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**In The Matter Of:**

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RULEMAKINGS AND  
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*PRIVATE FUEL STORAGE, L.L.C.*

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State's  
Exhibit 109

NUCLEAR REGULATORY COMMISSION

Document No. \_\_\_\_\_ NUCLEAR REGULATORY COMMISSION  
Official Exh. No. 109

In the matter of PRS ORIGIN

Staff \_\_\_\_\_ of \_\_\_\_\_ IDENTIFIED

Applicant \_\_\_\_\_ RECEIVED

Inspector  REGISTERED \_\_\_\_\_

Other PRINCEBRAIN

DATE 6-17-02 WITNESSED BY HAWWIN

Clerk pmw Witness \_\_\_\_\_

Perk \_\_\_\_\_

clarify your question?

[15] BY MS. CURRAN:

[16] Q: Do you agree with the statement [17] that that's made —

[18] MR. TRAVIESO-DIAZ: Do you mean [19] the entirety of the statement?

[20] MS. CURRAN: Yes.

[21] BY MS. CURRAN:

[22] Q: You can break it down, if you

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[1] want.

[2] A: Let me read it, please.

[3] Q: Sure.

[4] A: No, I don't necessarily agree with [5] this.

[6] Q: Could you go through and explain?

[7] Maybe you want to break it up be [8] sub parts.

[9] The applicant has not considered [10] the impact to native soil caused by [11] construction and placement of the [12] cement-treated soil?

[13] A: Well, I think there's been some [14] discussion addressed about how they're going [15] to possibly construct it, and not disturbing [16] the soils, and things like that. So they [17] have be considering that aspect of it.

[18] Q: If we inserted the word [19] "adequately" after "not," would you still [20] agree with that first part of the statement [21] that I just read?

[22] A: No. I wouldn't agree with that.

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[1] Q: Why not?

[2] A: I think for the stage of [3] development of this project, I think it's [4] been adequately addressed.

[5] Q: But for purposes of actually [6] building the facility, it's not adequate?

[7] A: For actual construction, that's [8] correct.

[9] Q: If you look at the second phrase, [10] which says that the applicant has not [11] analyzed the impact to settlement, is your [12] opinion similar, that some information has [13] been gathered, but not enough to approve the [14] construction of the facility?

[15] A: Repeat that.

[16] Q: If we look at the second phrase [17] here, whether the applicant has analyzed the [18] impact to settlement, would you agree that [19] some information has been collected?

[20] A: Yes.

[21] Q: Do you consider that the amount of [22] information that has been collected is

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[1] adequate for purposes of going ahead with [2] construction?

[3] A: No. It's not adequate.

[4] Q: And I have the same question with [5] respect to the last part of that sentence, [6] which refers to adhesion properties.

[7] A: Yes. It's the same answers.

[8] Q: Is there any aspect of the issue [9] of the design of soil cement or [10] cement-treated soil for which you feel or [11] you believe that the applicant has obtained [12] sufficient information in order to proceed [13] with construction?

[14] A: No. I don't think it's enough to [15] proceed with construction, no.

[16] Q: Dr. Wissa, is there a standard [17] formula for soil cement?

[18] A: A standard formula?

[19] Q: Yes.

[20] A: Can you explain what you mean by [21] formula?

[22] Q: Well, you know exact proportions

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[1] of every ingredient that goes into it and [2] what they are?

[3] A: Well, we know what ingredients go [4] into it. But the proportions, we do not [5] know.

[6] Q: And there's a difference between [7] soil cement and cement-treated soil; is that [8] correct?

[9] A: It's a degree of stabilization and [10] durability. Its the same concept. But it's [11] just a degree of stabilization.

[12] Q: So that cement-treated soil does [13] not have the same degree of stabilization [14] and durability as —

[15] A: Well, that's the way you are [16] trying to interpret it. I think the [17] nomenclature is vague. But I think that's [18] generally accepted today as not being as [19] durable.

[20] Q: I want to ask you a little bit [21] about your understanding about the way that [22] soil cement and cement-treated soil are to

Page 14

[1] be used at the PFS facility.

[2] Am I correct in understanding that [3] the cement-treated soil is going to be [4] directly underneath the concrete pads for [5] storage of the casts?

[6] A: Yes.

[7] Q: Will the cement-treated soil [8] extend beyond the perimeter of casts [9] laterally at all?

[10] A: I'm not sure. I don't think so. [11] I think that beyond that, they're going to [12] use what you call cement stabilized soil. [13] But I couldn't swear to that. I'm a bit [14] vague about it. But I believe it's [15]

primarily under the — I don't know the [16] answer exactly. I can't recall. It's there [17] somewhere in the —

[18] Q: And do you know, taking the soil [19] cement that's going to be around the edge of [20] the pads, how far out will it extend beyond [21] the edge of the pads? Do you know?

[22] A: Well, the pads — now speaking of

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[1] the stabilized, or the soil treated?

[2] Q: The soil cement?

[3] A: The soil cement?

[4] Q: Yes.

[5] A: It connects one pad to the next [6] one. So it is within the distance between [7] the pads. And I don't recall the exact [8] clearance between them. But it extends from [9] one pad to the next pad.

[10] Q: And at the outer perimeter, how [11] far does it go out?

[12] A: I don't recall. But I assume it [13] goes out to some distance. I don't know.

[14] Q: And do you know how far it extends [15] beyond the perimeter of the canister [16] transfer building?

[17] A: I know it's quite some distance. [18] It's not speaking tens of feet, but probably [19] a hundred or more.

[20] Q: What is your understanding of how [21] construction will be carried out with [22] respect to the soil cement and

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[1] cement-treated soil?

[2] A: How it will be carried out I think [3] will have to be left to the contractor and [4] the availability of his equipment and his [5] experience. I think, to me, is how it will [6] not be done. By that, is that certain [7] things should be in the specifications of [8] construction that you would not allow him to [9] do.

[10] Q: And what are they?

[11] A: Well, for example, you will [12] minimize disturbance of the subgrade of the [13] excavation. You will minimize it from [14] getting exposed to the elements. You will [15] not allow it to be reworked. Things like [16] that, things which — it's more of a [17] preventative than telling him how he is to [18] do his job.

[19] And he will come back, as I would [20] see it, with his concept. And then one [21] would agree with it or say it doesn't meet [22] with the objects of — and I'm just giving

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[1] you one example in the case of the subgrade [2] of the excavation. And what he's going to [3] do is going to cause disturbance and damage [4] those sub-

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grade.

[5] I'm calling it the subgrade. But [6] it's the bottom layer, say, the way you're [7] going to start placing your soil cement, for [8] example.

[9] Q: You're talking about the clay [10] silt, silty clay? That's the subgrade?

[11] A: That's correct.

[12] Q: Why would you want to minimize [13] disturbance to the subgrade?

[14] A: Because you don't want remodeling [15] and the possible loss of strength will [16] increase compressibility.

[17] Q: And what affect, if you were to [18] lose stress and compressibility, what would [19] that affect?

[20] A: Well, I don't know at this time. [21] Because we don't know how sensitive these [22] soils are to disturbance. Okay. This is

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[1] hypothetical. I think that once we know [2] this, we will be in a better position to [3] either be flexible or more rigid on what he [4] can or cannot do.

[5] Q: But in terms of why you would [6] worry about this, is it because if you were [7] to disturb the subgrade, that it might be [8] less resistant in an earthquake?

[9] A: I think to answer you, first of [10] all, I'm not as much concerned about [11] settlements as about loss in strength and, [12] therefore, its ability to have the shearer [13] resistance for this lateral movement which [14] we're relying on.

[15] Q: And you also mentioned exposure to [16] the elements.

[17] Why would that be a concern?

[18] A: Well, in a similar way. If you [19] got a lot of rain and the whole site was [20] open, you would have it flooded, maybe if it [21] was a heavy rainfall for a long time. Then [22] it's probably more a problem of efficiency.

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[1] Because then you'd have to let it dry out [2] substantially before you'd want to start [3] construction again. So there is a practical [4] problem of it, too, of exposing it to the [5] elements.

[6] Q: So during construction, what will [7] be done here is, equipment will be set up [8] for mixing soil and cement; is that correct?

[9] A: Yes.

[10] Q: And it will be mixed right on [11] site?

[12] A: Yes.

[13] Q: And will it be mixed in place or [14] done off to one side? Or can you give me a [15] picture of how that's going to happen?

[16] A: Well, I think here it's going to [17] be a function of a contractor, his ability, [18] his experience, and so on. There are two [19] approaches to it. One is mix in place. And [20] the other is plant-mixing it; in other [21] words, you hold material away. You put it [22] into a central plant, mix it, and hold it

Page 20

[1] back, and place it.

[2] Q: And you don't know which one will [3] be used?

[4] A: Not at this time, no.

[5] Q: Does it matter which one you use, [6] in terms of the impact on the subgrade?

[7] A: If you can achieve the quality [8] control, no, it wouldn't. Everyone has [9] their preferences.

[10] Q: Which one do you prefer, and why?

[11] A: I prefer the central plant mixing.

[12] You have better quality control on the [13] amount of cement, the amount of water, the [14] mixing, than mixing in place.

[15] Q: So you —

[16] A: But you could — a good contractor [17] with the right equipment could achieve the [18] same by mixing in place.

[19] Q: Why do you say a good contractor? [20] It's harder to do, to mix in place?

[21] A: I would say it takes more [22] experience for a contractor to mix in place

Page 21

[1] than to haul it away and have a plant there [2] which does it. There's less human [3] influence.

[4] Q: I would think that, to just say it [5] another way, that there's more of an impact [6] on the site if you're mixing it in place, [7] because you have more heavy equipment that's [8] right? There is that fair to say?

[9] A: No. We are talking about an [10] interesting situation, unlike a highway [11] where you have miles of it. These pads are [12] fairly small. The quantity of soil cement [13] is not large per pad. And, therefore, you [14] could do one pad at a time. And you [15] wouldn't need a lot amount of equipment [16] moving around in place. So I don't think [17] that's a main issue.

[18] Q: Have you done this before? Have [19] you supervised this process of mixing soil [20] and cement and making soil cement?

[21] What do you do if the soil is too [22] wet?

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[1] A: You have several options. [2] Obviously, one option which is usually done [3] is you work it, pulverize it, and have it [4] dry out. Another thing, in some instances [5] you may want to add quick lime or something [6] to dry out the soil. But then you change [7] its properties. But that is a method of [8] improving the soil, making it easier to [9] work. That's two which come to mind. I [10] think those are probably the most common [11] ones.

[12] Q: If you used the first method, you [13] dry it out first and then you pulverize it, [14] where do you do that?

[15] A: You are taking the — I'm sorry — [16] you're taking the soil and excavating it, [17] stockpiling it. And now, if it's wet, you [18] will work it, spread it, out, let it dry [19] out. That's not in the location where [20] you're going to be compacting it. It's not [21] in the location of the pad itself. Because [22] if you did that, you would disturb the whole

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[1] area. You would haul it away or spread it [2] somewhere, and then put it back in after it [3] reaches the right moisture content, and [4] mixed in with the cement.

[5] Q: So we're talking about a process [6] where you have a backhoe that's digging up [7] the colian silt, I suppose. And then you [8] are maybe drying it in the pile somewhere on [9] the site, or maybe putting it right on a [10] truck and trucking it out. This is if we go [11] with option A of processing it off site.

[12] Then it gets taken to another [13] plant, and portland cement is added and its [14] put into a cement truck?

[15] A: No.

[16] Q: What happens then?

[17] A: Well —

[18] Q: I'm showing my ignorance.

[19] A: No. The cement truck, you [20] wouldn't be able to pour it. If you used a [21] cement truck, I think you would have too wet [22] a mix to be able to pour it back in. What

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[1] you do is — you're right, to some extent, [2] that you take it to the central plant. [3] You'd probably stockpile it there, have [4] moisture equilibrium, so you don't have a [5] bucket of wet, bucket of dry.

[6] Then you put it into the mixing — [7] let's say tank if you want. It could be a [8] continuous process, or it may be a batch [9] process. You would add the cement, and the [10] water, mix that up, and then put it in [11] trucks, and haul it back to

where you want [12] to place it.

[13] Q: You don't have to keep spinning it [14] around to keep it from hardening?

[15] A: You don't — well, you do work — [16] if you're going to delay, it depends on the [17] time between mixing the water and final [18] compaction. If it's going to take along [19] time — by "long time," I'm saying a couple [20] of hours — and if it's hot water, you'd [21] probably want to work it during that period. [22] But preferably, you'd want to place it as

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[1] soon as possible and not have to rework it.

[2] Q: When you do the mixing in place, [3] what kind of equipment is used in that case?

[4] A: A pulver mixer.

[5] Q: A "powder" mixer?

[6] A: No. Pulver, P-U-L-V-E-R M-I-X-E-R [7] pulverization mixer. They call it a pulver [8] mixer, which is a high-speed Harrow rotating [9] blades which take the soil and break it up [10] first. You have to do this at the right [11] moisture content, so if it's too wet, it [12] gums up. The drier it is, the better you [13] are that way. But if it's too dry, it could [14] get too hard.

[15] But for the right moisture [16] content, you break it up. And then you, at [17] the same time, could be adding the cement, [18] and conceivably also could be adding the [19] water in this pulver mixer. Or you can do [20] it in several passes. You first break it [21] up. Then you add the cement, mix that in. [22] And then you come again, add the water, mix

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[1] all that in, and then come back.

[2] Q: And you're using a Harrow, like an [3] agricultural machine?

[4] A: Well, it's a little more — it's [5] high-speed blades which break up the [6] material and mix it. So it's not a Harrow. [7] Harrow is the wrong word. Harrow is more [8] just rotating it. It's breaking it up by [9] high-speed rotation of cutters. Or they're [10] high-speed meaning, yeah, spinning.

[11] Q: And this machine, let's call it [12] the high-speed Harrow.

[13] A: Okay. Let's call it that.

[14] Q: We'll just call it that.

[15] A: I call it the pulver mixer.

[16] Q: The pulver mixer?

[17] A: Yeah.

[18] Q: Is it a heavy piece of equipment?

[19] A: Not essentially, no.

[20] Q: How heavy is it?

[21] A: Depends on the size and so on. In [22] this case, these are a lot smaller areas.

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[1] It wouldn't be very heavy equipment.

[2] Q: Would you foresee it having any [3] kind of an impact on the subgrade by sitting [4] on top of it?

[5] A: Well, let me back off a bit. I [6] have a hard time seeing that you could take [7] two feet of material and in situ mix two [8] feet and recompact it in one layer and go [9] efficiently. I think you'd have to move it [10] beside where you're going to place it, mix [11] it up, and then put it in. So I don't see [12] us really being able to take two feet. I [13] don't know of any equipment which could cut [14] two feet, mix it up well, and put it back [15] in.

[16] Q: Because you would need to be able [17] to cut less, or more?

[18] A: Less.

[19] Q: It's much less?

[20] A: I think the depth of two feet is [21] excessive.

[22] Q: In other words, you don't think

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[1] that's a reason that it's not advisable to [2] do the in situ mixing?

[3] A: I didn't say that. I think the in [4] situ mixing — let me define in situ mixing [5] a little further. In this context, in situ [6] mixing means using the soils close or [7] located in place, and blending it with that [8] type of equipment, the pulver mixer, versus [9] hauling it away, taking it to a central [10] plant, and mixing it. That's what I call in [11] situ mixing.

[12] It doesn't necessarily have to be [13] literally in situ. And you just take it [14] like you would when we say in situ mixing of [15] these deep foundations, where you would mix [16] in place and you put a cement grout and mix [17] in there. I think even in the case of in [18] situ mixing, you move the soil around.

[19] In the highway, they would wind [20] row it, mix it up, and then spread it out [21] again. So it isn't literally just staying [22] there. You do move it around, even in

Page 29

[1] highways, when you have what you call in [2] situ mixing.

[3] Q: So just so I understand it, using [4] the pulver mixing, it wouldn't necessarily [5] be that you would mix everything right in [6] the exact same place where it was going to [7] be in the end; the mixing might be done off [8] to one side of the ultimate destination?

[9] A: That's correct.

[10] Q: Would you take out Exhibit 21, [11] which is the SAR chapter two?

[12] A: Yes.

[13] Q: And turn to page 2.61 18.

[14] A: Yes.

[15] Q: Can you tell me, looking at the [16] second bullet there, what does it mean when [17] it says, The soil cement will be constructed [18] in lifts approximately six inches thick?

[19] A: When you compact soils, if you [20] have too thick a layer, you end up having [21] inadequate density in the bottom of the [22] layer. So you have to limit the thickness

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[1] of the layer to get adequate compaction. So [2] to achieve two feet, it would be very [3] difficult, if at all possible, to compact it [4] all in one layer. You would have to compact [5] it in several layers. Usually six- to [6] eight-inch is about the maximum you would [7] want to do the compacted layer.

[8] Q: So you do six-inch layers at a [9] time when you —

[10] A: Compacted, yes.

[11] Q: So when you put the material back [12] in the hole, you compact it with some kind [13] of machine?

[14] A: Correct.

[15] Q: What kind of machine is used for [16] that?

[17] A: Well, it depends. It could be a [18] rubber tire compact. It could be a steel [19] drum, smooth tar. Several sheets of — it [20] depends on what the soil is or the soil [21] cement is, and what equipment is available [22] and so on.

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[1] Q: It says here, in the same section [2] as described in section 6.2.2.5 of ACI 1998, [3] These techniques will include, but will not [4] be limited to, minimizing the time between [5] placement of successive layers of soil [6] cement.

[7] Can you explain what is the [8] minimal time between placement of successive [9] layers of soil cement?

[10] A: Well, I think this, you have to be [11] a little careful of what you mean by that. [12] You want to obviously prevent the surface [13] drying out. Okay. If it does, you have to [14] scarify it. And then what you're interested [15] in is achieving a good bond between each [16] layer. So surface drying out is one thing.

[17] Also, if it — if the first layer, [18] let's say — let's say you prevent it drying [19] out by humid curing it or putting a spray [20] on — well, you wouldn't put a asphaltic [21] seal coat, because you want good bonding. [22] You may want to use a plastic, a

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[1] geomembrane, to prevent evaporation losses. [2] But then you do get it curing.

[3] So let's say a week later you come [4]

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back and want to put the next layer on, you [5] would have a discontinuity. And, therefore, [6] you would have to pretreat your soil to [7] improve the bond. But you don't want to [8] wait a week. So what we're saying here is [9] you try to do it within a reasonable amount [10] of time.

[11] But let's say the equipment breaks [12] down and you have delays. Then you'd have [13] to do something with that surface to make [14] sure you have good bonding again. What it's [15] saying here, basically, you don't want to [16] wait a week between layers, if you can help [17] it.

[18] Q: Turning to page 2.6-119. If you [19] look at the first full paragraph there, [20] entitled, Soil cement and in situ clay [21] interface, the first statement says, The [22] soil cement and in situ clay interface will

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[1] be constructed such that a good bond will be [2] established between the materials.

[3] Can you explain what is the [4] purpose of that bond?

[5] A: This is a important — well, it's [6] important throughout. The soil cement, it [7] would be under the pads. Because under the [8] building, you have five feet of concrete [9] that we — five feet of concrete, and no [10] soil cement under the building.

[11] What it is, is you're trying the [12] whole objective here of a soil — modified [13] soil or cement-treated soil, is to transfer [14] the shear stresses due to an earthquake down [15] to the clay below. So you want a good bond [16] between the soil cement and clay interface.

[17] Q: And how is that done?

[18] A: Well, what you do want is — most [19] likely, we would add a coating of cement or [20] a cement slurry, a thin — thick slurry. [21] And this is going to be established by a [22] test, what's the best way of achieving a

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[1] good bond.

[2] And that's where these shear tests [3] plan to determine what's the best way of [4] achieving a good bond between the soil [5] cement and the underlying clay subgrade.

[6] Q: And you used the term "good bond." [7] Is that something that you define [8] quantitatively?

[9] A: No. It's measured. You would [10] measure the — you would cause them to fail. [11] And you would measure the shear strength, or [12] the force required to cause them to slip. [13] And from that, you can say anything — we [14] know what we need as minimum.

[15] Q: What's the minimum that you

need?

[16] A: I don't recall what the minimum [17] was. But there is — they have worked it [18] out from the analysis what's the minimum [19] required. I don't know it offhand, minimum [20] shear strength required at these interfaces.

[21] Q: How do you perform that test?

[22] A: There is a — it's a direct shear

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[1] box, you call it. And usually for this type [2] of test, you'd use one which is probably a [3] one-foot-by-one-foot instead of a — you [4] could use a small one. A small one's [5] usually for size two-inch or [6] four-inch-by-four-inch.

[7] But I think in this case you would [8] probably use one which is maybe a foot [9] square. But it could be a four-inch one.

[10] And it has two boxes, two boxes, halves. [11] And you pull one with respect to the other. [12] And you measure the resist — or the force [13] required to cause them to slip. So half of [14] the box would slip in one direction, the [15] other half in the other direction.

[16] Q: That seems like a pretty simple [17] thing to do. You could do that today, [18] right? You could perform that test today?

[19] A: Yes.

[20] Q: To your knowledge, has that test [21] been performed?

[22] A: On this specific job?

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[1] Q: Yes.

[2] A: No. To my knowledge it has not [3] been performed.

[4] Q: Do you know why not?

[5] A: No.

[6] Q: And what are the variables that go [7] into meeting that requirement, that shear [8] strength? Is it the nature of the concrete [9] slurry? Is it the weight of the pad on top [10] of the clay?

[11] What are the things that go into [12] if you change it, it changes the shear [13] strength?

[14] A: Well, obviously, if you change the [15] loads, you change shear strength. But in [16] this case, we know what the loads are going [17] to be. So we're not going to apply much [18] higher loads than that of the slab and the [19] overburden above it, or whatever's above it, [20] the soil cement above it and the concrete [21] slab. And so then you wouldn't use anything [22] above that.

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[1] The other factors are the moisture [2] content; the type of treatment, surface [3] treatment, whether it's dry cement, or is it [4] a cement slurry, or a moist slurry.

[5] Q: Let me just interrupt you there [6] and clarify. When you say the type of [7] treatment, you're talking about the [8] interface between the subgrade and the [9] cement-treated soil?

[10] A: That's correct.

[11] Q: Okay. What else? Does it have to [12] do with characteristics of the [13] cement-treated soil, also?

[14] A: Yes.

[15] Q: What aspects of the cement-treated [16] soil affect the resistance to stress?

[17] A: Well, probably the controlling — [18] obviously, if the soil — the cement-treated [19] soil is the weakest link. It's going to [20] fail through the cement-treated soil. If [21] the clay is the weakest link, it's going to [22] fail through clay. If the bond is the

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[1] weakest link it will fail through that think [2] layer that we're talking about.

[3] And the idea would be to make sure [4] that the thin layer between the two, or the [5] interface, is not the weak link. That's [6] really the objective of all we're doing [7] here, is make sure it fails either through [8] either the underlying clay or the [9] cement-treated soil. And I suspect it's [10] probably going to be through the clay rather [11] than the cement-treated soil.

[12] Q: It would be possible, wouldn't it, [13] to design the pads so that their thickness [14] was the thickness of the colian silt; so [15] that, in other words, they would entirely [16] displace the layer of colian silt and touch [17] the subgrade below?

[18] A: I can't answer that question. [19] Because that's outside my area.

[20] Q: You don't do concrete?

[21] A: Yes, I do concrete. But I don't [22] get involved with canisters tipping over and

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[1] things like that, which control the [2] thicknesses.

[3] Q: Oh, I see. But there isn't any reason, from the standpoint of the stability [5] of concrete by itself, that would prevent [6] PFS from building a pad that was four or [7] five feet thick, as opposed to two-foot [8] thick?

[9] A: I need to understand what you mean [10] by "stability."

[11] Q: Well, disregarding the issue that [12] they're holding casts on top of them: if you [13] were just building a pad out in the desert, [14] would there be any reason that you couldn't [15] design the pad to be five feet thick and go [16] down as far as to touch the subgrade layer?

[17] MR. TRAVIESO-DIAZ: I'm going to

[18] object to the form of the question. Because [19] it assumes something for which there is no [20] foundation, which is that there is a [21] uniform distance from the surface to the [22] layer underneath. And that hasn't been

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[1] established. What I'm saying is that your [2] question assumes that there is four to five [3] feet uniform distance between the top and [4] the bottom.

[5] MS. CURRAN: Okay.

[6] BY MS. CURRAN:

[7] Q: I'd like to ask you about a [8] statement here also on page 2.6-119.

[9] In the second full paragraph, the [10] first sentence reads, An additional benefit [11] of incorporating the soil cement into the [12] design is that will minimize the [13] environmental impacts of constructing the [14] facility.

[15] This represents that minimizing [16] environmental impacts is an additional [17] benefit of incorporating soil cement into [18] the design.

[19] What's the first benefit of [20] incorporating the soil cement into the [21] design?

[22] A: I can only see what's — state

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[1] what's said here. From what I gather, [2] you're saying, if you read the next [3] sentence, is use of on-site materials to [4] construct soil cement rather than excavating [5] and spoiling these materials is an [6] environmental benefit.

[7] Q: Right.

[8] A: That's what they're stating here.

[9] Q: Right. But it says it's an [10] additional benefit.

[11] So I'm just wondering: Is it a [12] benefit in some other way to incorporate [13] soil cement into this design?

[14] A: I don't know. I did not write [15] this paragraph. So I don't know. I'd have [16] to read back over and see what other benefit [17] was involved in it. This was not my [18] wording.

[19] MS. CURRAN: I'd like to take a [20] ten-minute break.

[21] (Recess)

[22] BY MS. CURRAN:

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[1] Q: I'm going to pass you kind of a [2] bulky item, Doctor. This is a set of some [3] of the exhibits. And I just want to look at [4] one of them, which is Number 13. These [5] happen to be stapled together. And I'd like [6] you to turn the Exhibit 13, which has [7] already been marked: Applicants objections [8] and responses to the State of Utah's 14 set [9] of discovery requests directed to the [10]

applicant, dated February 19, 2002.

[11] I believe earlier in the [12] deposition you stated that you had been [13] retained by Shaw Pittman, and not by PFS; is [14] that correct?

[15] A: That's correct.

[16] Q: Well, I'd like you to turn to page [17] 20 of this discovery response. You'll see [18] at the top of the page, this is an answer to [19] interrogatory number three.

[20] It states, PFS has retained [21] Dr. Anwar E.Z. Wissa as a consultant to [22] assist in the soil cement program.

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[1] Is that incorrect?

[2] A: Well, I haven't received any [3] formal contract or information that I have [4] been retained.

[5] Q: Do you have a handshake?

[6] A: An insinuation or a handshake may [7] be the case, but no formal agreement of any [8] kind exists. And as of today, I have not [9] spent any time or billed them or done [10] anything with them to confirm that this is [11] the case. As I said, I would hope it would [12] be the case. But from where I'm speaking to [13] you, and I expect they will retain me, but [14] there is no formal agreement as of this [15] date.

[16] Q: So the phrase "has retained" is [17] somewhat hopeful language?

[18] A: I didn't write this. So whoever [19] wrote this — maybe I should have read this [20] and assumed that I have been retained.

[21] Q: Now, it also says here, PFS [22] anticipates that Ardaman & Associates will

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[1] be performing additional relevant soil [2] cement testing.

[3] Have you been retained to [4] represent soil cement testing?

[5] A: I think it's the same context, [6] where we've discussed it; and they told us [7] can we do this work; and are we willing to, [8] and so on. I've agreed yes. But the [9] physical — or the documentation that we [10] have been retained, I do not have yet. It [11] may be in the mail, for all I know.

[12] Q: Have you had any involvement with [13] PFS's other consultants in the soil testing [14] that has been done?

[15] A: I had a meeting with the lawyers [16] where other consultants were present.

[17] Q: Have you had any involvement with [18] AGEC?

[19] A: No. I don't think so.

[20] Q: Did you participate at all in the [21] engineering services scope of work that

[22] we've all looked at as Exhibit 14?

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[1] A: No.

[2] MS. CHANCELLOR: Can I ask a [3] question?

[4] MS. CURRAN: Yes. You're breaking [5] up, Denise. I don't know why.

[6] MS. CHANCELLOR: Dr. Wissa, have [7] you had any conversations with Paul Trudeau [8] at Stone & Webster?

[9] MR. TRAVIESO-DIAZ: I am going to [10] object to having two counsel examine my [11] witness at the same time.

[12] MS. CHANCELLOR: Okay. That's [13] fine. We'll do it at a break. And we'll [14] just go back and Diane can ask the [15] questions. That's just fine.

[16] MR. TRAVIESO-DIAZ: Just one at a [17] time, please.

[18] MS. CURRAN: Well, we were doing [19] it one at a time.

[20] MS. CHANCELLOR: I mean, I was [21] trying to be efficient. And I haven't [22] broken in before. I was trying to be

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[1] efficient so that we could get Dr. Wissa out [2] of there as quickly as possible. If you [3] want to delay this, we have will have phone [4] conversations. We'll go back. We'll cover [5] the same ground. And we'll re-ask the [6] question.

[7] MR. TRAVIESO-DIAZ: I'm sorry, [8] Denise. Rule number one in depositions is [9] only one lawyer is allowed to ask questions [10] of a witness at a point in time. If you [11] want to ask questions later, after Diane [12] finishes, then we can talk about it. But no [13] double-teaming, please.

[14] MS. CHANCELLOR: Okay. That's [15] fine. I was trying to be efficient.

[16] MR. TURK: Denise, I personally [17] don't blame you. I think this is very [18] exciting. And I understand the impulse to [19] break in.

[20] BY MS. CURRAN:

[21] Q: Dr. Wissa, have you had any [22] conversations with Paul Trudeau of Stone &

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[1] Webster regarding the PFS design issues?

[2] A: Other than with attorneys present?

[3] Other than that?

[4] Q: Yes.

[5] A: Yes. I've had one.

[6] Q: Can you describe it for me, [7] please?

[8] A: Paul Trudeau delivered some [9] documents to me at — some plans or — [10] without the attorneys present, just [11]