

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED 12/12/00

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
PRIVATE FUEL STORAGE, LLC)	Docket No. 72-22-ISFSI
)	
(Independent Spent)	
Fuel Storage Installation))	

NRC STAFF'S OBJECTIONS AND RESPONSES
TO THE "STATE OF UTAH'S ELEVENTH SET OF
DISCOVERY REQUESTS DIRECTED TO THE NRC STAFF"

INTRODUCTION

On December 1, 2000, the State of Utah ("State") filed the "State of Utah's Eleventh Set of Discovery Requests Directed to the NRC Staff" ("Eleventh Request"), in this proceeding on the application for an Independent Spent Fuel Storage Installation ("ISFSI") filed by Private Fuel Storage, L.L.C. ("PFS" or "Applicant"). In its Request, the State filed 69 requests for admission and four interrogatories, purportedly concerning Contention Utah L (geotechnical issues). The NRC Staff ("Staff") hereby files its objections and responses to the State's Eleventh Request, as follows.

GENERAL OBJECTIONS

Objection 1. The Staff objects to each of the State's discovery requests, in that the State has not complied with the Commission's regulations that govern discovery from the Staff. In this regard, it is well established that discovery against the Staff rests on a different footing than discovery in general. *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-634, 13 NRC 96, 97-98 (1981). While discovery from parties in an NRC adjudicatory proceeding is generally governed by the provisions of 10 C.F.R. § 2.740 *et seq.*, interrogatory and document discovery

against the Staff is governed by the provisions of 10 C.F.R. §§ 2.720(h)(ii)-(iii), 2.744 and 2.790.¹ These regulations establish certain limits to the Staff's obligation to respond to requests for discovery.

In particular, with regard to interrogatories, the Commission's rules provide:

[A] party may file with the presiding officer written interrogatories to be answered by NRC personnel with knowledge of the facts designated by the Executive Director for Operations. Upon a finding by the presiding officer that answers to the interrogatories are necessary to a proper decision in the proceeding and that answers to the interrogatories are not reasonably obtainable from any other source, the presiding officer may require that the staff answer the interrogatories.

10 C.F.R. § 2.720(h)(2)(ii). With regard to requests for the production of documents, the Commission's rules similarly provide:

(a) A request for the production of an NRC record or document not available pursuant to 10 C.F.R. § 2.790 . . . shall set forth the records or documents requested, either by individual item or by category, and shall describe each item or category with reasonable particularity and shall state why that record or document is relevant to the proceeding.

(b) If the Executive Director for Operations objects to producing a requested record or document on the ground that (1) it is not relevant or (2) it is exempted from disclosure under § 2.790 and the disclosure is not necessary to a proper decision in the proceeding or the document or the information therein is reasonably obtainable from another source, he shall so advise the requesting party.

10 C.F.R. § 2.744(b). The rule further provides for application by the requesting party to the presiding officer to compel production of the documents, where the movant shows that the document is relevant to the issues in the proceeding; and the document is not exempt from disclosure under 10 C.F.R. § 2.790 -- or, if exempt, that the document or information is necessary

¹ See also 10 C.F.R. §§ 2.740(f)(3), 2.740a(j), 2.740b(a), and 2.741(e) (excluding discovery from the Staff from the general provisions of those regulations).

to a proper decision in the proceeding and is not reasonably obtainable from another source. 10 C.F.R. § 2.744(c)-(d).²

Moreover, it is an adequate response to *any* discovery request for a party to state that the information or document requested is available in the public domain and to provide information to locate the material requested. 10 C.F.R. § 2.740(b)(1); *accord*, *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), CLI-79-8, 10 NRC 141, 147-148 (1979).

Here, the State has not complied with any of the Commission's requirements governing discovery against the Staff. First, the State has not indicated that the requested information and documents are not available in the public domain. Indeed, much of the information and documents requested by the State are available to the public at the Commission's Public Document Room (PDR) or the former Local PDR (LPDR) in Salt Lake City -- or from the Applicant, inasmuch as much of it concerns the Applicant's analyses.³ The State has not indicated that the requested information and documents are exempt from disclosure under 10 C.F.R. § 2.790 or that it can not obtain the documents from public sources. Similarly, to the extent that any documents may be exempt from disclosure, the State has not explained why any such exempt items are necessary to a proper decision in the proceeding.

Objection 2. The Staff objects to each of the State's discovery requests, insofar as they request information that is not relevant to the issues in this proceeding and/or that exceeds the scope of admitted contentions in this proceeding. In particular, Contention Utah L, as filed by the

² Additionally, 10 C.F.R. § 2.744(e) provides a framework for limited disclosure (under a protective order) of documents exempt from disclosure under 10 C.F.R. § 2.790, upon a finding by the presiding officer that such disclosure is necessary to a proper decision in the proceeding. *Cf.* 10 C.F.R. § 2.740(c).

³ To the extent that the instant discovery requests seek information that has been withheld from public disclosure as PFS' proprietary information, the State has been afforded access to that material by the Applicant under a confidentiality agreement, and the State has not shown why it could not obtain the requested information from the Applicant.

State and admitted by the Board, asserts that PFS has failed to adequately characterize the soil and seismic properties of the proposed PFS site. Nowhere in this contention did the State raise an issue concerning the seismic design of the facility, or the Applicant's cask/pad sliding analysis. Yet, despite the clear language and scope of the contention, the State has chosen to present, at the close of the discovery period on safety contentions, numerous discovery requests concerning sliding and other structural analysis and design issues that the State had never raised in this contention. Not only were these concerns never raised in Contention Utah L, many of them were raised in other contentions that are no longer at issue in the proceeding.⁴ Accordingly, it is altogether improper for the State to seek discovery on these issues at this time, under the rubric of this site characterization contention.⁵

Objection 3. The Staff objects to the State's discovery requests insofar as they relate to matters which are outside the jurisdiction of the NRC and/or are beyond the proper scope of this proceeding.

Objection 4. The Staff objects to each of the State's discovery requests, insofar as they request information or documents from the "Nuclear Regulatory Commission," "NRC," or other persons who are not NRC Staff members or consultants in this proceeding. *See, e.g.,* Definition A (Request at 4). The NRC and persons other than Staff members (*e.g.,* Commissioners,

⁴ *See* (1) *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 206-09 (1998), dismissing Contention Utah EE ("Failure to Demonstrate [HI-STORM] Cask-Pad Stability During Seismic Event"); and (2) "Order (Revising Scheduling Order and Granting Motion to Withdraw)," dated October 6, 2000, slip op. at 2 (granting State of Utah's September 14, 2000, request to withdraw Contention Utah GG, "Failure to Demonstrate Cask-Pad Stability During Seismic Event for TranStor Casks").

⁵ Significantly, the State does not assert that each of its requests relate to Contention Utah L; rather, the State asserts that "[t]his set of discovery against the Staff relates to section 2.1.6, Geology and Seismology of NRC Staff's recently issued Safety Evaluation Report ('SER') released to the public in October 2000. . . ." (Eleventh Request at 7-8).

Commissioners' Assistants, Licensing Board members, ACRS members, etc.) are not parties to this proceeding and are not properly subject to the State's requests for discovery herein.

Objection 5. The Staff objects to each of the State's discovery requests, insofar as they seek to impose an obligation to respond that is different from or greater than the obligations imposed by Commission requirements in 10 C.F.R. Part 2. *See, e.g.*, Instruction B, "Lack of Information (Request at 2).

Objection 6. The Staff objects to each of the State's discovery requests, insofar as they may request information or documents protected under the attorney-client privilege, the doctrines governing the disclosure of attorney work product and trial preparation materials, and/or any other privilege or exemption that warrants or permits the non-disclosure of documents under the Freedom of Information Act, as set forth in 10 C.F.R. § 2.790(a). Notwithstanding this objection, the Staff will prepare a privilege log to identify any documents that are sought to be withheld from discovery as privileged, and will produce that log to the State.

Objection 7. The Staff objects to each of the State's discovery requests, insofar as they pertain to the Applicant's seismic exemption request or its probabilistic seismic hazard analysis ("PSHA"), inasmuch as those issues are outside the scope of Contention Utah L. *See, e.g.*, "Memorandum and Order (Ruling on Discovery Requests Relating to Contention Utah L)," dated June 12, 2000, slip op. at 2.

RESPONSES TO DISCOVERY REQUESTS

Notwithstanding the above objections to the State's Request, and without waiving these objections or its right to interpose these or other objections in the future, the Staff hereby voluntarily provides the following responses to the State's Request.⁶

⁶ The Staff's responses to the State's Eleventh Requests are supported by the Affidavit of Dr. Goodluck I. Ofoegbu, attached hereto. Objections to the State's Eleventh Request are stated by the undersigned Staff Counsel.

CONTENTION UTAH L - Geotechnical
A. Requests for Admissions - Contention Utah L.

REQUEST FOR ADMISSION NO. 1. SAR (Rev. 8) at 2.6-22 (*emphasis added*) states:

Based on the borings and laboratory test data, the generalized subsurface profile consists of three layers. The uppermost layer extends to a depth of between 25 and 35 ft below existing grade and is mainly interlayered silt, silty clay, and clayey silt. Standard Penetration (SPT) N-values for this layer are mostly between 8 and 20 blows per ft, with an average of 16 blows per ft and a median value of 14 blows per ft, indicating that these are “stiff” or “medium dense” materials.

Do you admit that the above statement in the SAR does not support giving the uppermost layer a classification of “stiff” or “medium dense.” See *also* SER at 2-46.

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, and impermissibly confusing and compound, in that it fails to indicate which of the several, lengthy quoted statements are the subject of this request. Notwithstanding this objection, however, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 2. Do you admit that engineering properties (*e.g.*, soil unit weights, shear strengths, consolidation properties) were not determined for each of the soil layers described in SAR Figure 2.6-5 (Rev. 8)? See *also* SER at 2-46 to -47.

STAFF RESPONSE. No.

REQUEST FOR ADMISSION NO. 3. Do you admit that averaging of soil properties was used in the engineering analyses for the soil profile in the upper 25 to 30 feet?

STAFF RESPONSE. No.

REQUEST FOR ADMISSION NO. 4. Do you admit that in the SER the Staff relies on averaging the engineering properties in the upper soil profile?

STAFF RESPONSE. No.

REQUEST FOR ADMISSION NO. 5. Do you admit that the upper five soil layers shown in SAR Fig. 2.6-5 contain dissimilar soil properties?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that (a) it fails to identify which of the many possible “soil properties” are the subject of this request, and (b) SAR Figure 2.6-5 consists of numerous sheets, which differ from each other in their identification of the various soil layers at the site.

REQUEST FOR ADMISSION NO. 6. Do you admit there is no justification in averaging the engineering properties of the upper five layers shown in SAR Fig. 2.6-5?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that (a) it fails to identify which of the many possible “soil properties” are the subject of this request, (b) SAR Figure 2.6-5 consists of numerous sheets, which differ from each other in their identification of the various soil layers at the site, and (c) it fails to identify which “engineering properties” or regions are the subject of this request. Further, the Staff objects to this request on the grounds that it improperly contains a predicate that has not been established (i.e., that certain undefined engineering properties have been averaged).

REQUEST FOR ADMISSION NO. 7. Do you admit that the unacceptable performance of a foundation system (e.g., sliding) is not governed by the average properties of a soil profile?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that (a) it fails to identify which of the many possible “properties of a soil profile” are the subject of this request, and (b) it fails to define the term “unacceptable” or “foundation system.” Further, the Staff objects to this request on the grounds that it constitutes a confusing and compound question, in that it contains a predicate that has not been established (i.e., that “average properties of a soil profile” have been utilized).

REQUEST FOR ADMISSION NO. 8. Do you admit that when averaging is used in engineering analyses, a conservative account of any potential low shear strength zones in the shallow soil profile must be considered?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that (a) it fails to identify any particular “engineering analyses” or “averaging” that are the subject of this request, (b) it fails to identify the properties of interest that were the subject of “averaging,” (c) it fails to define the terms “potential low shear strength zones” or “shallow soil profile,” and (d) it fails to explain the context or type of “consideration” that is the subject of this request.

REQUEST FOR ADMISSION NO. 9. Do you admit that the PFS license application does not account for any potential low shear strength zones in the shallow soil profile?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that it fails to define the terms “potential low shear strength zones” or “shallow soil profile.” Notwithstanding this objection, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 10. Do you admit that the SER does not account for any potential low shear strength zones in the shallow soil profile?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that it fails to define the terms “potential low shear strength zones” or “shallow soil profile.” Notwithstanding this objection, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 11. Do you admit that the tip stress from the cone penetrometer test (CPT) at the PFS site was not correlated with the undrained shear strength of a fine-grained soil?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that it fails to define the term “fine-grained soil” (i.e., this term could include

many different soils, such as silt, clayey-silt, silty-clay, etc.). Notwithstanding this objection, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 12. Do you admit that if CPT tip stress is correlated with undrained shear strength (*i.e.*, lower tip stress indicates lower shear strength), then one of the five the layers in SAR Figure 2.6-5 has the potential for having the lowest shear strength?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that SAR Figure 2.6-5 consists of numerous sheets, which differ from each other in their identification of the various soil layers at the site, and it is unclear which sheet and which soil layer are the subject of this request. Notwithstanding this objection, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 13. Do you admit that the shear strength for the low strength zone in SAR Fig. 2.6-5 was not accounted for in the sliding and dynamic bearing capacity analyses?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that SAR Figure 2.6-5 consists of numerous sheets, which differ from each other in their identification of the various soil layers at the site, and it is unclear which sheet and which soil layer are the subject of this request. Notwithstanding this objection, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 14. Beside laboratory shear strength testing, do you admit that no other data or methods were used to estimate the shear strength properties of soils in the Bonneville Clay?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that it fails to explain which soils are referred to as “soils in the Bonneville Clay.” Notwithstanding this objection, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 15. Calculation no. 05996.02 G(B) 04-6, *Stability Analyses of Storage Pads* (June 16, 2000), at p. 13 states:

. . . the resistance to sliding on that interface will be limited by the shear strength of the silty clay/clayey silt. Direct shear tests on samples of the soils . . . [sic] in the pad emplacement area indicate the shear strength available to resist sliding from loads due to the design basis ground motion [sic] 2.1 ksf as shown in Figure 7 . . .

Do you admit there is no explanation of how this design value was derived?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it contains an improper predicate that has not been established (i.e., that testing of soil samples was utilized to establish sliding resistance values of the storage pads at the site). Notwithstanding these objections, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 16. Do you admit that the peak shear strength used in the calculation for seismic sliding of the pads, Calculation 05996.02 G(B) 04-6, p. 13, is based on one set of direct shear tests taken from a single borehole (borehole C-2, Sample U-1)?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it contains an improper predicate that has not been established (i.e., that the shear test data from borehole C-2, Sample U-1, were utilized to establish sliding resistance values of the storage pads at the site). Notwithstanding these objections, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 17. Do you admit that a single datum, borehole C-2, Sample U-1, is not a representative sample of this layer across the entire pad placement area?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the

discovery of admissible evidence, (b) it is overly vague and ambiguous, in that it does not identify the “layer” that is the subject of this request, and (c) it contains an improper predicate that has not been established (i.e., that the shear test data from borehole C-2, Sample U-1, were utilized to establish sliding resistance values of the storage pads at the site). Notwithstanding these objections, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 18. Do you admit that for the sliding analyses for the pad, Calculation 05996.02 G(B) 04-6, it is unknown whether the value of 2.1 ksf represents a mean value, upper bound, or lower bound to the undrained shear strength?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it contains an improper predicate that has not been established (i.e., that the shear test data from borehole C-2, Sample U-1, were utilized to establish sliding resistance values of the storage pads at the site). Notwithstanding these objections, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 19. Do you admit that the silty-clays and clay-silts [sic] found in the upper 10 feet of the profile are partially saturated?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague and ambiguous, in that it does not identify the “profile” that is the subject of this request. Notwithstanding this objection, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 20. Do you admit that for partially saturated soils, the shear strength is a function of the amount of matrix suction present in the soil fabric?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding this objection, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 21. Do you admit that as the matrix suction increases, the moisture content decreases?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it utilizes an incorrect term in lieu of the term “saturation,” and contains an incorrect statement of the causal or other relationship between variations in matrix suction and saturation.

REQUEST FOR ADMISSION NO. 22. Do you admit that the shear strength also increases as the moisture content decreases?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) is overly vague and ambiguous, in that by utilizing the word “also,” it contains an improper predicate that has not been established (i.e., that something other than shear strength “also” increases as moisture content decreases), and by utilizing the term “moisture content,” it utilizes an incorrect term in lieu of the term “saturation,” and fails to identify the conditions that are assumed to be present (such as the type of soil and soil void ratio).

REQUEST FOR ADMISSION NO. 23. Do you admit that prolonged exposure to air causes a decrease in the moisture content of the soil?

STAFF RESPONSE. The Staff objects to this request on the grounds that it fails to identify the conditions that are assumed to be present (such as the type of soil, air humidity, and length of exposure to air), which could affect any answer to this request.

REQUEST FOR ADMISSION NO. 24. SAR 2.6-32 reports total stress parameters of $\phi = 24.9$ deg. and $c = 1.22$ ksf based on direct shear tests performed as described in Attachment 7, Appendix 2A of the SAR. SAR App. 2 A, Attachment 7 at 1, states in relevant part:

The samples were trimmed into a nominal 2.5-inch diameter ring and placed in the direct shear apparatus. The samples were not inundated because

the soils at the site are not expected to be saturated during the life of the facility. A normal load was applied and the deformation measured. Primary consolidation occurred prior to 1 minute. After at [sic] minimum of 90 minutes, the sample was sheared at a displacement rate of 18 mm/hr.

Do you admit that the samples referred to above may have dried out during the minimum of 90 minutes between primary consolidation and shearing?

STAFF RESPONSE. The Staff objects to this request on the grounds that it calls for speculation as to whether something “may” have occurred. Notwithstanding this objection, the Staff states that it lacks sufficient information to respond to this request.

REQUEST FOR ADMISSION NO. 25. Do you admit that PFS conducted supplemental unconsolidated-undrained triaxial tests in March 1999 from samples taken in October 1996? See SAR, App. 2A, Att. 5 at 1.

STAFF RESPONSE. Yes.

REQUEST FOR ADMISSION NO. 26. Do you admit that NRC has no objective evidence to support that these samples used for the supplemental unconsolidated-undrained triaxial tests in March 1999 have not undergone significant drying in a two year five month period?

STAFF RESPONSE. The Staff objects to this request on the grounds that it contains an improper predicate that has not been established (i.e., that the samples tested in March 1999 were utilized to establish any soil property values at the site). Notwithstanding this objection, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 27. Do you admit that is it [sic] not a common procedure to test samples that were collected approximately 2 ½ years prior to the test?

STAFF RESPONSE. The Staff objects to this request on the grounds that it contains an improper predicate that has not been established (i.e., that the samples tested in March 1999 were utilized to establish any soil property values at the site). Notwithstanding this objection, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 28. Do you admit that PFS relied on CPT data to quantify the amount of variability in engineering properties across the pad and canister transfer building sites?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague, ambiguous and compound, in that it fails to identify which of the various possible “engineering properties” are the subject of this request.

REQUEST FOR ADMISSION NO. 29. Do you admit that the Staff relied on PFS’s CPT data to quantify the amount of variability in engineering properties across the pad and canister transfer building sites?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is overly vague, ambiguous and compound, in that it fails to identify which of the various possible “engineering properties” are the subject of this request.

REQUEST FOR ADMISSION NO. 30. Do you admit that PFS did not use geostatistical (*i.e.*, spatial statistics) techniques to determine the degree of horizontal and vertical variation for the CPT data within the pad and CTB sites?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding this objection, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 31. Do you admit that PFS did not correlate the results of the CPT data with foundation design properties such as undrained shear strength and friction angle?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding this objection, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 32. Do you admit that PFS did not measure and account for shear strength anisotropy [sic] in determining the sliding resistance and bearing capacity of the storage pads and cask transfer building sites?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding this objection, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 33. Do you admit that PFS did not compare the results of the shear wave velocities from the seismic refraction survey with the results from the seismic cone penetrometer soundings?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding this objection, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 34. Do you admit that the Staff did not compare the results of the shear wave velocities from the seismic refraction survey with the results from the seismic cone penetrometer soundings?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence. Notwithstanding this objection, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 35. Do you admit that SAR Figure 2.6-28 (Rev. 6) shows the shear wave and primary wave velocities versus depth from the seismic cone penetrometer (SCPT)?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) the document speaks for itself. Notwithstanding these objections, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 36. Do you admit that in the upper Bonneville Deposits (*i.e.*, upper 10 feet of the profile) the shear wave velocity values shown in SAR Fig. 2.6-28 range from about 400 to 700 feet per second?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) the request is overly vague and ambiguous, in that it is unclear that the “upper 10 feet of the profile” constitute “the upper Bonneville Deposits,” and (c) the document speaks for itself. Notwithstanding these objections, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 37. Do you admit that in Calc. No. 05996.01-G(P05)-1, *Development of soil and foundation parameters in support of dynamic soil-structure interaction analyses*, prepared by Geomatrix (June 9, 1997), Figure 3-2, “Idealized Shear Wave Velocity Profile,” shows shear wave velocities of 700 to 800 feet per second in the Bonneville Deposits?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) the request is overly vague and ambiguous, in that the cited calculation has been superseded, and (c) the document speaks for itself.

REQUEST FOR ADMISSION NO. 38. Do you admit that the profiles shown in SAR Fig. 2.6-28 and Figure 3-2 of Calc. No. 05996.01-G (P05)-1 cannot both be correct?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) the request is overly vague and ambiguous, in that the cited calculation has been superseded, and (c) the documents speak for themselves.

REQUEST FOR ADMISSION NO. 39. Do you admit that the shear wave velocity measurements from the shear wave refraction surveys in SAR Ch. 2, App. 2B, Fig. 4.2 and Fig. 4.4 show that shear wave velocities in the upper 50 to 60 feet of the profile range from range from [sic] 721 to 829 ft/s for seismic line 1, and from 695 to 952 ft/s for seismic line 2?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the

discovery of admissible evidence, (b) the request is overly vague and ambiguous, in that it is not clear which area (i.e., “the upper 50 to 60 feet of the profile”) is the subject of this request, and (c) the documents speak for themselves. Notwithstanding these objections, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 40. Do you admit that the shear wave velocities from the CPT in SAR Fig. 2.6-28 are

<u>Depth</u>	<u>Shear Wave Velocity</u>
0 to 10 feet	mean $V_s \approx 550$ ft /s
10 to 25 feet	mean $V_s \approx 750$ ft / s
25 to 30 feet	mean $V_s \approx 1100$ ft /s

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) the request is overly vague and ambiguous, in that it is not clear what level of precision is represented by the use of an approximation symbol, and (c) the document speaks for itself. Notwithstanding these objections, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 41. Do you admit that the data from the shear wave refraction survey and seismic CPT cannot both be correct?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) the request is overly vague and ambiguous, in that it is not clear which data are the subject of this request, and (c) the document speaks for itself. Notwithstanding these objections, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 42. Do you admit that the SCPT data from the upper 10 feet suggest a mean sheer [sic] wave velocity of 540 ft/sec and a lower bound of about 400 feet per second? See SAR Fig. 2.6-28.

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the

discovery of admissible evidence, (b) the request is overly vague and ambiguous, in that it is not clear which data are the subject of this request, and (c) the document speaks for itself.

Notwithstanding these objections, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 43. Do you admit that PFS did not revise the design basis motion calculation to account for the 540 fps velocity layer?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) the request is overly vague and ambiguous, in that it is not clear what “design basis motion calculation” and what “540 fps velocity layer” are the subject of this request, and (c) the request constitutes an improper compound question, in that it has not been established that there is a “540 fps velocity layer.”

REQUEST FOR ADMISSION NO. 44. Do you admit that the Staff did not analyze the PFS design basis motion calculation to account for the 540 fps velocity layer?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) the request is overly vague and ambiguous, in that it is not clear what “design basis motion calculation” and what “540 fps velocity layer” are the subject of this request, and (c) the request constitutes an improper compound question, in that it has not been established that there is a “540 fps velocity layer.”

REQUEST FOR ADMISSION NO. 45. Do you admit that a design basis motion developed for a 750 ft/sec shear wave velocity layer is not appropriate for a soil layer with a mean velocity of 540 ft/sec?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) the request is overly vague and ambiguous, in that it is not

clear what “design basis motion” and what “soil layer with a mean velocity of 540 ft/sec” are the subject of this request, and (c) the request constitutes an improper compound question containing unsupported assumptions, in that it has not been established that there is a “soil layer with a mean velocity of 540 ft/sec.”

REQUEST FOR ADMISSION NO. 46. Do you admit that the Fault Evaluation and Seismic Hazard Assessment (Vol. III, App. F, prepared by Geomatrix February 1999) calculations were not revised to reflect the lower shear wave velocity in the upper 10 feet of the profile?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) the request is overly vague and ambiguous, in that it is not clear what is meant by the phrase, “the lower shear wave velocity in the upper 10 feet of the profile.”

REQUEST FOR ADMISSION NO. 47. Do you admit that based on Calculation no. 05996.02-G(P018)-2, *Soil and foundation parameters for dynamic soil-structure interaction analyses, 2,000-year return period design ground motions* (August 10, 1999), Geomatrix, a significant part of soil shear [sic] strength is already mobilized due to free field wave propagation?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) it is overly vague and ambiguous, in that it is not clear what is meant by the terms “significant” or “already,” and (c) it constitutes a confusing and improper compound question, in that it fails to identify the conditions or events that are assumed to have occurred such that some portion of soil shear strength has been “already mobilized due to free field wave propagation.”

REQUEST FOR ADMISSION NO. 48. Do you admit that PFS has not considered how much shear [sic] strength has been mobilized and how much is available to resist sliding of the foundation?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) it is overly vague and ambiguous, in that it fails to identify which “foundation” is the subject of this request, and (c) it constitutes a confusing and improper compound question, in that it fails to identify the conditions or events that are assumed to have occurred such that some portion of (soil) shear strength “has been mobilized,” the conditions or events that are assumed to cause “sliding of the foundation,” or any portion of the proposed facility that relies upon soil shear strength to resist sliding.

REQUEST FOR ADMISSION NO. 49. In calculating the factor of safety against dynamic sliding and bearing capacity, do you admit that PFS did not give any consideration to the degradation of stiffness and peak undrained strength in the upper 10 feet of the profile due to earthquake cycling?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) it is overly vague and ambiguous, in that it fails to identify which calculation and which “profile” are the subject of this request, and (c) it constitutes a confusing and improper compound question, in that it fails to identify the conditions or events that are assumed to exist or to have occurred so as to cause “degradation of stiffness and peak undrained strength in the upper 10 feet of the profile due to earthquake cycling,”

REQUEST FOR ADMISSION NO. 50. Do you admit that if degradation of strength has occurred, the factors of safety for dynamic bearing capacity and sliding for the pads and canister transfer building are potentially lower than the reported values?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) it is overly vague and ambiguous, in that it fails to identify which “reported values” are the subject of this request, or the degree or type of “degradation of

strength” that is assumed to have occurred, (c) it constitutes a confusing and improper compound question, in that it fails to identify the conditions or events that are assumed to exist or to have occurred so as to cause a “degradation of strength,” and (d) it calls for a speculative answer.

REQUEST FOR ADMISSION NO. 51. Do you admit that in calculating the factor of safety against dynamic bearing capacity and sliding stability of the pads constructed on the silty/clayey silt, the maximum horizontal inertial force was reduced as follows:

However, the maximum horizontal force that can be applied to the top of the pad by the casks is limited to the maximum value of the coefficient of friction between the cask and the top of the pad, which equals 0.8, multiplied by the cask normal force.

Calculation no. 05996.02 G(B) 04-6 at 14.

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it fails to explain what is meant by the phrase “calculating the factor of safety against dynamic bearing capacity and sliding stability of the pads.”

REQUEST FOR ADMISSION NO. 52. Do you admit that if sliding does not occur it will adversely affect the calculated factor of safety?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) it is overly vague and ambiguous, in that it fails to identify the “calculated factor of safety,” and the structure or foundation, that are the subject of this request, (c) it constitutes a confusing and improper compound question, in that it fails to identify the conditions or events that are assumed to exist or to have occurred such that sliding or an adverse effect on the calculated factor of safety could occur, and (d) calls for a speculative answer.

REQUEST FOR ADMISSION NO. 53. Do you admit that to justify factors of safety below those listed in NUREG-75/087, Section 3.8.5, the Newmark analysis was used to estimate the potential amount of

sliding of the pad and canister transfer building atop the silt layer at 8 to 10 feet? See SAR at 2.6-115 (Rev. 11).

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it calls for a speculative answer by the Staff as to the Applicant's reasons for using a Newmark analysis.

REQUEST FOR ADMISSION NO. 54. Do you admit that the Newmark analysis does not consider soil structure interaction?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence.

REQUEST FOR ADMISSION NO. 55. *Stability Analyses of the Canister Transfer Building Supported on a Mat Foundation*, Calculation No. 05996.02 G(B) 13-3 (June 19, 2000) at p. 25 states:

It is likely, that should such slippage occur within the cohesionless soils underlying the building, it would minimize the level of the accelerations that would be transmitted through the soil and into the structure. In this manner, the cohesionless soils would act as a built-in base-shear isolation system. Any decrease in these accelerations as a result of this would increase the factor of safety against sliding, which would decrease the estimated displacements as well.

Do you admit that if slippage (*i.e.*, displacement) is required to reduce accelerations to the canister transfer building, then reduced accelerations resulting from that slippage cannot reduce the displacement that has already occurred?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it fails to explain what is meant by the phrase, "if slippage (*i.e.*, displacement) is required to reduce accelerations to the canister transfer building. . . ."

REQUEST FOR ADMISSION NO. 56. Do you admit that the Newmark analysis does not consider fault fling and other near-field earthquake affects [sic]?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it fails to explain what is meant by the phrase, "fault fling."

REQUEST FOR ADMISSION NO. 57. Do you admit that the Newmark analysis did not consider the potential degradation of shear modulus and shear strength?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence.

REQUEST FOR ADMISSION NO. 58. Do you admit that the Newmark analysis did not consider the potential for asymmetrical sliding?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence.

REQUEST FOR ADMISSION NO. 59. SAR p. 2.6-81 states:

These analyses include several conservative assumptions. They are based on static strengths of the silty clay block under the Canister Transfer Building mat, even though, as reported in Das (1993), experimental results indicate that the strength of cohesive soils increases as the rate of loading increases. For rates of strain applicable for the cyclic loading due to the design basis ground motion, Das indicates that for most practical cases, one can assume that $c_{u \text{ dynamic}} \sim 1.5 \times c_{u \text{ static}}$.

Do you admit that the textbook value of $c_{u \text{ dynamic}} \sim 1.5 \times c_{u \text{ static}}$ is not substantiated by site-specific testing of soils at the PFS site?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence.

REQUEST FOR ADMISSION NO. 60. Do you admit that based on the shear strain developed in the upper 10 feet of the profile as indicated by the 1-D SHAKE analysis, there is potential for large degradation due to cycling? See Calculation no. 05996.02-G(P018)-2, Geomatrix.

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, (b) it is overly vague and ambiguous, in that it fails to explain what is meant by the phrase, “the upper 10 feet of the profile” or to define the term, “large degradation,” and (c) it constitutes a confusing and improper compound question, in that it fails to identify the conditions or events that are assumed to exist or to have occurred so as to cause a “potential for large degradation due to cycling.”

REQUEST FOR ADMISSION NO. 61. Do you admit that the following statements in Calculation no. 05996.02 G(B) 04-6 imply that the soil-cement mat will substantially improve the sliding resistance of the pads:

. . . the shearing resistance will be available over the areas between the pads, as well as under the pads, and additional passive resistance will be provided by the continuous soil cement layer existing below the pads.

Calculation no. 05996.02 G(B) 04-6 at 13.

Furthermore, the pads will be constructed on and within soil cement, which will be strong enough to resist sliding of the pads using only the passive resistance of the soil cement. This soil cement will effectively lock the pads in their respective locations, so that they can not move relative to one another.

Calculation no. 05996.02 G(B) 04-6 at 73.

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence.

REQUEST FOR ADMISSION NO. 62. Do you admit that for the soil cement mat to be effective in resisting sliding, it must act as an integral unit with the pads and allow no differential movement between the pads?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it fails to explain its use of the terms “integral unit” and “differential movement between the pads.”

REQUEST FOR ADMISSION NO. 63. Do you admit that PFS has not computed the tensile strength of the soil cement?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence.

REQUEST FOR ADMISSION NO. 64. Do you admit that the Staff had not computed the tensile strength of the soil cement?

STAFF RESPONSE. The Staff objects to this request on the grounds that it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence.

REQUEST FOR ADMISSION NO. 65. Do you admit that PFS has not considered the potential weakness in the soil cement mat due to cracking upon drying and other environmental factors?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it fails to explain what is meant by the phrase, “other environmental factors,” and (c) it constitutes a confusing and

improper compound question, in that it fails to identify the conditions or events that are assumed to exist or to have occurred so as to cause “potential weakness in the soil cement mat.”

REQUEST FOR ADMISSION NO. 66. Do you admit that the Staff has not considered the potential weakness in the soil cement mat due to cracking upon drying and other environmental factors?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it fails to explain what is meant by the phrase, “other environmental factors,” and (c) it constitutes a confusing and improper compound question, in that it fails to identify the conditions or events that are assumed to exist or to have occurred so as to cause “potential weakness in the soil cement mat.”

REQUEST FOR ADMISSION NO. 67. Do you admit that there are no calculations to determine the effect of the non-uniformity in thickness at the interface of the 3-foot thick soil-cement mat outside the pad footprint and the approximately one foot thick soil-cement underneath the pad?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence.

REQUEST FOR ADMISSION NO. 68. Do you admit that no consideration has been given to how the joint at the interface of the soil-cement mat outside the pad footprint and the soil cement underneath the pad will respond to the dynamic torsional and bending stresses?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it fails to explain what is meant by the phrase, “joint at the interface of the soil-cement mat outside the pad footprint and the soil cement underneath the pad,” or to identify the “dynamic torsional and bending

stresses” that are referred to in this request, and (c) it constitutes a confusing and improper compound question, in that it fails to identify the conditions or events that are assumed to exist or to have occurred so as to cause “dynamic torsional and bending stresses.”

REQUEST FOR ADMISSION NO. 69. Do you admit that there is no objective evidence that the soil-cement mat and pad system will perform as an integral unit as implied by the sliding calculations?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it fails to explain what is meant by the terms, “integral unit” and “soil-cement mat and pad system,” and (c) it constitutes a confusing and improper compound question, in that it has not been established that the sliding calculations “imply” that “the soil-cement mat and pad system will perform as an integral unit,” or the conditions under which such a phenomenon is implied to result.

B. Interrogatories - Contention Utah L.

INTERROGATORY NO. 5. Please explain the rationale for allowing the Applicant to compute sliding force and the overturning moment using only the peak ground acceleration values rather than the spectral values applicable to foundation frequencies. *See e.g.,* Calculation No. 05996.02 G(P017)-2, *Storage Pad Analysis and Design* (February 4, 2000), prepared by International Civil Engineering Consultants.

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it constitutes a confusing and improper compound question, in that it has not been established that the Applicant was “allowed” to perform its calculations in any particular manner.

INTERROGATORY NO. 6. Please describe whether, if at all, the Staff considered the fact that the passive soil cement forces restraining one pad is an active force for a second pad only five feet apart in the longitudinal direction of the pads. See e.g., Calculation No. 05996.02 G(P017)-2.

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it constitutes a confusing and improper compound question, in that it has not been established as a “fact” that “the passive soil cement forces restraining one pad is an active force for a second pad only five feet apart in the longitudinal direction of the pads.”

INTERROGATORY NO. 7. Please explain why the assumption that the casks slide smoothly on the pads is consistent with the deformation of the pad due to axial loading?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it fails to explain what is meant by the term, “slide smoothly,” and (c) it constitutes a confusing and improper compound question, in that it has not been established that an “assumption” of the type alleged in this request has been made, or that “deformation of the pad due to axial loading” will occur.

INTERROGATORY NO. 8. Please explain whether and how the proximity of the pads to major active faults warrants consideration of inclined seismic waves that could adversely impact the stability of the casks and the foundation pads?

STAFF RESPONSE. The Staff objects to this request on the grounds that (a) it exceeds the scope of Contention Utah L, and is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence, and (b) it is overly vague and ambiguous, in that it fails to explain what is meant by the terms, “proximity,” “major active faults,” “inclined seismic waves,” or

“adversely impact,” and (c) it constitutes a confusing and improper compound question, in that it has not been established that any “major active faults” are located in “proximity” to the pads.

Respectfully submitted,

Sherwin E. Turk/*RA*/
Counsel for NRC Staff

Dated at Rockville, Maryland
this 11th day of December 2000

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
PRIVATE FUEL STORAGE, L.L.C.) Docket No. 72-22-ISFSI
)
(Independent Spent Fuel)
Storage Installation))

AFFIDAVIT OF GOODLUCK I. OFOEGBU

COUNTY OF BEXAR)
) SS:
STATE OF TEXAS)

Goodluck I. Ofoegbu, having first been duly sworn, does hereby state as follows:

1. I am employed as a Senior Research Engineer at the Center for Nuclear Waste Regulatory Analysis (CNWRA), which is division of the Southwest Research Institute (SwRI), in San Antonio, Texas. I am providing this affidavit under a technical assistance contract between the NRC Staff and SwRI. A statement of my professional qualifications is attached hereto.

2. I have reviewed the foregoing "NRC Staff's Objections and Responses to the 'State of Utah's Eleventh Set of Discovery Requests Directed to the NRC Staff,'" and verify that they are true and correct to the best of my knowledge, information and belief.

/RA/

Goodluck I. Ofoegbu

Sworn to before me this
11th day of December 2000

Lucy Gutierrez /RA/

Notary Public

My commission expires: 08/24/2001

GOODLUCK I. OFOEGBU
Senior Research Engineer
Center for Nuclear Waste Regulatory Analyses
Southwest Research Institute

Education

B.Sc., Geology, University of Nigeria, Nsukka, 1977

M.A.Sc., Geological Engineering, University of Toronto, Canada, 1981

Ph.D., Geological Engineering, University of Toronto, Canada, 1985

Experience

Dr. Ofoegbu is a geological engineer specializing in the mechanical analyses of geological processes, finite element modeling, and the constitutive modeling of geological materials. He has a background in geoscience, geomechanics and computer software development; and about 20 years of experience in teaching, research, and consulting.

As a senior research engineer at the Southwest Research Institute, Dr. Ofoegbu has led several numerical modeling projects to investigate technical issues related to possible licensing of a geologic repository for high level nuclear waste at Yucca Mountain, such as: Evaluation of a finite element code, ABAQUS, for modeling thermal-mechanical-hydrological coupled processes; and investigations of ground motion patterns resulting from numerically simulated normal fault earthquakes, effects of perched water on thermally driven moisture flow, effects of spatial and time-dependent rock-mass property variations on the stability of underground openings and groundwater flow, and effects of regional crustal density variations on patterns of small-volume basaltic volcanism. Other numerical modeling investigations led by Dr. Ofoegbu include finite element analyses of geologic finite strain for fracture distribution predictions and numerical simulation of a deforming salt body. He has also participated in the development of review procedures for an anticipated license application for the proposed Yucca Mountain repository, technical review of uranium recovery site reclamation plans under the Uranium Mill Tailings Radiation Control Act, and a safety evaluation report for an Independent Spent Fuel Storage Installation.

Dr. Ofoegbu was a research engineer at the University of Toronto for five years, during which time he was the Principal Investigator for an industrial contract on the development and numerical implementation of a constitutive model for geological materials. He developed constitutive models for intact rock, non-lithified soils, and regularly jointed rock mass; implemented the models as user-defined code modules in ABAQUS (a commercially available finite element code); and conducted finite element modeling of the Atomic Energy of Canada Limited's mine-by experiment tunnel.

As an Assistant Professor at the Ahmadu Bello University, Nigeria, in the Department of Civil Engineering, Dr. Ofoegbu taught courses and supervised student research projects in the areas of soil mechanics, earthwork, and foundation engineering, and served as Principal Consultant on industrial site-investigation contracts.

Dr. Ofoegbu has published 25 articles in refereed journals and conference proceedings, as well as several technical reports. He is a member of the International Society for Rock Mechanics and the American Rock Mechanics Association. He is a registered professional engineer in Canada.

PROFESSIONAL CHRONOLOGY: Senior Research Engineer, Southwest Research Institute, 1993–Present; Consulting Engineer, GI-Johnson Engineering, 1991–93; Research Engineer, University of Toronto, 1987–92; Assistant Professor, Ahmadu-Bello University, 1985–87; Teaching/Research Assistant, University of Toronto, 1980–85; Hydrogeologist, Lower Benue Development Authority, 1978–79; Mathematics/Physics Teacher, Ogun State of Nigeria, 1977–78.

Publications

Reviewed Scientific Journal Articles

- Connor, C.B., J.A. Stamatakos, D.A. Ferrill, B.E. Hill, G.I. Ofoegbu, and F.M. Conway. In review. Volcanic hazards at the proposed Yucca Mountain, Nevada, high-level radioactive waste repository I: Geologic factors controlling patterns of small-volume basaltic volcanism. *Journal of Geophysical Research*.
- Ofoegbu, G.I., A.C. Bagtzoglou, R.T. Green, and A. Muller. In press. Effects of perched water on thermally driven moisture flow at the proposed Yucca Mountain repository for high-level waste. *Nuclear Technology* 125.
- Ofoegbu, G.I., and D.A. Ferrill. 1998. Mechanical analyses of listric normal faulting with emphasis on seismicity assessment. *Tectonophysics* 284: 65–77.
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
PRIVATE FUEL STORAGE L.L.C.) Docket No. 72-22-ISFSI
)
(Independent Spent)
Fuel Storage Installation))

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S OBJECTIONS AND RESPONSES TO THE 'STATE OF UTAH'S ELEVENTH SET OF DISCOVERY REQUESTS DIRECTED TO THE NRC STAFF'" in the above captioned proceeding have been served on the following through deposit in the NRC's internal mail system, with copies by electronic mail, as indicated by an asterisk, or by deposit in the U.S. Postal Service, as indicated by double asterisk, with copies by electronic mail this 11th day of December, 2000:

G. Paul Bollwerk, III, Chairman*
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555
(E-mail copy to GPB@NRC.GOV)

Office of the Secretary*
ATTN: Rulemakings and Adjudications
Staff
U.S. Nuclear Regulatory Commission
Washington, DC 20555
(E-mail copy to
HEARINGDOCKET@NRC.GOV)

Dr. Jerry R. Kline*
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555
(E-mail copy to JRK2@NRC.GOV)

Office of the Commission Appellate
Adjudication
Mail Stop: 16-C-1 OWFN
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dr. Peter S. Lam*
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555
(E-mail copy to PSL@NRC.GOV)

James M. Cutchin, V*
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555
(E-mail to JMC3@NRC.GOV)

Atomic Safety and Licensing Board
Panel
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Jay E. Silberg, Esq.**
Ernest Blake, Esq.
Paul A. Gaukler, Esq.
SHAW, PITTMAN, POTTS &
TROWBRIDGE
2300 N Street, N.W
Washington, DC 20037-8007
(E-mail copy to jay_silberg, paul_gaukler,
and ernest_blake@shawpittman.com)

Danny Quintana, Esq.**
Danny Quintana & Associates, P.C.
68 South Main Street, Suite 600
Salt Lake City, UT 84101
(E-mail copy to quintana
@Xmission.com)

Denise Chancellor, Esq.**
Fred G Nelson, Esq.
Laura Lockhart, Esq.
Utah Attorney General's Office
160 East 300 South, 5th Floor
P.O. Box 140873
Salt Lake City, UT 84114-0873 (E-mail
copy to dchancel@State.UT.US), and
jbraxton@email.usertrust.com)

Connie Nakahara, Esq.**
Utah Dep't of Environmental Quality
168 North 1950 West
P. O. Box 144810
Salt Lake City, UT 84114-4810
(E-mail copy to cnakahar@state.UT.US)

Diane Curran, Esq.**
Harmon, Curran, Spielberg & Eisenberg
1726 M Street, N.W., Suite 600
Washington, D.C. 20036
(E-mail copy to
dcurran@harmoncurran.com)

John Paul Kennedy, Sr., Esq.**
1385 Yale Ave.
Salt Lake City, UT 84105
(E-mail copy to john@kennedys.org)

Joro Walker, Esq.**
Land and Water Fund of the Rockies
2056 East 3300 South, Suite 1
Salt Lake City, UT 84109
(E-mail copy to joro61@inconnect.com)

Land and Water Fund of the Rockies**
2260 Baseline Road, Suite 200
Boulder, CO 80302

Sherwin E. Turk/**RA**/
Counsel for NRC Staff