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January 5, 2001

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

By Electronic Filing and Mail Delivery

Emile L. Julian
Assistant for Rulemakings and Adjudications
Rulemakings and Adjudications Staff
Office of the Secretary of the Commission
U. S. Nuclear Regulatory Commission
11555 Rockville Pike, One White Flint North
Rockville, MD 20852-2738
Attn: Docketing & Services Branch

Re: Private Fuel Storage – Docket No. 72-22 – ASLBP No. 97-732-02

Dear Mr. Julian:

I am writing in regard to our telephone conversation yesterday regarding the transcript pages of Dr. Walter Arabasz's deposition filed by Applicant in support of its Motion for Summary Disposition of Utah Contention L. You noted that two pages of Dr. Arabasz's deposition referenced in our Material Statement of Facts did not appear to be included in the transcript pages of Dr. Arabasz's deposition attached to our motion. You are correct, and we are today providing those two pages to you, to the Board, and to the parties. We have also double-checked to ensure the completeness of the other deposition excerpts provided with our Motion and have identified several pages of Dr. Bartlett's deposition which were inadvertently omitted which are also attached.

You also noted in our conversation yesterday that the cover page of Dr. Arabasz's deposition and several of the attached pages contained the phrase "Confidential and Proprietary" and you inquired whether any portion of the Arabasz deposition was confidential. I advised you that those pages were mistakenly identified as confidential and proprietary, and that no portion of the Arabasz deposition is confidential. Although you indicated that you would mark your pages as not being confidential, because we are filing additional pages, I am providing you the pages that we had originally transmitted with the caption "Confidential and Proprietary" with that phrase deleted to you, to the Board, and to the parties so that everyone can correct their copies. We have also identified that the first pages of the Allison and Solomon depositions contained the same phrase, "Confidential and

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Emile L. Julian
January 5, 2001
Page 2

Privileged," and we are providing copies without that phrase to you, to the Board, and to the parties.

Thank you for bringing these matters to my attention. Please call me if you have any further questions.

Sincerely,



Paul A. Gaukler

enclosures

cc: G. Paul Bollwerk III, Esq. (By Hand Delivery)
Dr. Jerry R. Kline (By Hand Delivery)
Dr. Peter S. Lam (By Hand Delivery)
Sherwin Turk, Esq. (By Hand Delivery)
Denise Chancellor, Esq. (By Federal Express)
Susan F. Shankman
Adjudicatory File, Atomic Safety and Licensing Board Panel
Diane Curran, Esq.
John Paul Kennedy, Esq.
Joro Walker, Esq.
Danny Quintana, Esq.

COPY OF TRANSCRIPT
UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	Docket No. 72-22
	)	ASLPB No. 97-732-02-ISFSI
PRIVATE FUEL STORAGE)	
L.L.C.)	
(Private Fuel Storage	)	DEPOSITION OF:
Facility)	)	<u>WALTER J. ARABASZ</u>
_____)	

Wednesday, October 18, 2000 - 9:30 a.m.

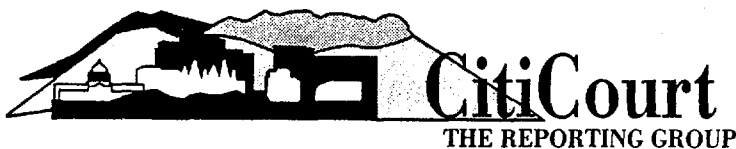
Location: Parsons, Behle & Latimer

201 S. Main, #1800

Salt Lake City, Utah

Reporter: Vicky McDaniel

Notary Public in and for the State of Utah



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Salt Lake City, Utah 84144

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P R O C E E D I N G S

WALTER J. ARABASZ,

having first been duly sworn to tell the truth,
was examined and testified as follows:

EXAMINATION

BY MR. GAUKLER:

Q. Good morning, Dr. Arabasz.

A. Good morning, Mr. Gaukler.

Q. Would you please state your full name for
the record.

A. Walter Joseph Arabasz.

Q. And what is your current position and
employer?

A. I'm employed by the University of Utah. I'm
a research professor at the university and director of
the University of Utah seismograph stations.

Q. My name is Paul Gaukler, and this morning
I'm going to be asking you a series of questions with
respect to Utah Contention L and related issues. If at
any time you don't understand my question, will you ask
me to clarify the question?

A. Yes.

Q. Are you familiar with the Private Fuel
Storage project?

A. Yes, I am.

1 Q. And what is your familiarity with that
2 project?

3 A. In August of 1998 I was asked by the
4 director of the Utah Division of Environmental Quality
5 if I would provide assistance in reviewing documents
6 produced for the licensing of a facility. And in
7 December of that year I began a contract to the
8 university, also involving assistance of Dr. James
9 Pechmann, to provide assistance to DEQ, the Department
10 of Environmental Quality. And so in that process I was
11 first given the 1997 SAR to review, and that basically
12 began my familiarity with the project.

13 Q. And have you reviewed other documents
14 related to the project?

15 A. Yes. Subsequently was given the Geomatrix
16 1999 PSHA report to review, and then was routinely given
17 documents relating to Contention L aimed at helping the
18 attorney general's office to respond to interrogatories
19 and so forth.

20 Q. I'm going to show you just for the record a
21 document labeled *Final Report, Fault Evaluation Study*
22 *and Seismic Hazard Assessment*, Private Fuel Storage
23 Facility, prepared for Stone & Webster Engineering
24 Corporation, prepared by Geomatrix Consultants, Inc. Is
25 that the report of Geomatrix that you reviewed on behalf

1 PSHA isn't part of Contention L. I just want it on the
2 record as saying that.

3 MR. TURK: Off the record.

4 (Discussion off the record.)

5 A. In one form or another, I can recall
6 relevant discussion in the Geomatrix report.

7 Q. That covers the different topics, Appendix
8 D?

9 A. Correct.

10 MR. GAUKLER: Why don't we take a break at
11 this point in time.

12 (Brief Recess.)

13 Q. (BY MR. GAUKLER) Dr. Arabasz, we can go
14 back on the record now. I want to go back to a couple
15 questions on Regulatory Guide 1.165. First of all, the
16 nature of the studies that were outlined in Appendix D
17 that we were discussing, would those generally be
18 required for any type of analysis you did of seismic
19 sources, whether you were going to use a deterministic
20 or probabilistic approach?

21 A. Ideally, yes.

22 Q. And did you identify any of those list of
23 studies that Geomatrix did not do?

24 A. No, the -- recognizing that the volcanism,
25 the volcanic hazard was cursorily addressed in the

1 study, being judged to be not directly significant.

2 Q. And you would agree with that judgment, that
3 it's not directly significant, volcanic hazard?

4 A. I am not familiar with the history of
5 volcanic activity in this general area, and I would be
6 reluctant to offer an opinion.

7 Q. Just to clarify: apart from the volcanic
8 activity, then, they did cover everything else in
9 Appendix D?

10 A. Down to the next to the last bullet, the
11 effects of human activities, I don't recall relevant
12 investigations. I would infer a judgment that they were
13 basically not material.

14 Q. And would you agree with that judgment or
15 disagree?

16 A. I'm not familiar with any history of
17 withdrawal of fluids in that basin. In general I would
18 agree, but I don't have that direct familiarity.

19 Q. Then those are the only two potential
20 exceptions that you see with respect to Appendix D?

21 A. In terms of acknowledging that appropriate
22 studies were undertaken, yes.

23 MR. GAUKLER: I'd like to have marked as
24 Exhibit 3 Utah Contention L.

25 (Exhibit 3 marked.)

1 A. Yes.

2 Q. Could you briefly leaf through that for a
3 second? And ask if you recognize that as the portion of
4 the Safety Evaluation Report that you reviewed recently.

5 A. Yes. And as earlier indicated, I said that
6 I cursorily reviewed this.

7 Q. Now, the Nuclear Regulatory Commission staff
8 in Section 2.1.6, beginning on page 2-24, and
9 particularly in terms of page 2-27 they talk about basic
10 geologic and seismic information, and 2-29 they talk
11 about regional and site geologic history, and 2-30 they
12 talk about structural geologic conditions.

13 And on page 2-33 they have a paragraph
14 called "Staff Review" with respect to this provision,
15 and they state that "The staff reviewed the information
16 in Section 2.61 of the Safety Analysis Report and found
17 it acceptable because the basic geologic and seismic
18 characteristics of the site and vicinity have been
19 accurately described in detail to allow investigation of
20 seismic characteristics of the Facility. The staff has
21 determined that this information is acceptable for use
22 in other sections of the Safety Analysis Report to
23 develop the design bases of the Facility, perform
24 additional safety analysis, and demonstrate compliance
25 with regulatory requirements." And then it goes on to

1 state the various regulatory requirements.

2 Do you agree with this staff conclusion?

3 A. Only to the extent that it relates to my
4 domain of inspection. I said earlier that the detail to
5 which one attends in a site characterization depends on
6 distance from the point of interest, in this case the
7 site. Now, because I have not reviewed the seismic
8 reflection data nor concerned myself with the immediate
9 site subsurface structure on a scale that might relate
10 to fault displacement at the site, my interest begins on
11 a scale of kilometers from the site, kilometers below
12 the site or kilometers away from the site. So I say
13 yes, I agree with this, but I have to defer it to this
14 process because the state does have companion experts
15 who will address concerns relating to the immediate
16 site.

17 Q. Can you identify anything in the staff's
18 analysis that you disagree with?

19 A. In this SER?

20 Q. Uh-huh, in terms of that section that you
21 just read, 2.6.1.

22 MS. CHANCELLOR: I'd like to object just for
23 the record that Dr. Arabasz has already stated that he's
24 only cursorily reviewed the report. And to the extent
25 that you're asking for an opinion, he will give that

1 MR. GAUKLER: Certainly. I have no
2 objection to that whatsoever.

3 (Lunch recess from 12:30 to 1:52 p.m.)

4 Q. Good afternoon, Dr. Arabasz.

5 A. Good afternoon.

6 Q. I'd like to have marked as Exhibit 11 a
7 two-page document from James C. Pechmann to C. Nakahara
8 and D. Chancellor with a cc to Dr. Arabasz dated October
9 20, 1999.

10 (Exhibit 11 marked.)

11 Have you seen this document before?

12 A. It's a copy of an e-mail. I would have seen
13 it as an e-mail --

14 Q. You would have seen it --

15 A. -- document, correct.

16 Q. And this document discusses a review that
17 Dr. Pechmann has done of the time histories --

18 A. Correct.

19 Q. -- prepared for PFS?

20 A. Yes.

21 Q. And he concludes, does he not, that the time
22 histories appear to meet the NRC requirements?

23 A. That's correct.

24 Q. You have referred to before when I was
25 asking about the interrogatory response on his time

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	Docket No. 72-22
	)	ASLPB No. 97-732-02-ISFSI
PRIVATE FUEL STORAGE)	
L.L.C.)	
	)	DEPOSITION OF:
(Private Fuel Storage)	
Facility)	)	<u>BARRY J. SOLOMON</u>
<hr/>		

Wednesday, October 18, 2000 - 3:41 p.m.

Location: Parsons, Behle & Latimer
201 S. Main, #1800
Salt Lake City, Utah

Reporter: Vicky McDaniel

Notary Public in and for the State of Utah



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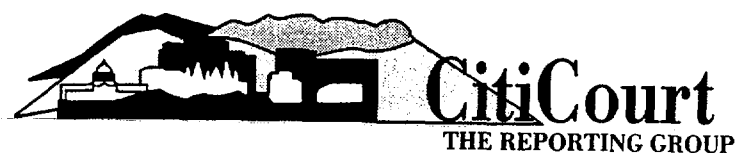
In the Matter of) Docket No. 72-22
PRIVATE FUEL STORAGE, L.L.C.) ASLPB No.1 97-732-02-ISFSI
(Private Fuel Storage	) Deposition of:
Facility)	) <u>LEE ALLISON</u>
)

Wednesday, October 25, 2000

Location: Parsons, Behle & Latimer
201 South Main Street, #1800
Salt Lake City, Utah

Reporter: Diana Kent, R.P.R.

Notary Public in and for the State of Utah



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UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of:

)
) Docket No. 72-22-ISFSI
) ASLBP No. 97-732-02-ISFSI
)

PRIVATE FUEL STORAGE, LLC

) Deposition of:

(Independent Spent Fuel
Storage Installation)

) DR. STEVEN F. BARTLETT and

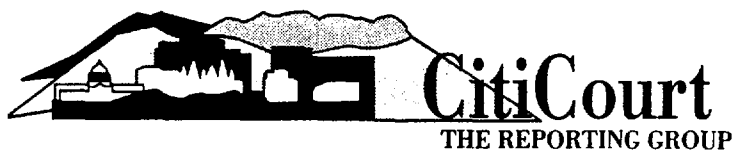
) DR. FARHANG OSTADAN
)

) Vol. I
)

Thursday, November 16, 2000 - 10:11 a.m.

Location: Offices of
Parsons, Behle & Latimer
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1 Q. Could you please go on?

2 A. (Dr. Bartlett) I think that's -- let's see.
3 Got one more paragraph, don't I?

4 The last paragraph talks about some standard
5 types of engineering properties tests, and it cites, for
6 example, "unit weights, porosity, compaction, etc.,
7 which should be performed for layer 1 and 2 soils."

8 As I've stated earlier, I do not believe
9 unit weights are a significant issue here. Porosity is
10 a function of void ratio, so we're really again talking
11 about void ratio when we say porosity. We just
12 discussed that matter. And compaction, though I don't
13 recall seeing standard compaction curves for this site,
14 I would assume those would be done when one would begin
15 to develop a design. I do not believe those type of
16 compaction issues are a problem.

17 Q. Sorry, I didn't hear you.

18 A. (Dr. Bartlett) That any issues relating to
19 compaction or standard compaction curves will really be
20 an issue here.

21 Q. Before I ask you my next question, so the
22 record is clear: when you said the last paragraph, you
23 meant the last paragraph of subsection 3 --

24 A. (Dr. Bartlett) In that subsection, correct.

25 Q. -- which is on top of page 92?

1 A. (Dr. Bartlett) Yes, beginning with
2 "Further, the Applicant performed only limited."

3 Q. Could you clarify for me what is meant in
4 that paragraph that you just read by layer 1 and layer 2
5 soils?

6 A. (Dr. Bartlett) That I am not sure of.

7 Q. But you said earlier that you were not too
8 sure of whether your definition of layers was the same
9 as applicant's.

10 A. (Dr. Bartlett) That's correct.

11 Q. Could you elaborate on that?

12 A. (Dr. Bartlett) Our information and
13 understanding of the layering of the system has changed
14 since this document was published, and admittedly so.
15 And as I recall in the earlier versions of the SAR we
16 were talking about soils in the upper 30 to 35 feet and
17 then a deeper, denser layer. And I'm assuming these
18 mean for those -- that system. But now it seems we have
19 progressed to the state where we've been talking about
20 the upper layer and as many as possibly five subunits.
21 So when it refers to layer 1 and, 2, I assume it's
22 talking about the original layering as discussed in the
23 SAR.

24 Q. But for purposes of the rest of our
25 discussion today, when we speak of layers, do you mean

1 the layers that were discussed in -- strike that
2 question. Start a new question. Were you here
3 yesterday when Mr. Trudeau and Dr. Chang gave their
4 testimony deposition?

5 A. (Dr. Bartlett) Correct.

6 Q. Do you recall there being a discussion in
7 their deposition of several layers that were identified
8 against particular figures of the SAR?

9 A. (Dr. Bartlett) Correct.

10 Q. Now, for purposes of our discussion today,
11 when we refer to layers, are you speaking for those
12 layers that are now currently depicted in the SAR for
13 the top 30 feet?

14 A. (Dr. Bartlett) Correct. In fact, we could
15 bring the SAR out and identify them if you'd like.

16 Q. We'll do that very soon, but I just wanted
17 to make sure we're speaking of the same --

18 A. (Dr. Bartlett) Since this document is
19 historical, I think it's talking about an older layering
20 system. The layering system has evolved.

21 Q. Thank you. I would ask you to keep this
22 Exhibit 3 handy, since we'll be probably talking about
23 it a lot more.

24 With whom, other than your legal counsel,
25 have you discussed issues relating to Contention L in

1 this proceeding?

2 A. (Dr. Bartlett) Of legal counsel?

3 Q. Apart from legal counsel.

4 A. (Dr. Bartlett) Oh, apart from legal
5 counsel.

6 Q. Please.

7 A. (Dr. Bartlett) Could you restate the
8 question?

9 Q. Okay. With what parties, other than the
10 lawyers, have you discussed the subject of Contention L?

11 A. (Dr. Bartlett) My immediate supervisors for
12 the Utah Department of Transportation. I've had -- I
13 guess my supervisors now at the University of Utah have
14 asked me questions about my involvement in Contention L.
15 I've just told them what I'm doing, just more as in
16 passing so they know where I'm at and what I'm about.

17 When you mean "besides," do you want also me
18 to include those that are also state expert witnesses?

19 Q. Yes.

20 A. (Dr. Bartlett) Okay. That would also
21 include, then, Dr. Lee Allison, Walter Arabasz, Jim
22 Peschmann, Dr. Ostadan, Barry Solomon. I believe that's
23 all.

24 Q. Now, what is your understanding of the
25 respective roles of the experts that you mentioned in

1 this proceeding?

2 A. (Dr. Bartlett) We've broken it up into
3 different disciplines and expertise for our review. And
4 Dr. Arabasz and Dr. Peschmann have taken the lead in the
5 Basis 1, though we have had some comments and input into
6 Basis 1 also. When I mean "we," myself and also
7 Dr. Ostadan.

8 For the geology and geotechnical issues
9 would be Barry Solomon, Lee Allison, myself,
10 Dr. Ostadan.

11 Within that trichotomy, I guess, if you
12 will, Barry would be reviewing the geology; I would be
13 reviewing the geotechnical engineering related to the
14 site characterization, the foundations; Dr. Ostadan
15 would deal with issues of dynamic loadings and dynamic
16 analysis and response. Finished.

17 Q. I didn't want to cut you off. You testified
18 earlier that you did not consult with Dr. White.

19 A. (Dr. Bartlett) No, I did not.

20 Q. To the extent that Dr. White was the person
21 who wrote this Exhibit 3, do you believe it would be
22 useful for you to find out what he meant, for example,
23 here in discussion of layer 1, layer 2?

24 A. (Dr. Bartlett) Yes, that would have been
25 useful.

1 Q. And can I ask you why you didn't speak with
2 him?

3 A. (Dr. Bartlett) I was never given the
4 opportunity as part of the team in the project.

5 Q. Did you seek to contact Dr. White?

6 A. (Dr. Bartlett) No, I did not. He was no
7 longer retained by the state.

8 Q. Explain to me what you mean by you were
9 never given the opportunity.

10 A. (Dr. Bartlett) Well, normally when I would
11 consult on something of this issue in these matters, I
12 would consult with those that would be part of the
13 project team. He was no longer part of the team. I
14 didn't feel it would be appropriate to seek him out once
15 he had been removed from the team.

16 Q. I see. You mentioned a little while ago
17 that your first involvement, or earlier in your
18 involvement with this project that there was a team
19 meeting that you attended.

20 A. (Dr. Bartlett) That's my first recollection
21 of, yes, getting together with the group.

22 Q. What happened at that meeting?

23 A. (Dr. Bartlett) Well, as usual, there were
24 some introductions. There was a fair amount of
25 discussion about the seismic refraction, reflection

1 data. I remember Dr. Allison was there and discussed
2 that to some extent. Myself being new to the team, I
3 didn't take a large part in that, of the conversations
4 during the meeting. Dr. Arabasz was there. I'm sure
5 there was some discussion of the design basis ground
6 motions, how they were being developed, derived. Denise
7 and Connie were there. That's my recollection. It was
8 a year and a half ago, two years ago.

9 Q. Have there been subsequent meetings of that
10 time among the state experts that are working on this
11 Contention L?

12 A. (Dr. Bartlett) From time to time, but
13 usually not quite that extent. That was the first
14 really full panel meeting that I recall.

15 I do recall at that time I think someone
16 else had made the recommendations that we may consider
17 bringing in an expert in soil dynamics at that meeting.

18 Q. I'm getting ahead of the story. I want to
19 pursue that Dr. Ostadan was not part of the team then.

20 A. (Dr. Bartlett) You'll get him later. Fair
21 enough. This was before Dr. Ostadan was part of the
22 team.

23 Q. All right. And you said you have had
24 less --

25 A. (Dr. Bartlett) Yes, not -- not I think the

1 questions that they had.

2 I think one has to also consider depth of
3 investigation. One thing that was not done at this site
4 is the drillings were not done down to bedrock. It's
5 ambiguous how depth -- the depth of bedrock and types of
6 analyses especially involve ground response -- well, at
7 least my frame of reference is the Savannah River. We
8 drilled several hundreds of feet down to bedrock and
9 characterized the soil column all the way from bedrock.
10 That was not done here, so the boreholes were all
11 relatively shallow. We do not have real deep, or at
12 least one or two very deep borings. So that remains an
13 area of uncertainty to me.

14 There's been no -- investigations are
15 usually phased. And in each subsequent phase you have
16 issues that you're trying to resolve and what you're
17 trying to do in those, and I'm not sure I get a sense in
18 reading the documentation why some things were being
19 done and why they were doing additional borings and
20 investigations, other than just to satisfy a few
21 questions from the NRC.

22 Q. With respect to your observation that the
23 borings and the cone penetration tests are often or
24 sometimes too far apart to be able to correlate the
25 data, what is the significance of the fact that you

1 might not be able to correlate the data as you would
2 like to?

3 A. (Dr. Bartlett) Well, we saw yesterday that
4 cone penetrometer data were used to adjust the shear
5 strengths for layer 4, and if you get too far apart
6 between the data which you're trying to adjust, your
7 adjustment factors may be meaningless.

8 Q. You're saying, if I understand you, and
9 correct me if I'm wrong, that to the extent that you
10 want to be able to refer to cone penetration test data,
11 to adjust some of the information that you get from the
12 boring data --

13 MS. CHANCELLOR: Objection. Is this a
14 question?

15 MR. TRAVIESO-DIAZ: Yes. I'm getting there.

16 Q. (By Mr. Travieso-Diaz) You might not be
17 able to do so because the two sets of measurements are
18 too far apart?

19 A. (Dr. Bartlett) Yes, correct. Because
20 there's lateral variability in this direction, and the
21 further you get apart, the less the data are correlated.
22 So you run the risk of essentially developing
23 correlations upon which there are no -- they don't
24 correlate. So in other words, part of your distance
25 that you space boreholes, whether they be CPT or SPT, is

1 fundamentally based on your understanding of how much
2 you think the soils are variable, particularly in the
3 lateral direction.

4 Q. So I take it that to the extent that this
5 presents a problem, it's only if you're trying to
6 correlate for some reason to assess the data. Is that
7 fair?

8 A. (Dr. Bartlett) I may have to think about
9 that. I'll answer this way. Yes, if your main premise
10 or what you're trying to do in an investigation is
11 correlation. To me, it's obvious that they have to be
12 very close or reasonably close. If you're using the two
13 types of data to supplement one another, I can see cases
14 where they would not necessarily have to be in close
15 proximity to each other. However, one then has to go
16 back and consider the density of both types of data,
17 because they are different types of data, and whether
18 you're putting in the appropriate number of borings and
19 sampling to fully characterize the site.

20 Q. How many cone penetration tests in your
21 practice do you typically correlate to a single boring?
22 Is there any ratio or any way you correlated the
23 measurements?

24 A. (Dr. Bartlett) If I'm trying to correlate?

25 Q. Yeah.

1 A. (Dr. Bartlett) So you're asking how many
2 paired boreholes, CPT and boreholes would I do in an
3 investigation to develop correlations?

4 Q. Yes. One to one? One to two? I don't
5 know. I'm trying to get a sense for how you do the
6 correlation.

7 A. (Dr. Bartlett) Well, let's see if this
8 answers your question. If my purpose is correlating
9 data from a borehole, I would always have a CPT adjacent
10 to it.

11 Q. And to the extent that you are trying to
12 correlate cone penetration tests and boreholes,
13 typically how many of those do you do?

14 A. (Dr. Bartlett) It depends on the size of
15 the facility. So there's a density issue now; how many
16 data do I need. And different agencies, whomever you're
17 working for, have different somewhat suggestions. I
18 won't call them requirements. It's usually still left
19 up to the discretion. But they have densities that they
20 suggest to you.

21 Q. Is there any -- talking about agency
22 requirements, is there any NRC guidance or regulations
23 that control the spacing of the placement of boreholes?

24 A. (Dr. Bartlett) Yes, they are.

25 Q. Where would those be?

1 A. (Dr. Bartlett) I believe they are found in
2 Reg Guide 1.132, Appendix C, I believe.

3 Q. Did you review Appendix C or Reg Guide 1.132
4 to determine whether the program that was put in place
5 at PFS comply with the requirements of that appendix?

6 A. (Dr. Bartlett) Yes, I did.

7 Q. And what was your conclusion?

8 A. (Dr. Bartlett) They did not.

9 Q. In which respect?

10 A. (Dr. Bartlett) There were not enough
11 boreholes. May I qualify that?

12 Q. Okay.

13 A. (Dr. Bartlett) For the pad emplacement
14 area. I'm not sure I would make that statement about
15 the canister transfer building right now. I'd have to,
16 again, look at the -- count the borings again in that
17 footprint.

18 Q. So you're not sure?

19 A. (Dr. Bartlett) Right. And the reason I'm
20 not sure is because when we divide -- when we split this
21 project team up to do the review, I really primarily
22 looked at the storage pad -- or emplacement pad area,
23 excuse me, and Dr. Ostadan looked more at the canister
24 transfer building. However, I have looked at the
25 laboratory testing and boreholes from both areas.

1 Q. May I refer to Dr. Ostadan. Don't think I'm
2 forgetting you. In your review of the canister transfer
3 building, did you develop a view as to whether the
4 number of boreholes that were drilled or that were done
5 by PFS complies with Reg Guide 1.132?

6 A. (Dr. Ostadan) I did not specifically review
7 the investigation performed for the canister transfer
8 building to see whether it's in compliance with the NRC
9 guidelines or not.

10 Q. Okay. Let's move to something else.

11 A. (Dr. Bartlett) Sure.

12 Q. I take it, as we discussed before, that one
13 of the purposes of drilling boreholes is to take samples
14 for later testing in the laboratory?

15 A. (Dr. Bartlett) Yes.

16 Q. And I take it that you have in fact gone
17 through the process of first collecting samples and then
18 having tested them or having them tested?

19 A. (Dr. Bartlett) Generally having them
20 tested, because most of my commercial experience we did
21 not have our own on-site laboratories. Those were sent
22 to either others in the firm or laboratories which we
23 were contracted with. But yes, I have taken samples to
24 submit them for laboratory testing.

25 Q. What kinds of tests are typically run with

1 soil samples taken from projects such as the ones you
2 have been involved with?

3 A. (Dr. Bartlett) What types of tests or
4 samples?

5 Q. No. No. What type of tests are conducted
6 in the laboratory with respect to samples taken from
7 borings?

8 A. (Dr. Bartlett) Shear strength tests,
9 consolidation tests, general Atterberg and
10 classification tests. Once in a while permeability
11 testing.

12 Q. Has, to your knowledge, applicant performed
13 tests on samples taken from borings on the PFS site?

14 A. (Dr. Bartlett) Yes, they have.

15 Q. What kind of tests did they run?

16 A. (Dr. Bartlett) Regarding shear strength, to
17 my knowledge, they've performed unconsolidated-
18 undrained, UU tests; consolidated-undrained; direct
19 shear. I believe that's all I recall as far as shear
20 strength testing. Consolidation testing, and the
21 oedometer, o-e-d-o-m-e-t-e-r. And then again typical
22 classification tests that we would do -- moisture
23 contents, Atterberg limits, those type of routine tests.

24 Q. In terms of the kinds of tests that the
25 applicant performed, was there any category of tests

1 that they failed to perform that you wish they had?

2 A. (Dr. Bartlett) Restricting ourselves to
3 laboratory testing, correct?

4 Q. Yes, restricting ourselves to laboratory
5 testing for the moment.

6 A. (Dr. Bartlett) Okay. Yeah, I think a
7 direct simple shear test. Some of that might be useful
8 instead of the direct shear. Also strain controlled
9 triaxial testing, cyclic triaxial testing.

10 Q. Why do you feel that they should have done
11 strain controlled triaxial tests?

12 A. (Dr. Bartlett) We have issues with
13 degradation, degrading of the strength and modulus of
14 some of these soils at the level of strains that we see
15 that have been produced by the earthquake. And really
16 we cannot assess whether those degradations are real or
17 not, because the type of testing they perform doesn't
18 really lead us any. They performed --

19 I'm not sure quite what I said. Can I start
20 again?

21 Q. Sure.

22 A. (Dr. Bartlett) Okay. Let me focus on first
23 the direct simple shear test.

24 Q. Okay.

25 A. (Dr. Bartlett) The direct simple shear test

1 does not allow really any strain concentrations along
2 one predefined plane. So it may give us a better
3 indication of what the shear strength is across the
4 entire sample. The direct shear test which was
5 performed by the applicant tends to concentrate stresses
6 on one predefined failure plane.

7 Now on to the strain controlled cyclic
8 triaxial tests. Those would give us a better idea, or
9 an idea, really, of how the stiffness or modulus and the
10 strength may degrade or behave at the levels of strain
11 that we see from the shake analysis.

12 A. (Dr. Ostadan) May I add to that?

13 Q. Yes, please.

14 A. (Dr. Ostadan) One of the points raised in
15 Contention L was the soil properties used to take into
16 account soil linearity or the so-called soil curves or
17 generic curves. I have not seen in the package, in the
18 calculation any laboratory data that was developed in
19 order to come out with the site specific soil curves.

20 Q. Let me clarify your answer to make sure that
21 you're saying what I understand you to be saying. Are
22 you saying, Dr. Ostadan, that there is no data developed
23 in the laboratory for specific soil properties for the
24 PFS site?

25 A. (Dr. Ostadan) No, I'm not saying that.

1 Q. Or are you restricting yourself to a
2 particular type of soil test?

3 A. (Dr. Ostadan) I'm restricting myself to a
4 particular soil test. You asked -- your question was,
5 what other tests should have been done in the
6 laboratory. And my answer to that, in addition to what
7 Dr. Bartlett said, is that cyclic triaxial tests could
8 have been done to develop site specific soil curves as
9 is stated in the Contention L.

10 Q. Is it your testimony that they did not
11 conduct cyclic triaxial tests?

12 A. (Dr. Ostadan) They did not conduct cyclic
13 triaxial tests to develop soil curves.

14 Q. I need you to explain the second part of the
15 answer. What do you mean by "to develop soil curves"?

16 A. (Dr. Ostadan) Soil curves are used
17 primarily in a ground response analysis, such as those
18 done by the applicant here using computer program Shake,
19 S-h-a-k-e. As shown in the calculation currently, the
20 curves are generic curves, published in the literature.

21 Q. When you say that they should have run
22 cyclic triaxial tests to develop soil curves, what would
23 those curves be? Of what? In other words, how would
24 you be plotting the curves?

25 A. (Dr. Ostadan) The curve have two branches,

1 actually. There are two types of information present in
2 these curves. One is shear modulus of the soil and the
3 function of shear strength, and it's in a linear curve
4 that shows degradation of the stiffness versus the
5 strain.

6 The second piece of the information is the
7 soil material damping as a function of shear strength
8 that generally shows an increase of damping versus
9 strain.

10 Q. And your testimony is that these type of
11 tests for the purpose of developing this type of curves
12 were not done?

13 A. (Dr. Ostadan) Yes.

14 A. (Dr. Bartlett) May I add to my testimony?

15 Q. Please.

16 A. (Dr. Bartlett) One other test that we
17 discussed a little bit yesterday is the types of
18 triaxial testing that were done were all in compression.
19 I believe also in helping to understand maybe the part
20 of the failure surface that we look at when we look at
21 general bearing capacity that's in -- it actually goes
22 into extension. So the triaxial extension test too
23 would appear to be appropriate for parts of that failure
24 surface.

25 Q. So your testimony is that in addition to the

1 triaxial tests that they did in compression --

2 A. (Dr. Bartlett) Right.

3 Q. -- they should have done a similar test that
4 was in extension as opposed to compression?

5 A. (Dr. Bartlett) Correct. And I would also
6 add that we would -- we see a conceptual design of a
7 soil mat that we need to also, instead of seeing
8 compression of that soil cement, we also need to
9 understand its behavior and tension. So we need tensile
10 tests done on the proposed design of this soil cement
11 mat.

12 Q. Let me ask you the following question. The
13 simple shear test that you mentioned before, are these
14 commonly performed in the industry? And we're talking
15 about any of these tests, starting with the simple shear
16 tests, specialized tests.

17 A. (Dr. Bartlett) The direct simple shear
18 test, I'm not sure I could call it specialized, but it
19 may be hard to find from a small commercial geotechnical
20 laboratory. Larger laboratories in a fair amount of
21 universities can perform these type of tests.

22 Q. Have you done any of these yourself in
23 your program?

24 A. (Dr. Bartlett) I have not.

25 Q. How about the triaxial extension tests or

1 presented. I can infer their thicknesses from this and
2 somewhat about significant features that the geologists
3 mapped in their trenches, namely, fractures, in-field
4 fractures. Seems that they were most interested in
5 obtaining the strike and dip or the orientation of
6 those, and then they did a rose diagram to figure out if
7 there was any preferential orientation to this data.
8 That's what I see.

9 Q. Now, let's go back again just so we can move
10 to the bottom line. We were talking about the sentence
11 in Exhibit 3 that said, "Structure specific cross
12 sections and profiles were not prepared utilizing the
13 boring log records." And you said that that is a true
14 statement. And my question to you is, in light of all
15 the information that I just displayed before you, does
16 it matter? Or how does it matter? Is this a
17 significant concern?

18 A. (Dr. Bartlett) When this Contention was
19 written, structure specific cross-sections and profiles
20 were not prepared using the boring logs or from the
21 boring logs that were obtained during the first phase of
22 the investigation. This Geomatrix report postdates
23 that, postdates this statement; and whether
24 structure-specific cross-section profiles were not
25 prepared using the boring logs from the current data as

1 it now exists, including the CPT and the borings done by
2 Geomatrix, the shallow borings we see, I'm going to
3 defer whether we've really met that or not, because
4 again, we're in the realm of geology and that's really
5 outside of my review.

6 Q. Okay. I'm trying to understand, to what
7 extent did you personally regard this statement here in
8 Contention L?

9 A. (Dr. Bartlett) I did not draft this
10 statement.

11 Q. I understand, but it's on the record now.
12 I'm trying to get your interpretation as to how
13 significant you considered this observation to be.

14 MS. CHANCELLOR: Objection. He already said
15 he's deferred to somebody else.

16 MR. TRAVIESO-DIAZ: I'm asking for his
17 opinion if he has one.

18 A. (Dr. Bartlett) I think that along the lines
19 of where the trenches were investigated, these seem to
20 be reasonable and consistent types of data and
21 presentation of them. Whether all borehole data
22 including the geotechnical and geological investigations
23 have been compiled and reconciled in site-specific
24 structural cross-sections, I don't see that all here,
25 but again, I haven't reviewed this report.

1 Q. Well, assuming this statement is still true
2 today, does it concern you? Is it something that causes
3 you concern as to the state of the investigation of the
4 site performed by PFS?

5 A. (Dr. Bartlett) Probably not from a
6 geotechnical perspective, but geologists have other
7 reasons for wanting to know the orientation of these
8 layers, which could infer dips, faults and other things.
9 And so there -- these are not geotechnical
10 cross-sections, they are geological cross-sections. I'm
11 going to defer from trying to really say whether I --
12 what was the question? I'm not sure I'm answering it.

13 Q. Okay. I only want to know, since you are
14 the person who's explaining to us this contention,
15 whether you personally have a concern with this
16 particular observation made in this paragraph. That's
17 all I want to know.

18 A. (Dr. Bartlett) I personally don't have a
19 concern. Others may on the team.

20 Q. All right. And others will be who?

21 A. (Dr. Bartlett) Barry Solomon, that prepared
22 part of this document.

23 Q. All right. Let's move to the next sentence
24 on that page. It says, "Only a generalization of the
25 boring logs were used to establish the site geologic

1 characterization." Do you believe that statement to be
2 correct today?

3 A. (Dr. Bartlett) I think what it means, a
4 generalization of the boring logs was used to establish
5 the site geological characterization. Again, since the
6 words "site geological characterization," I'm going to
7 defer.

8 Q. Do you know whether it was true at the time
9 it was written, was accurate at the time it was written?

10 MS. CHANCELLOR: Objection. You're asking
11 him to speculate about --

12 MR. TRAVIESO-DIAZ: If he doesn't know, he
13 can say easily, "I don't know."

14 A. (Dr. Bartlett) I don't know if it was true.
15 I don't know if --

16 Q. Do you know if it's true today?

17 A. (Dr. Bartlett) I do not know if it's true
18 today. Again, the answer I think would be in the
19 Geomatrix report to that question, and I have not
20 reviewed it.

21 Q. Would you believe that these two statements
22 would relate more as you're talking about the geology of
23 the site as opposed to --

24 A. (Dr. Bartlett) Geotechnical.

25 Q. -- geotechnical issues?

1 A. (Dr. Bartlett) It seems to me that these
2 are more geological, not geotechnical issues, yes.

3 Q. Do you understand that the scope of Issue 3
4 to be addressing geotechnical issues?

5 A. (Dr. Bartlett) Could you repeat the
6 question?

7 MR. TRAVIESO-DIAZ: Could you read it back?

8 (The pending question was read.)

9 A. (Dr. Bartlett) Issue 3?

10 Q. Yes, what we have begun to look at,
11 discussion on page 83 of Exhibit 3.

12 A. (Dr. Bartlett) I don't see, at least in the
13 description of 3, geological or geotechnical used.

14 Q. All right.

15 A. (Dr. Bartlett) But in 3a, where they start
16 referring to the sections, the words "geological" are
17 used.

18 Q. All right.

19 A. (Dr. Bartlett) That's what I see.

20 Q. Let's go to -- I'm sorry. I didn't mean to
21 interrupt you. Let's go to the next sentence of this
22 paragraph that starts on the bottom of page 83, goes up
23 to the top of page 84.

24 A. (Dr. Bartlett) Fair enough.

25 Q. It says, "It is not possible to ascertain

1 whether or not all of the data collected, particularly
2 data on zones of soft/loose conditions encountered in
3 the explorations, have been used to characterize
4 subsurface conditions and to establish design values."

5 Let me stop there for a moment. Is that
6 statement that I just read you, this portion of the
7 sentence, true today?

8 A. (Dr. Bartlett) I have a hard time
9 interpreting whether the sentence is true without
10 completing the sentence.

11 Q. The reason I stopped is because I believe
12 that what follows, you already told us that was
13 resolved. The sentence that starts after the "and," or
14 the clause that starts after the "and." So that's why I
15 stopped. You can read the whole sentence if you will.

16 A. (Dr. Bartlett) Fair enough. If I could do
17 that. I forgot that part, so...

18 Q. I'm sorry. That's where I stopped.

19 A. (Dr. Bartlett) I do not agree with your
20 interpretation that everything that -- in the second
21 half of that sentence that we have agreed that we are
22 not concerned about.

23 Q. Okay. In what respect do you believe that
24 it is not possible to ascertain?

25 A. (Dr. Bartlett) My characterization this

1 morning, as I recall it, and I underlined this in
2 pencil, so that's why I am going back to that, is that
3 we -- it talks about uncertainties with the estimation
4 of the thickness. And I agreed that I -- from these
5 cone penetrometer data that there's not a great
6 uncertainty in the estimation of thickness. But this
7 sentence also talks about "and to establish design
8 values." And so inasmuch as we're talking only about
9 estimation of thicknesses of design value, I do not see
10 any significant issues.

11 MR. TRAVIESO-DIAZ: Could you read the
12 answer back again? I don't think I followed it
13 entirely.

14 (The record was read.)

15 Q. (By Mr. Travieso-Diaz) Are you saying that
16 you still believe that it is not possible to ascertain
17 whether or not all data collected has been used to
18 establish design values? Is that the part you have a
19 problem with?

20 A. (Dr. Bartlett) I'm sorry.

21 MR. TRAVIESO-DIAZ: I'm sorry. I think I
22 got it right, but could you read it?

23 (The pending question was read.)

24 Q. (By Mr. Travieso-Diaz) Can I rephrase the
25 question?

1 A. (Dr. Bartlett) Yes, please. I'm having a
2 hard time with it.

3 Q. If I understood your last answer, you said
4 that to the extent that we're talking about the
5 characterization of subsurface conditions, you don't
6 have a problem that all data collected have been used to
7 do that. But you are restricting yourself to that, and
8 I presume that you meant that with respect to the use of
9 those data to establish design values, you may still
10 have a problem or a concern. Is that fair?

11 A. (Dr. Bartlett) What I am stating is that
12 thickness is a design value. We use it in calculations
13 of settlements and other things. And inasmuch as
14 thickness is a design value, the data that we have seem
15 to be sufficient to estimate the thickness of the
16 sediments, and I think I restricted that this morning in
17 the upper 30 to 35 feet where the cone penetrometer data
18 were collected. There are some uncertainties of
19 thicknesses of layers deeper in the profile.

20 Q. I think I understand now. Thank you very
21 much.

22 Let's go to -- would you like to take a
23 break now?

24 A. (Dr. Bartlett) Your call. Yeah, it might
25 be good for just a few minutes.

1 (Recess from 4:31 to 4:42 p.m.)

2 Q. (By Mr. Travieso-Diaz) Before the break you
3 mentioned something, I don't recall the precise words,
4 to the effect that the boundary, the actual boundary
5 between the layers was of some significance or some
6 interest?

7 A. (Dr. Bartlett) The thickness.

8 Q. Of the layers?

9 A. (Dr. Bartlett) Of the layers is a design
10 value, because we have to use it in settlement
11 calculations. We're also inferring how continuous in
12 the vertical direction might be properties because those
13 layers. So it is a design value, at least in the upper
14 profile where the cone penetrometer's been taken. From
15 a geotechnical viewpoint, the estimation of thickness
16 throughout this pad emplacement area and the canister
17 transfer building do not seem to be significant issues,
18 but only with regard to the thickness.

19 Q. All right. Let me show you another exhibit
20 here.

21 (Exhibit 56 marked.)

22 I'm showing you what has been marked as
23 Exhibit 56.

24 A. (Dr. Bartlett) Correct.

25 Q. And I will identify it for the record as

1 being Section 2.6.1.12.1 of the SAR, entitled "Stability
2 and Settlement Analyses--Cask Storage Pads." This
3 section -- this exhibit goes from pages 2.6-46 to 2.6-54
4 of the SAR. And for the moment I'm going to ask you to
5 look at page 2.6-49 and to the last paragraph on that
6 page. Do you see that paragraph?

7 A. (Dr. Bartlett) Beginning with "analyses"?

8 Q. Exactly, yes. You have that.

9 A. (Dr. Bartlett) Yes.

10 Q. As I read this paragraph, it appears to say
11 that in performing bearing capacity analysis, the
12 applicant assumed that the top 30 feet of subsurface
13 soil was uniform, and assigned to that layer the minimal
14 value of strength measured in the tests that were taken
15 on depths -- that were performed on samples obtained
16 from depths of approximately 10 to 12 feet. Do you see
17 that?

18 A. (Dr. Bartlett) Yes, the UU test. I see
19 that.

20 Q. Correct. Is it your understanding that in
21 fact based on this sentence and of what Mr. Trudeau
22 testified yesterday, that that is what the applicant
23 did?

24 A. (Dr. Bartlett) They used a minimum value of
25 the UU test with an undrained shear strength of 2.2 ksf.

1 That's the best of my recollection. We can review the
2 calculation, but I don't think it's necessary.

3 Q. Assuming that in fact that is what they did,
4 would any concerns as to whether the boundary between
5 the various layers that are comprised in the upper 30
6 feet have any significance, at least insofar as this
7 calculation is concerned?

8 A. (Dr. Bartlett) I don't understand the
9 question.

10 Q. All right. This is what I understand
11 applicant did. They measured strength in the layer from
12 locations of depths of approximately 10 to 12 feet.

13 A. (Dr. Bartlett) Correct.

14 Q. And they selected the minimum value of
15 strength that was shown by those tests.

16 A. (Dr. Bartlett) Correct.

17 Q. It's reported here as 2.2 thousand pounds
18 per square feet.

19 A. (Dr. Bartlett) Correct.

20 Q. And they used that as the presumed strength
21 of the entire top 30 feet of subsoil. Is that what they
22 did?

23 A. (Dr. Bartlett) That's apparently what they
24 did.

25 Q. All right. And assuming that's what they

1 did, would that choice of design parameters resolve or
2 address any concerns there might be with respect to what
3 the thickness or the location or the layers that are
4 comprised in the upper 30 feet would be?

5 Do you understand the question?

6 A. (Dr. Bartlett) No.

7 Q. Okay. Let me ask the question differently.
8 Assuming that they picked the lowest value of strength
9 that was available and what was perceived as being the
10 least strong layer --

11 A. (Dr. Bartlett) Okay.

12 Q. -- okay? And they used that as their design
13 value of strength in their analysis of bearing capacity.

14 A. (Dr. Bartlett) Okay.

15 Q. Assuming they did that.

16 A. (Dr. Bartlett) Uh-huh.

17 Q. Would that choice, that decision, resolve
18 any concerns there might be, at least with respect to
19 that calculation, as to what the relative locations or
20 the various layers comprised the 30 feet would be? Do
21 you care whether one layer is five feet or six feet or
22 seven feet if you're going to take the lowest value and
23 use it for all three?

24 A. (Dr. Bartlett) Let me interpret what I read
25 here.

1 Q. Okay.

2 A. (Dr. Bartlett) That a sample was taken
3 approximately 10 to 12 feet, presumably in layer 2. We
4 must be careful when we look at that 10- to 12-foot
5 depth to make sure that that was layer 2. Because it's
6 my recollection layer 2 can sometimes end as shallow as
7 eight feet. So there's a little bit of uncertainty of
8 whether this exactly came from layer 2. So we first
9 need to ascertain that.

10 Then it's the minimum value coming from a
11 set of UU tests where the state has always contended
12 that the quantity and number of triaxial testing done in
13 this area has been insufficient for a design facility of
14 this size. I cannot tell whether it is the minimum
15 value in layer 2. I have insufficient data to determine
16 whether it's the minimum, maximum, mean, or if it even
17 is actually from layer 2.

18 Q. All right. So -- and this becomes a
19 hypothetical question because you don't have the answers
20 to all these items that you said. But assuming
21 hypothetically that the lowest value that was in fact
22 measured in this upper 30 feet corresponded to the
23 measurements of 10 to 12 feet and was this value 2.2,
24 with those assumptions, assuming the things that you
25 don't have to assume because you don't know --

1 MS. CHANCELLOR: I'm going to object. This
2 is going to call for lots of speculation.

3 MR. TRAVIESO-DIAZ: Well, I would ask him --
4 I would like him to answer if he can.

5 Q. (By Mr. Travieso-Diaz) Assuming -- with
6 those assumptions, would that design choice obviate the
7 concern that you may have defined your layers not
8 completely accurate?

9 A. (Dr. Bartlett) No. Because we discussed
10 yesterday that even if we assume that the 2.2 ksf
11 represents the minimum value for this layer and that we
12 assume that the minimum is of layer 2, we talked about
13 yesterday that there are still free field ground motions
14 that have to be resisted by this particular structure
15 and that some of this 2.2 ksf capacity will not be
16 available, the full capacity will not be able to resist
17 the motions of the structure. And we still have issues
18 with this value even at 2.2 ksf.

19 Q. All right. Okay.

20 A. (Dr. Bartlett) Do you want to add to that,
21 Dr. Ostadan?

22 A. (Dr. Ostadan) Yes. I think -- just a
23 reminder, you discussed anisotropy and some cone
24 penetrometer testing, and whether the shear strength
25 under extension would be different or not.

1 A. (Dr. Bartlett) Yes, I remember now. Also
2 an additional issue is the types of testing done were
3 triaxial compression, and we've talked this morning and
4 somewhat yesterday in our line of questioning about the
5 need to consider anisotropy and that this 2.2 ksf may
6 not represent the average shear strength mobilized along
7 the failure plane.

8 Q. All right. Let's move to the first full
9 paragraph -- first sentence in the first full paragraph
10 of page 84 of Exhibit 3.

11 A. (Dr. Bartlett) Excuse me. Did we finish
12 our discussion of the last sentence on 83? I don't
13 recall.

14 Q. I believe so, because you talked about the
15 first half of the sentence, and you have told me earlier
16 in the day that the second half, having estimated the
17 thickness, was no longer a concern.

18 A. (Dr. Bartlett) Yes. And restricted it to
19 thickness, yes.

20 Q. So that's why I believe we have finished
21 that section. So let's just move to the next one that
22 says that -- I'm going to paraphrase it slightly -- that
23 the SAR section 2.6 defining geologic features is not
24 acceptable because the discussions, maps, profiles of
25 the site stratigraphy, structural geology, geologic

1 history, and engineering geology are not complete and
2 are not supported by investigations sufficiently
3 detailed to obtain an unambiguous representation of the
4 site geology.

5 Now, do you believe that sentence that I
6 read you to be correct today?

7 A. (Dr. Bartlett) That's beyond my expertise
8 and scope of review.

9 Q. Based on your expertise, is there any
10 portion of that sentence that you believe to be correct
11 today?

12 MS. CHANCELLOR: Objection. He already
13 testified it's beyond his scope.

14 Q. From where you sit as the designated expert
15 on this Issue 3, would that, the matters raised in that
16 sentence, if true, be of concern to you?

17 A. (Dr. Bartlett) If they were true, they
18 would be a concern to me.

19 Q. How would they be a concern to you?

20 A. (Dr. Bartlett) One must understand the
21 geology of a site in performing the interpretation of
22 what has occurred and the geological processes that have
23 acted upon this site.

24 Q. All right. And you don't know in fact
25 whether this assertion is still true. Is that correct?

1 A. (Dr. Bartlett) Right.

2 Q. All right. Now, the next sentence says,
3 "The maps do not provide the requisite detail to
4 evaluate the assumed geologic conditions stated in the
5 text." First of all, can you help me, tell me what maps
6 are being described here?

7 A. (Dr. Bartlett) Well, again, with using the
8 adjective "geologic," I assume it would be referring to
9 geologic maps.

10 Q. What would be -- what would geologic maps
11 be?

12 A. (Dr. Bartlett) Mapping of the surficial
13 geologic units.

14 Q. And do you know the extent to which those
15 maps have been prepared since SAR -- since this
16 contention was written?

17 A. (Dr. Bartlett) I have not reviewed those
18 maps.

19 Q. All right. So you have no knowledge as to
20 this particular sentence?

21 A. (Dr. Bartlett) That's correct.

22 Q. Assuming this sentence was correct, would it
23 present a concern to you?

24 A. (Dr. Bartlett) Geologic maps can be used to
25 interpret features, for example, faults or surficial

1 geological features that could have implications and
2 interest to the past history and potential future
3 history of this site.

4 Q. Now, I'm going to ask you to read the next
5 two sentences together, because I believe that -- and
6 correct me, but I believe you need to read them
7 together. The first sentence says, "The maps do not
8 provide the requisite detail to evaluate the assumed
9 geological conditions stated in the text." And then the
10 next sentence says, "For example, only 25 borings were
11 taken across the site, and from this a single
12 generalized geologic profile in an obtuse angle across
13 the canister fuel storage facility is presented." And
14 the citation is given to SAR Figure 2.6-5.

15 A. (Dr. Bartlett) Correct.

16 Q. You see that?

17 A. (Dr. Bartlett) Yes, I do.

18 Q. Here's my problem.

19 A. (Dr. Bartlett) I see your problem.

20 Q. SAR Figure 2.6-5 I do not believe is a
21 geologic map, is it?

22 A. (Dr. Bartlett) It's probably a profile, I
23 would assume.

24 Q. In fact, let's just not assume. Let's take
25 a look at -- never assume when you can prove. Let's

1 take a look at Exhibit 51, and let's take a look at
2 Figure 2.6-5, which is the third figure on the page.

3 A. (Dr. Bartlett) I see it.

4 Q. Okay. Does that look like a geologic map to
5 you?

6 A. (Dr. Bartlett) No, that's a geotechnical
7 cross-section.

8 Q. Right. And in fact, if now we look at the
9 same Figure 2.6-5 as it sits today, it's 17 maps; is
10 that correct? Or 14 and three maps.

11 A. (Dr. Bartlett) What I sense is happening
12 here in this is that the geologist reviewed the original
13 SAR and did not find the data that they needed to make
14 their geological interpretations off of what is truly a
15 geotechnical profile.

16 Q. All right. But what my concern is, are we
17 talking here about a geological concern or a
18 geotechnical concern? To the extent that he's talking
19 about SAR Figure 2.6-5, that would indicate to me that
20 he's talking about geotechnical, not a geological
21 concern.

22 A. (Dr. Bartlett) And again, it may have been
23 the only profile presented in the original SAR, and so
24 it was perceived as both a geotechnical and a geological
25 cross-section because it did show some type of layering.

1 Q. All right. When it says here that "a single
2 generalized geologic profile in an obtuse angle across
3 the canister fuel storage facility is presented," can
4 you go back again -- I'm sorry to keep going back to it,
5 but let's go back again to that Figure 2.6-5.

6 A. (Dr. Bartlett) Sure.

7 Q. It's defined as Foundation Profile A-A'
8 Looking Northeast, and if you will correlate for me
9 perhaps with Figure 2.6-2 from the same exhibit.

10 A. (Dr. Bartlett) I see it, okay. The
11 cross-sectional line, I see it.

12 Q. All right. Is the line A-A' on 2.6-2 at an
13 obtuse angle? Is that what he's talking about?

14 A. (Dr. Bartlett) I believe so. On an angle
15 that's not perpendicular or parallel to the main -- to
16 the building.

17 Q. Assuming that that's what he's talking
18 about, that he's concerned there's only one of these
19 lines, isn't it true that you now have, just for the pad
20 emplacement area, 14, and there are two diagonal cuts
21 and like half of those go east/west and half of those go
22 north/south?

23 A. (Dr. Bartlett) Correct. Those are
24 geotechnical cross-sections.

25 Q. Well, what I'm trying to understand, and

1 maybe you can help me, whether this concern now is still
2 viable in light of all the additional information that
3 we have.

4 A. (Dr. Bartlett) This, by using the term
5 "generalized geological profile," to a geotechnical
6 profile.

7 Q. Okay. If the wording of this particular
8 sentence was changed from geologic to geotechnical
9 profile, would you believe it's accurate today?

10 A. (Dr. Bartlett) In the extent that we've
11 discussed our feelings of adequacy and inadequacy of the
12 geotechnical profiles in this area, which we've had
13 conversations, we've discussed those. Whether those
14 same cross-sections meet the needs for a geological
15 interpretation, I will not interpret that.

16 Q. From your standpoint, would those be
17 sufficient?

18 A. (Dr. Bartlett) They may not be. They're
19 geotechnical data, primarily, not geological data.

20 Q. But from a geotechnical standpoint, would
21 they be sufficient?

22 A. (Dr. Bartlett) The cross-sections of the
23 test?

24 Q. Yeah.

25 A. (Dr. Bartlett) We've discussed about their

1 adequacy, about delineating the stratigraphy in the
2 upper five layers.

3 Q. Right, thirty feet.

4 A. (Dr. Bartlett) We've discussed some
5 inadequacies we see even in the geotechnical perspective
6 with depth.

7 Q. Below the top 30 feet?

8 A. (Dr. Bartlett) Yes, below the cone
9 penetrometer data, CPT data.

10 Q. All right. And let's move on to the next
11 sentence, that says, and I read, "The geologic profile
12 cannot be correlated with surface topography, geological
13 deposition soil characteristics, or seismic profiling
14 completed for the site." Do you know whether that is an
15 accurate statement today?

16 A. (Dr. Bartlett) Again, it uses the word
17 "geological profile"; and inasmuch as I haven't really
18 reviewed the main geological report for this site, which
19 is the Geomatrix report, I defer from really answering
20 any of those.

21 Q. And again, as you sit here today, would you
22 consider this to be a concern to you?

23 A. (Dr. Bartlett) If one cannot correlate
24 surface topography, geological deposition, soil
25 characteristics, and deeper seismic profiling for the

1 site, it would be difficult to develop cross-sections
2 that would show significant geological features, and
3 those missing details could be important to this site.

4 Q. Okay. But to you is this a concern?

5 A. (Dr. Bartlett) From a geotechnical
6 perspective?

7 Q. Yes.

8 A. (Dr. Bartlett) I'm not understanding that
9 question. This is discussing geological data.

10 Q. Correct. I understand that you're not
11 testifying as to what a geologist's concern might be
12 with this statement. But as a geotechnical expert,
13 would this statement in itself pose a concern to you?

14 A. (Dr. Bartlett) Yes. It might infer also,
15 particularly with a couple aspects regarding seismic
16 profiling, we also need some of those same types of data
17 to develop shear wave velocity models. And so if those
18 were incomplete, we would have difficulty also
19 completing our analyses and characterizations.

20 It mentions soil characteristics. And even
21 though -- if those soil characteristics are
22 geotechnical, then I am concerned that they're -- that
23 we need to better quantify the soil characteristics.

24 Q. Well, you would not turn to the geological
25 profile to do that, would you?

1 A. (Dr. Bartlett) You bet I would.

2 Q. I thought you would be looking at the
3 geotechnical profiles that we were looking at before.

4 A. (Dr. Bartlett) I'm also trained as a
5 geologist, and I always look at a geological profile
6 before I start my geotechnical investigations.

7 Q. Oh, so you have expertise in geology?

8 A. (Dr. Bartlett) I have a degree in geology.

9 Q. I see.

10 A. (Dr. Bartlett) But I am not the state's
11 expert on that Geomatrix report.

12 Q. So your deferring on geology questions is
13 not based on lack of knowledge, but it not your assumed
14 role in this --

15 A. (Dr. Bartlett) I've practice as a
16 geotechnical engineer for most of my profession. My
17 geological skills are still there, but a little bit
18 distant.

19 Q. Maybe you can help me, then, on the next
20 sentence that says, "Details missing include the
21 interrelationship of the subsurface conditions with the
22 geologic history of the site." Would you just translate
23 that for me and tell me what it means?

24 A. (Dr. Bartlett) I think what this is trying
25 to do is establish the interrelationship of the

1 subsurface conditions and the profiles or cross-sections
2 we talked about with the geological history: what are
3 the geological origins of those units, what are their
4 ages, how were they deposited, what are their
5 characteristics from a geological perspective.

6 Q. To ask the question differently, would this
7 mean a correlation with a particular subsoil level and
8 the time in geological history in which that level was
9 deposited?

10 A. (Dr. Bartlett) That's part of it, but it
11 means more than that.

12 Q. What else does it mean?

13 A. (Dr. Bartlett) Could mean its physical
14 characteristics. Could mean any anomalies or
15 differences or subtle difference in this layering.
16 Could mean also -- since it's a general term, subsurface
17 conditions, it could mean faulting and fracturing or
18 issues related to potential instability that's been
19 recorded in the geological history of these sediments.
20 It means many things.

21 Q. All right. Let's go back and take a look at
22 Exhibit 50. I'm sorry, I didn't mean to cut you off.
23 Are you finished?

24 A. (Dr. Bartlett) No, no. That's enough.

25 Q. Let's take a look at Exhibit 55. Black and

1 The applicant disagrees with the state with
2 respect to whether foundation loading is contained in
3 Basis 3, and we have agreed to disagree.

4 Is that a correct statement?

5 MR. TRAVIESO-DIAZ: That's a fair, correct
6 statement. However, I would like you to add also that
7 you do not anticipate that Dr. Ostadan will be
8 testifying with respect to Basis 4.

9 MS. CHANCELLOR: Oh, that's correct. I'm
10 sorry. I thought that I did that. No, Dr. Ostadan will
11 not be testifying with respect to the -- the caption to
12 Basis 4 is "Soil stability and foundation loading."
13 Dr. Ostadan will be testifying with respect to
14 foundation loading, but the text of Basis 4 does not
15 address foundation loading.

16 MR. TRAVIESO-DIAZ: Will you stipulate that
17 he will not present testimony on Basis 4?

18 MS. CHANCELLOR: Provided that foundation
19 loading, you don't say that foundation loading is
20 precluded because it's in the caption of Basis 4.

21 MR. TRAVIESO-DIAZ: I will stipulate that to
22 the extent there is any foundation loading issue
23 admitted into this, the litigation of this contention
24 will be part of Basis 3.

25 MS. CHANCELLOR: So stipulated.

1 sentence, which is the last complete sentence on page 88
2 that indicates, "How samples are prepared and tests
3 performed can significantly impact test results and
4 their interpretation, potentially making the test
5 results and interpretations meaningless." I take this
6 sentence just to be caution as to what may happen if you
7 don't do --

8 A. The right type of testing to solve the type
9 of issues that are at hand, or if your type of testing
10 program does not consider the type of loading that's
11 going to be imparted to the soils. You can perform a
12 test, but if it is outside the bounds of the loading
13 that's anticipated, then the test results are
14 meaningless. Well, I won't say meaningless to you, but
15 they're not as valuable.

16 Q. Would it be fair to say that this sentence
17 is a general description of why it's important to do the
18 sample testing the right way as opposed to bringing up
19 particular problems? In other words, is this a general
20 sentence without any specific issues being raised by it?

21 A. Right. I think it's a general sentence, and
22 I think through the last three days of testimony we've
23 already discussed specific issues and how to make the
24 testing more meaningful.

25 MS. CHANDLER: Could we just go off the