there's one or two instances in the world where there have been what you would call a successful application of vitrification for this type of waste stream. It was at a lot lower scale than we need, and they went through hell to get to where they eventually got to.

So from our perspective -- I understand your comment, but to answer from our perspective, yeah, there's a 10, 20 million dollar difference in the cost estimate, but the data that we have got from industry tells us that we're going to have a very, very difficult time implementing vitrification if we can do it successfully at all.

We've already had one less than optimal experience with vitrification at Fernald. We look at what's happened at Savannah River. We look at what's happening at Paducah and more recently with DNFL at Hanford.

It's just not a technology that we feel certain that we can go implement in a cost-effective, timely manner.

I understand, and please welcome the formal comment period what you said, but that's -- that's from our perspective why we're going with chemical stabilization.

All those other advantages are only hypothetical

if you can't do it, and the simple fact is is that we're a lot more confident in our ability to get it done with chemical stabilization.

AUDIENCE PARTICIPANT: Thank you.

AUDIENCE PARTICIPANT: Yeah. The reason I wanted to make a comment and ask a question was to compliment Peter's concerns because this is the first time at least I have heard a positive evaluation of vitrification.

All up to now has been exactly parallel to what you've been saying, which I suppose leads to the question of why do you even present the vitrification in a positive sense when you do not have the technology or the capability?

Because if you don't have the capability, you don't have the knowledge, you don't have an alternative.

MR. HAGEN: Yeah. My answer to that is is that we evaluated this -- we, the Department of Energy and the Fernald site back in the early '90s where it was -- notwithstanding the comment that the technology has been around for a long time.

The technology is applied to environmental cleanup was kind of the rage in the early '90s, and so we went through the initial evaluation frankly with -- with a lot of literature-type data, lab scale-type data and we made an over-optimistic assessment of that technology relative to our ability to go do it, at least at the Fernald site.

So with that done, whenever we got into the situation of needing to re-evaluate the technologies, our stakeholders in Ohio felt very strongly that that needed to stay on the table for those comparative evaluation.

AUDIENCE PARTICIPANT: Well. I'm -- I'm perfectly satisfied with your remedial action choice. My only point was I'm not even sure that vitrification should have been given consideration, and that's your business.

AUDIENCE PARTICIPANT: I was -- I was pleased to see that you had a chart that showed the radon flux at silos 1 and 2, and so I assume from that that you had some measurements of the production of radon gas in those -- the vicinity of those two silos.

And then I further assume that with that kind of information, you made an estimate of the kind of contribution of radon gas in the Nevada environment, your disposal is going to make.

Did anybody do that?

MR. NIXON: Yeah. As part of -- in looking at the -- the way that the waste would be disposed, obviously you can see from the chart that the waste itself does not meet the regulatory requirements, which is basically 20 picocuries per meter -- square meter per sec -- per second.

But once packaged, it would meet the NESHAP requirements; not only for interim storage, but for long-term

disposal. Combined with the disposal facility.

When we ultimately do the performance assessment for the final disposal of this waste in its final form, that will be one of the key parameters that's evaluated for the disposal configuration to be sure that the waste itself, even after the package is possibly compromised over time, would still meet the radon flux limits on the top of the disposal -- disposal cell itself.

AUDIENCE PARTICIPANT: I just have one more question. I was wondering about the possibility of instead of putting all of that good shielding in the ground, I thought maybe you could design some kind of a shell that went over each container, and then after it's offloaded, return those shells back to Fernald.

MR. NIXON: That was evaluated. That certainly was evaluated, and let me tell you the main reason we -- there's two reasons, really.

One is worker risk. Putting the waste after it's treated into an unshielded container is going to require us to handle both at Fernald and at Nevada.

So there's a significant worker risk issue before it gets into the shielded container for shipment.

Secondly, you have the shipment that is not dedicated two-way trans -- transport. It's dedicated to the NTS site itself.

We would have to pay to have the container delivered back to the Fernald site at a significant cost to the project.

Really from our standpoint it's worker risk. We want the waste to go directly into the shielded container and have the waste shielded for the workers both putting it in the container and dealing with that at Fernald and offloading it here and putting it into the disposal cell.

AUDIENCE PARTICIPANT: Thank you.

I've got a couple questions. Is this a NEPA process?

MR. NIXON: Yes, yes.

AUDIENCE PARTICIPANT: The NEPA process requires that energy consumption be a consideration. I don't see that as one of your criteria.

We are importing over fifty-five percent of our energy. The Department of Energy has a responsibility for this area, and it is an issue which should be kept before the forefront of the public.

MR. NIXON: The feasibility study that led up to this proposed plan that we're presenting tonight was a full environmental impact statement when it was originally done. As revised, it's -- we did a supplemental analysis to our original Environmental Impact Statement.

So yes, those things are evaluated in the -- in

the detailed document, the feasibility study. They're not presented to you here.

AUDIENCE PARTICIPANT: In regard to energy consumption, we got process of transportation and disposal.

What alternative has the least energy consumed?

MR. NIXON: I'm not sure I can answer that.

AUDIENCE PARTICIPANT: It's an important question.

MR. NIXON: Yes, it is.

AUDIENCE PARTICIPANT: You folks should be able to answer that.

MR. NIXON: I would have to -- I would have to -- I don't have the information here in front of me.

AUDIENCE PARTICIPANT: We spend probably a hundred or 200 million dollars protecting our foreign oil resources with a military force and our energy consumption is increasing.

So this is a very major national issue and also a national security issue. Most people don't think about it.

MR. HAGEN: The exact numbers I can't quote. It was -- obviously it was significantly higher for the transportation element for chemical stabilization just because of the shear, you know, increased number of shipments.

As far as the on-site treatment aspect of it, it was significantly higher vitrification because of the -- the

high power requirements for that technology. I can't quote the numbers. I apologize.

AUDIENCE PARTICIPANT: Just for a point of information, in Europe, country of France, the vitrification process is quite sometime.

As a matter of fact in 1998 and 1996, the power plants in Europe were sent the waste vitrification and particularly in Germany, by rail car back to Germany for storage and all kinds.

Are you aware of that?

MR. HAGEN: Yes. In fact, I didn't get to -- the boss got the glory trip, but we actually went to La Havre in France and also to Britain where they're doing vitrification.

Basically they are doing it, but on a very different waste stream. So we didn't think it was --

MR. NIXON: We evaluated those facilities under commercial demonstration. They're on much smaller scales, but homogenous, high-level -- specifically on high-level waste. Never on low-level waste.

MR. HAGEN: Our boss actually went there and actually looked at these facilities.

MR. NIXON: These same facilities, the low-level waste or a portion of the waste that they have on-site is also being chemically stabilized, as well, or similar process.

AUDIENCE PARTICIPANT: What type of cement is going to be used in the --

MR. HAGEN: Cement is a generic term. I'm sorry.

AUDIENCE PARTICIPANT: That's okay.

MR. HAGEN: You know, cement stabilization is kind of a generic term that applies. What is more likely in my opinion -- not that a successful vendor couldn't use straight cement -- is they're going to have their own little proprietary version of some pozzolanic based additive.

So it will be some tweak, their own little proprietary tweak, and it will probably have the basics of cement in it, but it will have other things in it, too.

MR. NIXON: These are all type A cement with the stabilizing agents in it.

AUDIENCE PARTICIPANT: They got some good state of the art material.

MR. HAGEN: Yes.

MR. NIXON: And that very well will come into play with a competitive environment that vendors will be asked to engage in.

AUDIENCE PARTICIPANT: What I'd like to -- rather rude. I'd -- I'd like to really -- want to thank you all for having the public hearing out here and also for the meeting you had last week.

I found you responded to our questions and we had a number of them and I thought there was a good demonstration of interaction among sites, which I hope can happen with other sites.

One -- one question I had. You indicated the majority of the waste has actually arrived at the test site.

And how does that compare with the material you've already shipped? How does it compare with the material you're proposing to ship from the silo program as far as risk? Just ballpark or if you're able to do that.

MR. HAGEN: As far as a calculated number, I can't do it, but in terms of a type of material, most of it does not -- most of the material coming does not have the same degree of radium content within the radon generation, which is really a primary issue during waste transportation.

Most of the material would have fallen into the LSA-1 category versus the LSA-2.

AUDIENCE PARTICIPANT: The prior material?

MR. HAGEN: Yeah.

So, you know, all low-level waste, all -- you know, what I would say within the same order of magnitude of risk, although what's unique about this particular waste -- waste form relative to transportation issues, we'll probably do that radium content.

MR. NIXON: We've shipped similar compact dose

rates on the container that didn't require this level of shielding to get to those levels, to that 50 to 70 millirem per hour.

AUDIENCE PARTICIPANT: Thanks.

AUDIENCE PARTICIPANT: I've got a couple questions. Just kind of help me understand this.

On this sheet that you have here, you've got volumes.

MR. HAGEN: Yes.

AUDIENCE PARTICIPANT: Is this just the waste or does that include the containers alone?

MR. HAGEN: It's the container -- it's the entire waste volume that would go into the ground including the container.

AUDIENCE PARTICIPANT: Just roughly figure the loads out, how many loads are in --

MR. HAGEN: That's about 6,000 containers and 3,000 shipments.

AUDIENCE PARTICIPANT: On each line or total? I mean --

MR. NIXON: We're talking about the chemical stabilization one.

AUDIENCE PARTICIPANT: Each of them. That's what I --

MR. NIXON: If you look at the tallest one,

which would be M-1, which was our cement base chemical stabilization, that is equivalent to 3,000 shipments.

AUDIENCE PARTICIPANT: Okay.

MR. NIXON: Two containers per shipment.

AUDIENCE PARTICIPANT: I just kind of wanted to have an idea.

On this box, is this a picture of the actual box that -- basically or is it something different?

MR. NIXON: That's a picture of a box that was used in the evaluation. As Terry said earlier, the vendor who ultimately performs this design construct and operate the plant may decide to select a different package.

AUDIENCE PARTICIPANT: Okay.

MR. NIXON: That would be optimized to his particular process.

AUDIENCE PARTICIPANT: I was just trying to understand how would you fasten the lid on.

MR. NIXON: There again, it would have to be designed, certified in the manner that we talked about.

That particular container is in connection with a gas, a neoprene gasket, but that is not necessarily the package that would be used.

AUDIENCE PARTICIPANT: Okay. These silos -- you're emptying silos; is that correct?

MR. NIXON: Yes.

AUDIENCE PARTICIPANT: Are you going to reuse the silos or they look like they were kind of getting pretty well --

MR. NIXON: They'll be demolished.

AUDIENCE PARTICIPANT: Are they being hauled out here, too, or someone else or do you have your own -- where does that material go when you demolish those?

MR. HAGEN: Silos 4 will go to our on-site disposal facility. Silo 3 will go to our on-site disposal facility. Silo 1 and 2 rubble will come to the test site.

AUDIENCE PARTICIPANT: Is this in this volume here or not?

MR. NIXON: It's in that volume. It's in our cost estimate, yes, here, but it's also in our low-level waste shipment estimates in our waste management program.

AUDIENCE PARTICIPANT: Okay.

MR. NIXON: It's already covered under the waste management program that your cost and communication.

AUDIENCE PARTICIPANT: I think you've got a couple more questions.

AUDIENCE PARTICIPANT: That actually inspired during your discussion.

What's the speed of operation for this chemical -- in other words, how many little boxes will you put out a day? Are you going to stack up a thousand a day or one

every two weeks or how is it going to happen that way? Can you tell me?

MR. NIXON: Yeah. I think that based on our calculations, we're looking at up to fourteen containers per day.

AUDIENCE PARTICIPANT: Per day.

MR. NIXON: Per day, but it's probably going to be something less than that. That's what we think our maximum production.

AUDIENCE PARTICIPANT: But your shipping rate may not be that high.

MR. NIXON: That's correct.

AUDIENCE PARTICIPANT: There was a concern about constriction of shipments at portals of entry where we have --

MR. NIXON: Exactly.

AUDIENCE PARTICIPANT: We have stacks of total boxes here.

MR. NIXON: I thought we had a slide on that.

MR. HAGEN: We do.

MR. NIXON: Yeah. The proposed shipments are three shipments per day for the chemical stabilization, so that would be six containers per day normal shipping program.

MR. HAGEN: For three years.

MR. NIXON: For three years.

AUDIENCE PARTICIPANT: That wouldn't jam us up.

MR. NIXON: It would accelerate the process. If we were able to increase the shipments, we could potentially accelerate the project. But that would be something that could be worked out.

AUDIENCE PARTICIPANT: Thank you.

AUDIENCE PARTICIPANT: Did I not hear you say you're going to drop these containers from three feet?

MR. HAGEN: The certification requires a test of dropping it three feet.

AUDIENCE PARTICIPANT: You know, the shear stress of concrete is 33 psi.

Do you know what's going to happen in three feet? There would be nothing left of it.

MR. NIXON: This package that we're using, the SEG container was tested under those conditions. It was dropped on a corner from that one meter height.

You know, you got to remember that you were -- you're exactly right on concrete, but this SEG container is primarily steel.

MR. HAGEN: It's got a lot of rebar in it.

AUDIENCE PARTICIPANT: That's not on here at all. That's why I couldn't figure it out.

MR. NIXON: They use -- they use almost a steel wool type reinforcement that's packed into the concrete.

AUDIENCE PARTICIPANT: But it says concrete.

MR. NIXON: It's reinforced concrete.

AUDIENCE PARTICIPANT: Very reinforced concrete.

FORMAL COMMENTS

MR. CLAIRE: Any other questions, guys?

MR. STEGNER: If there are no other questions, we can proceed to the formal public comments period. We'll take them at this time.

All we would ask is simply you say your name for purposes of the court reporter before offering your comments or questions, and then as I said, we will go into our silent mode now and simply listen to your comments, take them and we will respond to them in the formal responsiveness summary that we will provide to you.

Yes, sir.

AUDIENCE PARTICIPANT: Can't you surmise from our questions?

MR. STEGNER: You don't have to say anything, as I said. We can -- if you do want something responded to formally or you do want to go on the record formally.

MR. CLAIRE: Why don't we go ahead. If nobody else has got anything to say. Why don't we let some of the guests --

AUDIENCE PARTICIPANT: I've got just one item. I think it's important to consider energy consumption for the national interest.

MR. BECHTEL: My comments are as a citizen. The Community Advisory Board may be commenting, so for the record, my name is Dennis Bechtel, 319 Encima Court, Henderson, Nevada, and a few items, and I'm going to read part of it and I'm just going to paraphrase part of it, and I have a copy for you.

There were several references in the -- in the documents that I had about, you know, the rural environment or the sparse population of Nevada, and, you know, the total program is going to be involved with -- you know, the disposal of the waste and the transport of the waste.

So my concern as a Nevadan is that southern Nevada is experiencing some fairly rapid growth, you know, over the last several decades, and I think that that will probably continue over the next -- who knows, until we run another of water, I guess.

But the concern I have is that the area is isolated now, and of course the test site will probably continue to be isolated, although parts of it are transitioning to other uses, that it's not -- it's kind of misleading to make statements like that in justifying, you know, say the project, I think the project needs to stand on its own merits.

The fact that although it's an isolated site, there's some concern about contaminants going off or, you know, at least migrating from where it was originally intended for the nuclear testing.

So I think -- I think the disposal needs to -- the citizens of Nevada need to be assured that -- that the concrete containers, which I also have some -- maybe some personal concern about over the long-term, that -- that the waste is able to is -- be isolated from the -- from the accessible environment or from the public.

And as a justification, I think you need to make that case -- I know I get a number of volumes of material. Maybe you did make it and I missed it, but I think that needs to be the -- the point that the waste is -- that the public is protected, both from the transportation of the waste, but also long-term because the material could be dangerous for a long period of time. So I want to make that item -- case.

The second, with regard to the preferred alternative -- and I think I spoke to this when you all came out here -- that yes, chemical stabilization probably has a longer history. It is easier to make.

There's been some problems of vitrification, but I think, you know, the -- there has been -- there has been that type of alternatives that have failed, and I'm thinking of the pondcrete at Rocky Flats.

I know you spoke to this. Each site is different, but it's very much something that needs process control, and I am certain that -- well, I guess the concern I have is that this is going to take place over time.

People are going to leave, and that a process control that's institutionalized in our operation so we don't run into another pondcrete situation, and the fact that there is a -- I also agree. I think vitrification, despite the fact it may not have the history, is probably a bit more stable form.

So that's -- not saying that chemical stabilization doesn't work, because it obviously works, too, but just so we don't run into situations like pondcrete.

I also have concern about the number of shipments. You indicated at our meeting last week that's pretty much the number of shipments are equivalent to historical shipments that you've had out to the test site.

One thing that sort of gets lost, though, is the fact that Nevada Test Site is -- will be the disposal site.

It's a disposal option for -- for all the sites in DOE complexes as I understand it, and not that everything's going to come here, but you will just be one of a number of waste streams.

So I think -- this isn't really your fault, but I think DOE nationally needs to look at the cumulative effects since we're the end of the funnel, so it's more than just your shipments. There will be other stuff coming, too.

Personally, and because I live in the Las Vegas Valley, I guess, but I'm gratified with your encouraging

shippers, your northern/southern option.

A little unclear on what the time frames are between the north and -- whether you transition to the southern shipment. I guess depends on the weather, but I think the point of -- of concern I have as a citizen is that risk could be less risk, and it's my personal opinion that -- that we can debate about the danger of the material, but the fact that DOE should -- and apparently is -- Fernald, at least, considering that you shouldn't put the shipments into places where there's an opportunity for accidents.

I think -- I think we all recognize that Murphy's law, I know it's alive and well and I think that it's my personal opinion that a more rural option is the way to prevent potential impact, particularly in our area. That's growing fairly rapidly.

So I'm glad to see that. We still have in the Las Vegas Valley, we're marking out our growth, and one of the areas that is growing is the southwestern section of the valley which coincides with the 160 route, and that's probably a split with the 160 and 127 route in California.

I do think there needs to be some sort of hazard analysis. Currently I don't -- 160 is a -- it's going to be better than it is maybe three or four years from now when some of those other developments get on-line. There's going to be a lot more construction traffic.

I mentioned routing.

The last item, state acceptance and community acceptance I think is very important. It's a little unclear in the documents.

You kind of mush everything together, and I know that's one of the -- I guess the ancillary alternatives, but I think nonetheless, there are -- all these other items are important, but we are the community -- southern Nevada is a community that's going to have to live with this.

So I think -- and your response here is good. I'm glad to see it, but -- and I hope you'll take our -- our concerns and questions into consideration because, you know, again, it's a -- it's a long-term commitment for folks in the area.

So those are my comments, and I have more formal, but --

MR. STEGNER: If you can give me those, also.

MR. BECHTEL: Sure.

MR. CLAIRE: Anyone else want to say anything? Any one of the guests want to come forward and say anything? Come on up to a mic here.

MR. SHUDY: Dale Shudy. I live out in Pahrump. I had one question right off the bat.

Did you -- in your transportation costs, did you consider using intermodal or not?

And then while your testing of the containers sounds fairly good, I would assume at 50 miles an hour on a highway, that a collision would probably rupture the container.

I would just like to state for the record that Nye County as it sits now is not really prepared to handle that type of an accident.

I guess that's really all I have to say.

MR. CLAIRE: Anyone else want to make any comments or statements?

John. Go ahead.

MR. PHILLIPS: Just recently we had hearings about the workers that had their health impacted adversely and the Federal Government's going to reimburse them, and my concern is we've said that there's the health and safety issue and we just need to feel a little more comfortable that we're not going to repeat history by having ten, twenty years from now the same thing, a hearing where people are saying that their health was impacted.

So I think that we need to specifically learn from history and make sure we're not going to have a repeat situation and we're getting into robotics.

Maybe that may be something that needs to be looked at where we minimize the environmental impact on the human beings and that robotics -- robots get involved in this at the beginning and at the end of this shipment. That may be

an area that you might want to look at.

MR. CLAIRE: Okay. Anybody else? Comments?

Don, do you want to say something?

MR. CLOQUET: Yes.

On behalf of the Native Americans, I would like to state that the Western Shoshone and their individual nations within the Great Basin region are opposed to all high-level and low-level nuclear waste issues, particularly the Yucca Mountain Project, which has been stated numerous times by my dear friend, Corbin Harney, who's a Western Shoshone Indian.

And I don't see him here today, but I certainly have a lot of respect for his thought and wisdom and foresight, and also I've also known the area myself, and I predict that the nuclear test site, 1,380 square miles, we're talking about various entities up there.

We have the proposed Kistler Aerospace Corporation that's going to be located up on that mesa. We have low-level nuclear waste areas of the test site already that we get from various entities like Oak Ridge and other areas, perhaps from Idaho and Hanford, perhaps and other areas cause low-level nuclear waste coming in daily, and I'd like to repeat my friend Dennis that this is a tremendously growing area here in Las Vegas and I don't know if you -- if you want to go down to Spaghetti Bowl as I see at this moment, you're probably going about 3 miles an hour.

The population of Las Vegas is 1,300,000 people and there are estimated 17,000 Native Americans that are residing in this area.

We all have really concerns of the transportation of low-level and high-level nuclear waste if it ever comes to southern Nevada here, and we have the Native Americans. Just for point of information, we have our own agenda with regard to this issue.

Thank you.

MR. CLAIRE: Dale, did you want to add something?

MR. SHUDY: It's not on the proposal. It's basically on the public hearing process.

As you may notice, I'm the only one here from Nye County. One of the only reasons for this appears to be that we received notice that the CAB meeting itself was cancelled for this month.

Then a notice came out about a little over a week ago stating that this meeting would be February -- or Mar -- May 5th, which is this Friday, and it wasn't until yesterday that I actually learned this meeting is today.

That's kind of a short response period for people who live out in Nye County to get into a public hearing like this.

I hope that next time that we'll get a lot more

warning of a public hearing.

Thank you.

MR. CLAIRE: Okay. Well, we're pretty well on schedule here.

MR. STEGNER: We thank you very much.

MR. HAGEN: We appreciate you coming out.

(The meeting concluded at 5:52 PM).

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STATE OF NEVADA]
COUNTY OF CLARK]

I, the undersigned, hereby certify that the foregoing proceeding was by me stenographically reported and that I have accurately and truthfully subscribed to time and place; that the foregoing proceeding is a full, true and complete record of said testimony; and that the subject or subjects of this transcript were given an opportunity to read and correct said transcript and to subscribe the same.

I further certify that I am not of counsel, attorney nor associated with either or any of the parties in the foregoing caption named, or in any way interested in the outcome of the cause discussed in said action.

IN WITNESS WHEREOF, I have hereunto set my hand this 19th day of May, 2004.

CCR No. 605