RAS 3863 **RELATED CORRESPONDENCE** February 1, 2002
DOCKETED 02/04/02

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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 EIGHTEENTH SET OF DISCOVERY REQUESTS DIRECTED TO THE NRC STAFF"

INTRODUCTION

On January 22, 2002, the State of Utah ("State") filed the "State of Utah's Eighteenth Set of Discovery Requests Directed to the NRC Staff" ("Eighteenth Request" or "Request"), concerning 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 (a) 18 requests for admission, and (b) five interrogatories (Interrogatory Nos. 21-25) concerning Contention Utah L (geotechnical issues). The NRC Staff ("Staff") hereby files its objections and responses to the State's Eighteenth Request, as follows.[1]

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

[1] The Staff's answers to the State's requests for admissions and interrogatories are supported by the "Joint Affidavit of Goodluck I. Ofoegbu and Daniel J. Pomerening," attached hereto; objections are stated by Counsel.

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.[2] These regulations establish certain limits to the Staff's obligation to respond to discovery requests. 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). Finally, 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).

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[2] *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).

Here, the State has not complied with the Commission's requirements governing discovery against the Staff. First, the State has not indicated that the requested information is not available in the public domain. Indeed, some of the information requested by the State is available to the public in the Commission's Public Document Room (PDR), or has previously been provided to the State. Further, the State has not indicated that the requested information is 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.[3]

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 contention Utah L in this proceeding.

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 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" ("Supplemental Responses") (Request at 2).

Objection 5. The Staff objects to each of the State's discovery requests, insofar as they may request information or documents from the "Nuclear Regulatory Commission," "NRC," or other persons or entities who are not NRC Staff members or consultants in this proceeding. *See, e.g.,* "Definition A" (Request at 3). The NRC and persons other than Staff members (*e.g.*,

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[3] In addition, to the extent that the instant discovery requests seek information that has been withheld from public disclosure as proprietary information, the State has been afforded access to that material by the Applicant under a confidentiality agreement, and the State has shown no reason why it could not obtain the requested information from the Applicant.

Commissioners, 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.

Objection 6. The Staff objects to each of the State's discovery requests, insofar as they request personal information such as the home address and telephone numbers of persons employed by or affiliated with the Staff, and which may be protected from disclosure under 10 C.F.R.§ 2.790(a) . *See, e.g.*, "Definition E.1" ("describe" or "identify") (Request at 4).

Objection 7. The Staff objects to each of the State's discovery requests as unduly burdensome insofar as they request that descriptions of documents are to include the name of "the person or persons having possession and/or copies thereof, the person or persons to whom the document was sent, all persons who reviewed the document, the substance and nature of the document, [and] the present custodian of the document . . . *See* Definition E.2 ("describe" or "identify") (Request at 5).

Objection 8. The Staff objects to each of the State's discovery requests as unduly burdensome insofar as they request that descriptions of "any activity, occurrence, or communication" are to include the identity "of each person alleged to have had any involvement with or knowledge of the activity, occurrence, or communication, and the identity of any document recording or documenting such activity, occurrence, or communication." *See* Definition E.4 ("describe" or "identify") (Request at 6).

Objection 9. The Staff objects to each of the State's discovery requests as unduly burdensome, and irrelevant and not calculated to lead to the discovery of admissible evidence, insofar as they request the discovery of "material contained in, or which might be derived or ascertained from, the personal files of NRC Staff employees, representatives, investigators, and agents." *See* Definition L (Request at 7).

Objection 10. The Staff objects to each of the State's discovery requests, insofar as they may request information pertaining to or copies of intra-agency memoranda, notes and other

pre-decisional materials; or 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, to the extent, if any, that documents are requested in the State's Eighteenth Request, the Staff will prepare a privilege log to identify documents that are sought to be withheld from discovery as privileged or exempt from disclosure, and will produce that log to the State.

Objection 11. The Staff objects to each of the State's discovery requests, insofar as they do not pertain to new matters discussed in Supplement No. 2 to the Safety Evaluation Report ("SER") for the PFS Facility, issued on December 21, 2001, which are the only matters that are currently subject to discovery concerning Contention Utah L under the Licensing Board's scheduling orders in this proceeding. *See, e.g.*, "Attachment A" to "Order (General Schedule Revisions)," dated September 20, 2001 (discovery against the Staff on Contention Utah L has been completed, except as to new matters in SER Supplement No. 2 ("SSER No. 2").

RESPONSES TO DISCOVERY REQUESTS

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

CONTENTION UTAH L

A. Requests for Admissions

> REQUEST FOR ADMISSION NO. 1. Do you admit that PFS intends to use soil cement (or cement-treated soil) under and around the pads and around the Canister Transfer Building ("CTB") to provide a method for the foundations of the pads and the CTB to resist dynamic seismic loadings?

STAFF RESPONSE. The Staff objects to this request on the grounds that (1) it constitutes an improper compound and confusing question, insofar as it refers to both the CTB and the concrete storage pads, and (2) the State has not demonstrated that the information requested could not have been obtained from another source, including, without limitation, PFS or documents filed in this proceeding. Notwithstanding these objections, the Staff states as follows: No. Based on information and belief, soil cement would be used by PFS to provide resistance to dynamic seismic loadings for the CTB foundation, but would not be used for this purpose for the storage pads.

> REQUEST FOR ADMISSION NO. 2. Do you admit that, to date, the Applicant has not demonstrated that its design to use soil cement under and around the storage pads and around the CTB will resist dynamic loadings?

STAFF RESPONSE. The Staff objects to this request on the grounds that (1) it constitutes an improper compound and confusing question, insofar as it refers to both the CTB and the concrete storage pads, and (2) the State has not demonstrated that the information requested could not have been obtained from another source, including, without limitation, PFS or documents filed in this proceeding. Notwithstanding these objections, the Staff states as follows: No. *See* Response to Request for Admission No. 1, *supra.*

> REQUEST FOR ADMISSION NO. 3. Do you admit that, to date, the Applicant has not conducted any soil cement testing?

STAFF RESPONSE. The Staff objects to this request on the grounds that the State has not demonstrated that the information requested could not have been obtained from another source, including, without limitation, PFS or documents filed in this proceeding. Notwithstanding these objections, the Staff states that it lacks sufficient information to admit or deny the statement contained in this request.

> PREFACE TO REQUEST FOR ADMISSION NOS. 4-6. The Safety Evaluation Report Supplement No. 2 (geotechnical and design changes to PFS facility) (SSER No. 2) states that the Applicant's stability analyses "rely on the shear strength of the natural soil underlying the lower layer of soil cement to resist sliding of the pads...." SSER No. 2, Ch. 2 at 44.
>
> REQUEST FOR ADMISSION NO. 4. Do you admit that PFS's foundation system design for the storage pads is based on an insufficient number of tested samples?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is vague, confusing and ambiguous in its use of the term "tested samples." Notwithstanding this objection, the Staff states as follows: No.

> REQUEST FOR ADMISSION NO. 5. Do you admit that PFS has not conducted any strain controlled cyclic triaxial tests.

STAFF RESPONSE. The Staff objects to this request on the grounds that the State has not demonstrated that the information requested could not have been obtained from another source, including, without limitation, PFS or documents filed in this proceeding. Notwithstanding these objections, the Staff states that it lacks sufficient information to admit or deny the statement contained in this request.

> REQUEST FOR ADMISSION NO. 6. Do you admit that PFS has failed to use its cone penetration test (CPT) data to determine whether there is potential variability of shear strength in the pad emplacement area?

STAFF RESPONSE. The Staff objects to this request on the grounds that the State has not demonstrated that the information requested could not have been obtained from another source, including, without limitation, PFS or documents filed in this proceeding. Notwithstanding these objections, the Staff states as follows: No.

REQUEST FOR ADMISSION NO. 7. Do you admit that PFS has not adequately described the stress-strain behavior of the native foundation soils under the range of cyclic strains imposed by the design basis earthquake?

STAFF RESPONSE. No.

REQUEST FOR ADMISSION NO. 8. Do you admit that under-estimating the dynamic Young's modulus of the cement-treated soil when subjected to impact during cask drop or tipover significantly underestimates the impact forces?

STAFF RESPONSE. The Staff objects to this request on the grounds that it (1) is vague, confusing and ambiguous insofar as it uses the term "significantly," (2) is improperly argumentative, and (3) constitutes a hypothetical question that lacks factual support and calls for speculation.

REQUEST FOR ADMISSION NO. 9. Do you admit that the pad foundations can resist dynamic loading and at the same time still meet the 1.1 factors of safety against sliding? *See* SSER No. 2, Ch. 2 at 45.

STAFF RESPONSE. The Staff objects to this request on the grounds that it (1) is vague, confusing and ambiguous insofar as it uses the phrase "1.1 factors of safety against sliding" with regard to the storage pad foundations, (2) constitutes an improper compound question, and (3) mischaracterizes SER Supplement No. 2.

REQUEST FOR ADMISSION NO. 10. Do you admit that the CTB foundations can resist dynamic loading and at the same time still meet the 1.1 factors of safety against sliding?

STAFF RESPONSE. Yes.

REQUEST FOR ADMISSION NO. 11. Do you admit that Holtec's *Multi Cask Response at the PFS ISFSI from 2000 Year Seismic Event*, HI-2012640, is a non-linear analysis?

STAFF RESPONSE. The Staff objects to this request on the grounds that the State has not demonstrated that the information requested could not have been obtained from publicly

available sources, including, without limitation, PFS and/or documents submitted by PFS and/or Holtec International in this proceeding. Notwithstanding these objections, the Staff states as follows: Yes.

> REQUEST FOR ADMISSION NO. 12. Do you admit that HI-2012640's non-linear analysis may be sensitive to phasing and thus must use multiple time histories?

STAFF RESPONSE. The Staff objects to this request on the grounds that it (1) is vague, confusing and ambiguous insofar as it uses the phrases "may be sensitive to phasing" and "must use multiple time histories," (2) constitutes an improper compound question, and (3) the State has not demonstrated that the information requested could not have been obtained from publicly available sources, including, without limitation, PFS and/or documents submitted by PFS and/or Holtec International in this proceeding. Notwithstanding these objections, the Staff states as follows: No.

> REQUEST FOR ADMISSION NO. 13. Do you admit that HI-2012640 does not use multiple time histories?

STAFF RESPONSE. The Staff objects to this request on the grounds that (1) it is vague and ambiguous insofar as it uses the phrase "multiple time histories," and (2) the State has not demonstrated that the information requested could not have been obtained from another source, including, without limitation, PFS or documents filed in this proceeding. Notwithstanding these objections, the Staff states as follows: Yes.

> REQUEST FOR ADMISSION NO. 14. Do you admit that the Staff does not conclude that Holtec in its analysis HI-2012640 must use multiple time histories?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is vague and ambiguous insofar as it uses the phrase "multiple time histories." Notwithstanding this objection, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 15. Do you admit that HI-2012640 assumes that the storage pad will act as a rigid mat?

STAFF RESPONSE. The Staff objects to this request on the grounds that the State has not demonstrated that the information requested could not have been obtained from another source, including, without limitation, PFS and/or Holtec International, and/or documents filed in this proceeding. Notwithstanding this objection, the Staff states as follows: Yes.

REQUEST FOR ADMISSION NO. 16. Do you admit that the Staff assumes that the storage pad will act as a rigid mat?

STAFF RESPONSE. The Staff objects to this request on the grounds that it is vague, confusing and ambiguous, in that it fails to specify the conditions, case, or analyses under which the specified assumption may or may not have been made by the Staff.

REQUEST FOR ADMISSION NO. 17. Do you admit that Holtec's HI-STORM 100 cask design is bottomed on the assumption that the unanchored casks will slide in a controlled manner when subjected to strong ground motions?

STAFF RESPONSE. The Staff objects to this request on the grounds that it (1) is vague, confusing and ambiguous, insofar as it uses the terms "bottomed," "controlled manner," and "strong ground motions," and fails to specify the conditions, case, or analyses under which the specified assumption may or may not have been made by Holtec, (2) constitutes an improper compound question, (3) is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence in this proceeding, and (4) the State has not demonstrated that the information requested could not have been obtained from another source, including, without limitation, PFS and/or Holtec International, and/or documents filed in this proceeding.

REQUEST FOR ADMISSION NO. 18. Do you admit that Staff assumes that unanchored HI-STORM 100 casks will slide in a controlled manner when subjected to strong ground motions?

STAFF RESPONSE. The Staff objects to this request on the grounds that it (1) is vague, confusing and ambiguous, insofar as it uses the terms "controlled manner" and "strong ground motions," and fails to specify the conditions, case, or analyses under which the specified assumption may or may not have been made by the Staff, and (2) constitutes an improper compound question.

B. Interrogatories [4]

> INTERROGATORY NO. 21. Given that the ground motions at the PFS site are approximately 0.7g (horizontal and vertical) and that in the H-STORM 100 certificate of compliance the bounding accelerations are 0.445 g horizontal and 0.16g vertical,[2] describe with specificity why "resulting loads on the MPC and fuel assemblies remain bounded by the loads considered in the HI-STORM 100 FSAR," and the basis thereof. SSER No. 2, Ch. 5 at 1.
>
> [2] *See e.g.,* Utah's Response and Opposition to Applicant's Motion for Summary Disposition of Utah L Part B dated December 7, 2001 . . . Resnikoff Dec. ¶ 12.

STAFF RESPONSE. The Staff objects to this request on the grounds that the State has not demonstrated that the information requested could not have been obtained from another source, including, without limitation, PFS and/or Holtec International, and/or documents filed in this proceeding. Notwithstanding this objection, the Staff states as follows. For the multi-purpose canister ("MPC") and fuel assemblies, the bounding load cases are the 45g maximum loads which were calculated to result from the cask drop and tip-over events. The seismic events result in loads lower than those produced during the cask drop and tip-over events.

[4] As noted by the State (Request at 10 n.1), the Staff has voluntarily agreed to the State's request that it respond to up to five additional interrogatories on Contention Utah L, in excess of the 10-interrogatory limit per contention, established by the Licensing Board in LBP-98-7, 47 NRC 142, 245 (1998).

> INTERROGATORY NO. 22: Describe with specificity whether or not the storage pads will behave as a rigid mat and the effect of the assumption of rigidity, if any, on subsequent calculations such as those prepared by ICEC, and the basis thereof. *See e.g.,* PFS Calculation No. G(PO17)-2, *Storage Pad Analysis and Design* by International Civil Engineering Consultants.

STAFF RESPONSE. The Staff objects to this request on the grounds that it (1) is vague, confusing and ambiguous, in that it fails to specify the case(s), conditions, or analyses which are the subject of this request (*i.e.,* the conditions, case or analyses in which the storage pads will or will not behave as a rigid mat), fails to indicate whether it seeks information concerning a real or only hypothetical event, fails to identify any other "subsequent calculations" apart from one specific calculation that is referred to as an example in this request, and fails to explain what is meant by the phrase, "the basis thereof," (2) constitutes an improper compound question, and (3) the State has not demonstrated that the information requested could not have been obtained from publicly available sources, including, without limitation, PFS and/or documents submitted in this proceeding.

> INTERROGATORY NO. 23: Describe with specificity what redundancies are built into Holtec's cask design other than Holtec's assumption that the casks will slide on the pad in a controlled manner during an earthquake and the basis thereof.

STAFF RESPONSE. The Staff objects to this request on the grounds that it (1) is vague and ambiguous insofar as it uses the terms, "redundancies," "cask design," "controlled manner," and "earthquake," (2) constitutes an improper compound and confusing question, (3) is overly broad and unduly burdensome, (4) seeks to discover information that is beyond the scope of Contention Utah L, as admitted, (5) is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence in this proceeding, and (6) the State has not demonstrated that the information requested could not have been obtained from publicly available sources, including, without limitation, documents submitted by Holtec International and/or PFS in this proceeding or the proceeding on Holtec's HI-STORM cask application.

INTERROGATORY NO. 24: An analysis prepared on behalf of the State by Dr. Mohsin Khan of Altran Corporation ("Khan Report") [3] concluded that if realistic and applicable ranges of interface parameters are considered, the casks will be subjected to severe dislocation, lift off and tipping at the PFS site. Describe how the Staff took the Khan Report into account in reaching its conclusions in the SSER relating to cask stability for the design basis earthquake, and if it did not take the Khan Report into account, explain why not. *See* SSER No. 2, Ch. 5 at 28-30.

[3] *See* Utah Response 12/7/01, Exhibit 2 and attachment F thereto.

STAFF RESPONSE. The Staff objects to this request on the grounds that it (1) is vague and ambiguous insofar as it uses the terms, "realistic and applicable ranges of interface parameters," "severe dislocation," "lift off" and "tipping," (2) constitutes an improper compound question, and (3) insofar as it seeks to discover the reasons why the Staff did or did not take the "Khan Report" into account in SSER No. 2, is irrelevant and not reasonably calculated to lead to the discovery of admissible evidence in this proceeding. Notwithstanding these objections, the Staff states that it did not take the "Khan Report," dated November 30, 2001, into consideration in SSER No. 2.

INTERROGATORY NO. 25: Describe whether or not the soil cement cap around the CTB impacts soil impedance parameters and kinematic motion of the CTB foundation and the basis thereof.

STAFF RESPONSE. The Staff objects to this request on the grounds that it (1) is vague, confusing and ambiguous insofar as it uses the terms, "impacts," "soil impedance parameters," and "kinematic motion," and fails to specify the case(s), conditions, or analyses which are the subject of this request, and (2) the State has not demonstrated that the information requested could not have been obtained from publicly available sources, including, without limitation, documents submitted by PFS in this proceeding. Notwithstanding these objections, the Staff states as follows.

Yes. The soil cement cap would provide restraint against lateral motion due to embedment of the CTB mat within the soil cement cap. This effect was conservatively disregarded in the Applicant's calculation of soil impedance parameters in Calculation SC-4, "Development of Soil Impedance Functions for Canister Transfer Building."

Respectfully submitted,

/RA/

Sherwin E. Turk
Counsel for NRC Staff

Dated at Rockville, Maryland
this 1st day of February 2002

February 1, 2002

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)	)	

JOINT AFFIDAVIT OF GOODLUCK I. OFOEGBU
AND DANIEL J. POMERENING

_____	)	
COUNTY OF BEXAR	)	
	)	SS:
STATE OF TEXAS	)	
_____	)	

Goodluck I. Ofoegbu ("GIO") and Daniel J. Pomerening ("DJP"), having first been duly sworn, do hereby state as follows:

1(a). (GIO) 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 ("Staff") and SwRI. A statement of my professional qualifications is attached hereto.

1(b). (DJP) I am employed as a Principal Engineer at the Mechanical and Materials Engineering 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 ("Staff") and SwRI. A statement of my professional qualifications is attached hereto.

2 2(a). (GIO) As part of my official responsibilities, I reviewed the adequacy of the investigations of site and subsurface conditions pertaining to subsurface soils, soil stability and foundation loading issues performed by or on behalf of Private Fuel Storage L.L.C. ("PFS" or "Applicant"), as described in the Applicant's Safety Analysis Report ("SAR"). I further assisted in preparing the Staff's related safety evaluation of these matters, presented in the NRC Staff's "Safety Evaluation Report Concerning the Private Fuel Storage Facility" ("SER"), issued on September 29, 2000, as revised in SER Supplement No. 2, dated December 21, 2001.

2(b). (DJP) As part of my official responsibilities, I reviewed the adequacy of the Applicant's facility design, based upon a design earthquake derived from the Applicant's PSHA with a 2,000 year return period. I further assisted in preparing the Staff's related safety evaluation of these matters, presented in the NRC Staff's "Safety Evaluation Report Concerning the Private Fuel Storage Facility" ("SER"), issued on September 29, 2000, as revised in SER Supplement No. 2, dated December 21, 2001.

3(a). (GIO) I have reviewed the foregoing answers of the NRC Staff to Requests for Admission Nos. 1-7 and 10, in the "State of Utah's Eighteenth 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.

3(b). (DJP) I have reviewed the foregoing answers of the NRC Staff to Requests for Admission Nos. 11-15, and Interrogatories Nos. 21 and 24-25, in the "State of Utah's Eighteenth 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.

4. I hereby certify that the foregoing is true and correct to the best of my knowledge, information and belief.

/RA/

_____
Goodluck I. Ofoegbu

Sworn to before me this
1st day of February, 2002

Ruben Juarez
_____
Notary Public

My commission expires: 11/29/05

4. I hereby certify that the foregoing is true and correct to the best of my knowledge, information and belief.

/RA/

_____
Daniel J. Pomerening

Sworn to before me this
1st day of February, 2002

_____
Ruben Juarez
Notary Public

My commission expires: 11/29/05

GOODLUCK I. OFOEGBU
Senior Research Engineer
Center for Nuclear Waste Regulatory Analyses
Southwest Research Institute
San Antonio, Texas

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

Qualifications:
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:

Ofoegbu, G.I., S. Painter, R. Chen, R.W. Fedors, and D.A. Ferrill. 2001. Geomechanical and thermal effects on moisture flow at the proposed Yucca Mountain nuclear waste repository. *Nuclear Technology*, 134: 241–262.

Newman, A.V., T.H. Dixon, G.I. Ofoegbu, and J.E. Dixon. 2001. Geodetic and seismic constraints on recent activity at Long Valley Caldera, California: evidence for viscoelastic rheology. *Journal of Volcanology and Geothermal Research*. 105: 183–206.

Connor, C.B., J.A. Stamatakos, D.A. Ferrill, B.E. Hill, G.I. Ofoegbu, and F.M. Conway. 2000. 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* 105(1): 417–432.

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Education:

B.S. in Aerospace Engineering, Georgia Institute of Technology, 1975
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University of California, Berkeley, 1977

Qualifications:

Mr. Pomerening is experienced in design, analysis, and testing of structural systems in the fields of Naval Architecture, Aerospace and Civil Engineering. While working for the Naval Ship Research and Development Center, Mr. Pomerening participated in the design, construction, instrumentation, testing, and data reduction of a variety of models tested in wind tunnels. As a research assistant at the University of California, Berkeley, Mr. Pomerening was involved with the testing of building structures on a large scale seismic simulator. His Master's project produced a feasibility study on a boundary layer wind tunnel to study the dynamic effects of the wind on structures immersed in the atmospheric boundary layer.

Since joining Southwest Research Institute, Mr. Pomerening has been involved in the study of structural response of systems under dynamic loading with specific emphasis on transient and shock loading. Investigations of the structural integrity under seismic motion have included the response of floating platforms, industrial plants, electrical racks, valves and other components. Mr. Pomerening has performed seismic qualification programs for components using both analytical and experimental procedures. Work in this area has also included a Nuclear Regulatory Commission (NRC) program designed to evaluate methodology of equipment seismic qualification for nuclear plants. This has included development of procedures for use of hand held analyzers for determination of the in-situ modes of systems. Mr. Pomerening has supported programs in the Center for Nuclear Waste Regulatory Analysis (CNWRA). These have included reviews of safety analysis reports with specific emphasis on identification of design criteria and assessment of the structural integrity of structures, systems and components to with respect to the NRC Standard Review Plans.

Studies of aerospace structures have included structural models of light aircraft for determination of structural-borne noise, the T-37B aircraft wing to determine local crack growth rates, and the dynamic response of a number of missile systems during transportation and flight. Mr. Pomerening has performed several preliminary hazards analysis of electrical systems and reliability studies of space station mechanical systems. Other activities have included ground vibration and flight flutter testing as part of the T-37B structural life extension program, and slosh and crash testing of light aircraft wings. His work in Naval Architecture has been associated with LNG transport ships, the use of reinforced concrete in the marine environment, the study of ship-based missile systems, blast response of submarines and radomes and dynamic response and fatigue assessments of submersibles.

Under Mr. Pomerening's management, a number of programs have been performed to qualify equipment installed on air, sea, and land-based vehicles. The programs have included test

tailoring in accordance with the most recent standards. Mr. Pomerening has also managed a number of programs which tested packaging systems used in the shipment of nuclear materials for compliance with 10 CFR, Part 72 requirements.

Professional Chronology:

Student Engineering Trainee, Naval Ship Research and Development Center, 1970-75; Research Assistant, University of California, Berkeley, 1976-77; Southwest Research Institute, 1977 to Present in the positions of Research Engineer, 1977-83, Senior Research Engineer, Department of Mechanical and Fluids Engineering, 1983-96; and Principal Engineer, 1999 to Present.

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Publications

Kana, D.D., D.J. Pomerening, and J.C. Simonis, "Recent Research on Methodology for Seismic Qualification of Nuclear Plant Equipment," Nuclear Engineering and Design, Vol. 79, pp. 229-241, 1984.

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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 EIGHTEENTH 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 1st day of February, 2002:

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