

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))	

NRC STAFF'S RESPONSE TO "STATE OF UTAH'S
SECOND REQUEST TO MODIFY THE BASES OF
LATE-FILED CONTENTION UTAH QQ IN RESPONSE TO
MORE REVISED CALCULATIONS FROM THE APPLICANT"

INTRODUCTION

Pursuant to 10 C.F.R. § 2.714(c) and the Licensing Board's "Order (Schedule for Responsive Pleadings)" dated August 30, 2001, the NRC Staff ("Staff") hereby responds to the "State of Utah's Second Request to Modify the Bases of Late-Filed Contention Utah QQ in Response to More Revised Calculations From the Applicant," dated August 23, 2001 ("Second Modification Request"). As set forth below, to the extent that the Licensing Board determines that late-filed Contention Utah QQ states an admissible contention, the Staff does not oppose the admission of certain portions of the State's second proposed modification of Contention Utah QQ, but submits that other portions of this proposed modification fail to satisfy the Commission's standards for late-filing and/or standards for admission of a contention and should therefore be rejected.

BACKGROUND

On June 25, 1997, Private Fuel Storage, L.L.C. ("PFS" or "Applicant"), filed a license application ("LA") to possess and store spent nuclear fuel ("SNF") in an Independent Spent Fuel Storage Installation ("ISFSI") to be constructed and operated on the Reservation of the Skull Valley

Band of Goshute Indians in Skull Valley, Utah. On or before November 24, 1997, numerous contentions were timely filed by the State of Utah ("State") and other petitioners for leave to intervene.

In a decision dated April 22, 1998, the Licensing Board found, *inter alia*, that the State and certain other petitioners had demonstrated their standing to intervene and had submitted at least one admissible contention, and admitted them as parties to this proceeding. *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142 (1998). Included among these contentions was Contention Utah L ("Geotechnical"),¹ which asserts as follows:

Utah L -- Geotechnical

CONTENTION: The Applicant has not demonstrated the suitability of the proposed ISFSI site because the License Application and SAR do not adequately address site and subsurface investigations necessary to determine geologic conditions, potential seismicity, ground motion, soil stability and foundation loading.

Id. at 253. The State provided four basis statements in support of this contention, concerning the following matters: (1) surface faulting (Utah Contentions at 80-82); (2) ground motion (*Id.* at 82-83); (3) characterization of subsurface soils, including subsurface investigations, sampling and analysis, and physical property testing for engineering analysis (*Id.* at 83-92); and (4) soil stability and foundation loading (*Id.* at 92-95). On December 30, 2000, PFS filed a motion for summary disposition of Contention Utah L, which motion is pending before the Licensing Board at this time.²

On April 2, 1999, PFS submitted a request for exemption from the seismic requirements of 10 C.F.R. Part 72, in order to utilize a probabilistic seismic hazard analysis ("PSHA") with a 2,000-year return period. On September 30, 2000, the Staff issued its Safety Evaluation Report

¹ See "State of Utah's Contentions on the Construction and Operating License Application by Private Fuel Storage, LLC for an Independent Spent Fuel Storage Facility" ("Utah Contentions"), dated November 23, 1997, at 80-95.

² See "Applicant's Motion for Summary Disposition of Utah Contention L," dated December 30, 2000, as *corrected* January 2, 2001.

("SER") for the PFS facility,³ in which it, *inter alia*, concluded its review of geotechnical issues and determined to approve the Applicant's seismic exemption request (see SER, § 2.1.6).

On November 9, 2000, the State filed a request to modify Basis 2 of Contention Utah L, challenging the Applicant's seismic exemption request.⁴ On January 31, 2001, the Licensing Board ruled that portions of the State's proposed modification of Contention Utah L were admissible, and certified a question to the Commission as to whether the State's challenge to PFS's exemption request should be considered in this proceeding. *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-01-3, 53 NRC 84, 101 (2001). On June 14, 2001, the Commission affirmed the Licensing Board's decision, in *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-01-12, 53 NRC ____ (2001); and on June 15, 2001, the Licensing Board issued an Order incorporating the State's modification as subpart "B" of Contention Utah L.⁵

On March 30, 2001, PFS submitted LA Amendment No. 22, in which it updated its safety analysis report ("SAR") and other licensing documents to reflect new information it had obtained regarding seismic ground motion, the seismic design of the facility, and other matters.⁶ Several calculation packages relating to this amendment were submitted by PFS in April 2001. On May 16, 2001, the State filed a request for admission of late-filed Contention Utah QQ, challenging the Applicant's revised use of soil-cement at the PFSF site and the seismic design of the facility, based

³ See Letter from Mark S. Delligatti (NRC) to John D. Parkyn (PFS), dated September 29, 2000, enclosing "Safety Evaluation Report Concerning the Private Fuel Storage Facility."

⁴ See "Request for Admission of Late-Filed Modification to Basis 2 of Contention Utah L," filed on November 9, 2000.

⁵ See "Memorandum and Order (Requesting Joint Scheduling Report and Delineating Contention Utah L)," dated June 15, 2001, at 2-3.

⁶ See letter from John D. Parkyn (PFS) to NRC Document Control Desk, dated March 30, 2001.

in part on the calculation packages submitted by PFS in April 2001.⁷ The following areas of concern were identified in this proposed contention:

1. Application of the new design basis ground motions to the CTB and its foundation system (Utah QQ Request at 8-9);
2. Application of the new design basis ground motions to the storage casks and the storage pads (*Id.* at 9-11);
3. Survivability and durability of cement-treated soil for the redesigned CTB and storage pad foundation systems (*Id.* at 11-14), including:
 - (a) Overstressing and cracking due to dynamic bending, torsional, and beam shear stresses (*Id.* at 12);
 - (b) Delamination or debonding along a cement-treated soil lift interface (*Id.* at 12-13);
 - (c) Shrinkage cracking due to drying and curing (*Id.* at 13);
 - (d) Cracking due to vehicle loads (*Id.*);
 - (e) Long-term performance of cement-treated soil over a 40 year period (*Id.* at 13-14); and
4. Overestimation of the sliding resistance provided by the clayey-silt and silty-clay underlying the CTB and storage pads (*Id.* at 14-15).

Responses to the State's request to admit proposed Contention Utah QQ were filed by PFS and the Staff,⁸ and that request is pending before the Licensing Board.

On June 19, 2001, the State filed its first request to modify late-filed proposed Contention Utah QQ, based on PFS's revision, on May 31, 2001, of two calculation packages it had submitted in April 2001 in support of LA Amendment No. 22: (a) Calculation No. 05996.02-G(B)-04, Rev. 8 ("Stability Analysis of Storage Pads"), and (b) Calculation No. 05996.02-G(B)-13, Rev. 5 ("Stability

⁷ See "State of Utah's Request for Admission of Late-Filed Contention Utah QQ (Seismic Stability)," dated May 16, 2001 ("Utah QQ Request" or "Contention Utah QQ").

⁸ See (1) "NRC Staff's Response to 'State of Utah's Request for Admission of Late-Filed Contention Utah QQ (Seismic Stability),' " dated May 30, 2001, and (2) "Applicant's Response to State of Utah's Request for Admission of Late-Filed Contention Utah QQ," dated May 30, 2001.

Analysis of the Canister Transfer Building Supported on a Mat Foundation”).⁹ Responses to the State’s first request to modify proposed Contention Utah QQ were filed by PFS and the Staff,¹⁰ and that modification request is pending before the Licensing Board.

On August 23, 2001, the State filed its second request to modify proposed Contention Utah QQ, based on PFS’s further revision, on July 27, 2001, of the two calculations that prompted the State’s First Modification Request, and PFS’s submission, on August 7, 2001, of an additional analysis provided by Holtec International (“Holtec”) concerning LA Amendment No. 22. At issue are: (1) Calculation No. 05996.01-G(B)-04, Rev. 9 (“Stability Analyses of Cask Storage Pads”); (2) Calculation No. 05996.01-G(B)-13, Rev. 6 (“Stability Analyses of Canister Transfer Building”); and (3) a Holtec analysis submitted by PFS to the NRC on August 7, 2001.

As set forth below, the Staff does not oppose the modification of proposed Contention Utah QQ to the extent that it is based upon the revised calculations or other new information contained in the Applicant’s July 27 and August 7 submittals; however, the Staff submits that other

⁹ See “State of Utah’s Request to Modify the Bases of Late-Filed Contention Utah QQ in Response to Further Revised Calculations From the Applicant,” dated June 19, 2001 (“First Modification Request”). The following areas of concern were identified in the State’s First Modification Request:

1. Seismic Stability Analysis of the Storage Pads (First Modification Request at 3-8, including:
 - (a) The accuracy of PFS’s analysis of the inertial forces acting on the pads (*Id.* at 4-5);
 - (b) The use of an inconsistent design approach with respect to the buttressing effect of the cement-treated soil (*Id.* at 4-6);
 - (c) PFS’s continued failure to address the impacts that affect the adhesive strengths at various foundation interfaces (*Id.* at 6-7);
 - (d) The adequacy of PFS’s longitudinal analysis of the storage pads (*Id.* at 7-8); and
2. Seismic Stability Analysis of the CTB (*Id.* at 8-9).

¹⁰ See (1) “NRC Staff’s Response to ‘State of Utah’s Request to Modify the Bases of Late-Filed Contention Utah QQ in Response to Further Revised Calculations From the Applicant,’” dated July 3, 2001, and (2) “Applicant’s Response to State of Utah’s Request to Modify the Bases of Late-Filed Contention Utah QQ in Response to Further Revised Calculations From the Applicant,” dated July 3, 2001.

portions of the State's second proposed modification should be rejected on the grounds that they are impermissibly late and/or fail to provide the necessary factual basis or sufficient information to show a genuine dispute of a material fact, as required under 10 C.F.R. § 2.714(b)(2)(ii)-(iii).

DISCUSSION

A. Legal Standards Governing the Admission of Contentions.

In order for a contention to be admitted to a proceeding, the requirements of 10 C.F.R. § 2.714 must be met. *Duke Energy Corp.* (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 333 (1999); *Yankee Atomic Electric Co.* (Yankee Nuclear Power Station), CLI-96-7, 43 NRC 235, 248 (1996). A contention must meet the standards set forth in 10 C.F.R. § 2.714(b)(2), which provides that each contention must consist of a "specific statement of the issue of law or fact to be raised or controverted" and must be accompanied by:

- (i) A brief explanation of the bases of the contention;
- (ii) A concise statement of the alleged facts or expert opinion which supports the contention . . . together with references to those specific sources and documents of which the petitioner is aware and on which the petitioner intends to rely to establish those facts or expert opinion;
- (iii) Sufficient information . . . to show that a genuine dispute exists with the applicant on a material issue of law or fact.

10 C.F.R. § 2.714(b)(2). The failure of a contention to comply with any one of these requirements is grounds for dismissing the contention. See 10 C.F.R. § 2.714(d)(2)(i); *Arizona Public Service Co.* (Palo Verde Nuclear Generating Station, Units 1, 2 and 3), CLI-91-12, 34 NRC 149, 155-56 (1991); *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 178-181 (1998).¹¹

¹¹ With respect to documentary or other factual information or expert opinion alleged to provide the basis for a contention, the Board is not to accept uncritically the assertion that a document or other factual information or an expert opinion supplies the basis for a contention. The Board should review the information provided to ensure that it does indeed supply a basis for the
(continued...)

B. The Legal Standards for Late-Filed Contentions.

The legal standards for the admission of late-filed contentions are set forth in 10 C.F.R. § 2.714(a). Under those standards, it is well-settled that where a contention is based upon the publication of a licensing-related document, the institutional unavailability of the document does not establish good cause for filing a contention late under 10 C.F.R. § 2.714(a)(1)(i), if information was publicly available early enough to provide the basis for the timely filing of that contention. *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 1041, 1045 (1983). Thus, it has been held that where a contention purportedly is based on the existence of a document recently made publically available, an important consideration in assessing good cause for lateness is the extent to which the contention could have been submitted prior to the document's availability. *See Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-737, 18 NRC 168, 172 n.4 (1983); *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-29, 48 NRC 286, 292 (1998).

In evaluating the five lateness factors of 10 C.F.R. § 2.714(a), two factors -- the availability of other means to protect the petitioner's interest and the ability of other parties to represent the petitioner's interest -- are less important than the other factors, and are therefore entitled to less weight. *Texas Utilities Electric Co.* (Comanche Peak Steam Electric Station, Units 1 and 2), CLI-92-12, 36 NRC 62, 74 (1992). With respect to the third factor (the potential contribution to the development of a sound record), petitioners are required to provide a "real clue about what they

¹¹(...continued)

contention. *See Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-919, 30 NRC 29, 48 (1989); *vacated in part on other grounds and remanded*, CLI-90-4, 31 NRC 333 (1990); *see also Yankee Atomic Electric Co.* (Yankee Nuclear Power Station), LBP-96-2, 43 NRC 61, 90 (1996) (a document put forth as the basis for a contention is subject to scrutiny both for what it does and does not show). The adjudicatory hearing process should not be triggered by contentions that lack a factual and legal foundation. *Oconee*, CLI-99-11, 49 NRC at 334-35, *citing Final Rule*, "Rules of Practice for Domestic Licensing Proceedings -- Procedural Changes in the Hearing Process," 54 Fed. Reg. 33,168, 33,172 (1989).

would say to support the contention beyond the minimal information they provide for admitting the contention.” *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation) LBP-98-7, 47 NRC 142, 208-09 (1998). Finally, a petitioner must also meet the requirements for setting forth a valid contention, as stated in 10 C.F.R. § 2.714(d)(2).

C. The Timeliness of the State’s Second Proposed Modification of Contention Utah QQ.

On July 20, 2001, PFS provided its response to a letter from the NRC Staff which had identified information that was missing from LA Amendment No. 22.¹² As discussed above, on July 27, 2001, PFS submitted revised calculation packages in support of its July 20 submittal, which revised two calculations that were challenged in the State’s First Modification Request: (1) Calculation No. 05996.01-G(B)-04, Revision 9 (“Stability Analyses of Cask Storage Pads”); and (2) Calculation No. 05996.01-G(B)-13, Revision 6 (“Stability Analyses of Canister Transfer Building”). In addition, on August 7, 2001, PFS submitted an additional analysis by Holtec, in response to an NRC Staff question concerning the stability analysis for the cask storage pads during a seismic event.¹³

In the instant request to modify proposed Contention Utah QQ, the State identified the following concerns with respect to PFS’s recent submissions:

The revised Stone & Webster calculations and the additional information from Holtec do not satisfy the concerns raised by the State in Utah QQ or the State’s First Modification Request. In particular, results from PFS’s soil cement testing program have not been presented in the revised calculations. Furthermore, there are

¹² See Letter from John D. Parkyn to NRC Document Control Desk, dated July 20, 2001 (“Data Needed for NRC Review”), and attachment thereto (“Missing Information Identified by the NRC Staff During the Acceptance Review, 6-20-01 NRC Letter (Delligatti to Parkyn)”).

¹³ See Letter from John L. Donnell (PFS) to NRC Document Control Desk, dated August 7, 2001 (“Commitment Resolution Letter #37”). PFS submitted the Holtec analysis, dated August 6, 2001, in response to a Staff comment that “PFS should provide a basis for the conclusions contained within the SAR that the storage casks do not tip over, collide, nor slide off the storage pad during the seismic event, taking into consideration the potential movement of the cask storage pads of up to 6”. *Id.* at 1.

significant errors in Stone & Webster's calculation of inertial force, simplified Newmark sliding block analysis, and dynamic active lateral earth pressure. In addition, both Stone & Webster and Holtec in their calculations rely on ideal conditions and unproven assumptions.

Second Modification Request at 2. However, while the State's second modification request relates, in part, to PFS's recent revision of the two referenced calculations and submission of a new Holtec analysis, in other respects, the modification request relates to matters which could have been raised with respect to the Applicant's previous submittals and are not timely filed now. The Staff's views of these matters are as follows.

1. Results From PFS's Soil Cement Testing Program.

In its revised calculations, submitted to the NRC on July 27, 2001, PFS makes reference to its "ongoing laboratory [soil-cement] testing program." Calculation No. 05996.01-G(B)-04, Rev. 9 ("Stability Analyses of Cask Storage Pads") at 8. The State raises three concerns with respect to PFS's soil-cement testing program: (a) the failure of the revised calculations "to address PFS's soil testing program with any specificity or data from the PFS testing program"; (b) the failure of PFS "to validate[] and verif[y] the quality assurance program under which [soil-cement] testing has been performed"; and (c) PFS's lack of plans "to conduct cyclic triaxial or cyclic direct shear testing of the cement-treated soil samples." Second Modification Request at 3-4.

With respect to the first of these concerns (PFS's failure to incorporate data from its soil-cement testing program into its revised stability calculations), the State claims that "PFS's analyses of the pads and CTB are incomplete without the soil test data results incorporated into stability calculations." *Id.* at 3. The Staff notes that this concern, which focuses on site-specific soil testing, is equivalent to Basis 3 ("Survivability and Durability of Cement-Treated Soil for the Redesigned CTB and Storage Pad Foundation Systems") of the State's late-filed proposed Contention QQ. In proposed Contention QQ, the State challenged the use of soil-cement in connection with both the CTB and the storage pads, claiming, *inter alia*, that the use of soil-cement in this context "has not

been supported by precedent, site-specific evaluations and testing, and engineering analyses and design.” Utah QQ Request at 11 (emphasis added). As noted in the NRC Staff’s response to the State’s proposed Contention Utah QQ, “the State’s challenge with respect to the use of soil-cement in the storage pad area could have been filed much earlier -- as could the State’s claims with respect to any concerns it may have, in general, regarding the use of soil-cement for this facility.” NRC Staff’s Response to Utah QQ Request at 11. Again, nowhere does the State indicate that it could not have raised these concerns earlier; instead, it simply states that “PFS’s analyses of the Canister Transfer Building (“CTB”) and storage pads still rely upon assumed values,” and that PFS’s analyses “are incomplete without the soil test data results incorporated into the stability calculations.” Second Modification Request at 2-3 (emphasis added). Accordingly, the State has not shown good cause for its late submission of this issue, since a claim that test results must be disclosed before an analysis may be accepted could have been made at any time.

With respect to the second issue raised by the State (validation and verification of the quality assurance program under which the soil-cement testing program has been performed), the State claims that “the contractor chosen by PFS to conduct the soil-cement testing does not appear to be qualified to conduct the work within the scope set forth by PFS, such as following the standards” established by regulation and guidance, and that “near the time PFS awarded the soil testing contract, PFS was unaware of any of the recommended bidders’ qualifications.” *Id.* at 3, *citing* Exhibit 3, a proprietary PFS “Recommended Bidder’s List” for the laboratory testing of soil-cement mixes. The State further contests a statement made by PFS in its revised calculations that PFS’s “entire laboratory testing program is being conducted in full compliance with the Quality Assurance (QA) Category I requirements of the [Engineer Services Scope of Work],” prior to PFS’s validation and verification of its QA program. *See id.* at 3, *citing* Calculation No. 05996.01-G(B)-13, Rev. 6 (“Stability Analyses of Canister Transfer Building”) at 11.

Although this concern appears to be timely, in that any questions concerning the QA program of the specific contractor who is to conduct the soil-cement testing program could not have been raised earlier because PFS had yet to select the contractor, the State has not shown reason to believe that PFS's contractor is not qualified.¹⁴ Therefore, the State does not provide the necessary factual basis or sufficient information to show a genuine dispute of a material fact with respect to this issue, as required under 10 C.F.R. § 2.714(b)(2)(ii)-(iii).

With respect to the third issue raised by the State (PFS's lack of plans "to conduct cyclic triaxial or cyclic direct shear testing of the cement-treated soil samples"), the State asserts that "only" through such testing "can the behavior of the cement-treated soil be evaluated under the cyclic loading of the design earthquake." Second Modification Request at 4. Once again, however, this concern relates to the basic concept of using soil-cement in PFS's design, which is an issue that the State could have and has raised previously. See *id.* n.3; NRC Staff's Response to Utah QQ Request at 8. The State's expression of this concern thus restates its earlier assertion that PFS has "conducted no site specific testing to determine the strength, survivability and durability properties of the cement-treated soil." Utah QQ Request at 13-14. Indeed, in footnote 3 of its second modification request, the State reiterates a statement made in proposed Contention Utah QQ emphasizing that PFS's use of soil-cement as a structural element in the foundation design for the CTB lacks "sufficient . . . testing . . . to demonstrate that the cement-treated soil will perform its intended functions both under seismic loading and long-term operational conditions." Second

¹⁴ The State merely asserts that "the contractor chosen by PFS to conduct the soil-cement testing program does not appear to be qualified to conduct the work with the scope set forth by PFS. . ." and that, "near the time PFS awarded the soils testing contract to the lowest bidder, PFS was unaware of any of the recommended bidders's qualifications." Second Modification Request at 3, *citing* Exhibit 3 (emphasis added). This assertion fails to establish that the contractor is not qualified. Dr. Bartlett's Declaration is equally speculative. See Bartlett Dec. ¶ 6. The State presents Exhibit 3 as evidence that PFS did not "pre-qualify" the bidding contractors. However, neither Exhibit 3 nor any other information provided by the State shows that PFS has failed to verify and validate the quality assurance program of the selected contractor.

Modification Request at 4 n.3, *citing* Utah QQ Request at 6. Thus, given this focus on the need for testing to demonstrate the acceptability of PFS's use of soil-cement and the soil-cement's performance, the issue is untimely raised, and the State has failed to show good cause for its late submission of this issue.

2. Inertial Forces and the Rigidity of the Cask-Pad System

With respect to Revision 9 to Calculation No. 05996.01-G(B)-04, the State notes that in attempting to correct its analysis to use as an input the inertial force of the combined mass of the pad and underlying soil cement, PFS claims that it added the inertial force due to the 2-foot thick layer of soil-cement beneath the pad to the sliding stability analysis. Second Modification Request at 4. The State maintains, however, that in doing so, PFS "incorrectly uses peak ground acceleration to calculate the inertial force in attempting to correct its mistake in Revision 8." *Id.* at 4 (emphasis added). The State herein challenges PFS's assumption "that the soil cement will act as a rigid body" (*Id.*), and concludes that "there is no supportable basis for PFS claiming the pads and cement-treated soil will act as a rigid system." *Id.* at 5-6. While the State's concern ostensibly responds to a new revision to Calculation No. 05996.01-G(B)-04, the State is in reality again challenging PFS's long-standing analytical assumption of a rigid mat in the stability analysis of the storage pad. In fact, the State itself concedes that "the dispute about whether the cement-treated soil and pad system will act as a rigid mat is a long-standing one. . . ." (Second Modification Request at 5 n.4), and acknowledges that this issue "was also raised by the State in Utah QQ." *Id.* at 5, *citing* Utah QQ Request at 6 and Exhibit 1, Ostadan Dec. ¶ 13. Moreover, the Staff has previously observed that this issue "could have been raised before." NRC Staff's Response to Utah QQ Request at 9. Thus, this issue continues to be untimely, and the State has not shown good cause for its late submission.

3. Newmark Sliding Block Analysis

The State's third area of concern raises several issues with respect to PFS's use of Newmark sliding block analyses in Revision 9 to Calculation No. 05996.01-G(B)-04, in which PFS presents a "hypothetical sliding case where resistance to sliding [of the pad] is based on frictional resistance along the base of the pads and the cement-treated soil." Second Modification Request at 6. The first issue pertains to the viability of using the Newmark deformation analyses for sliding stability under extreme environmental conditions such as earthquakes. *Id.* at 6-7. The State claims that because the "factors of safety against sliding for the no cohesion cases" presented by PFS in Revision 9 are less than 1.1, and NUREG-75/087 "allows a recommended minimum factor of safety against sliding failure of 1.1 for extreme environmental conditions," Revision 9 is "not consistent" with NUREG-75/087. *Id.* The Staff notes, however, that NUREG-75/087 is a guidance document, and that an applicant may use reasonable alternative methods to verify that the structures, systems, and components important to safety will perform the necessary safety functions. See 10 C.F.R. 72.122(b)(2). Thus, any alleged failure to follow the NUREG document does not establish a genuine issue of material fact.

Second, the State asserts that PFS has failed to define in its design criteria what constitutes "acceptable deformation" from sliding of the pad. See *id.* at 7. However, the State provides no reason to believe that any such explicit definition is required. Accordingly, this issue fails to establish a genuine dispute of material fact, as required under 10 C.F.R. § 2.714(b)(2)(ii)-(iii).

The State raises four additional issues, which it characterizes collectively as "other errors and unconservative assumptions in PFS's simplified Newmark sliding block analyses." Second Modification Request at 7. Specifically, the State asserts:

First, the deformations analyses presented are very simplistic and have numerous errors and unconservative assumptions. Again, PFS has erroneously assumed the pads will behave in a rigid manner and incorrectly uses peak vertical ground acceleration in calculating the maximum resistance coefficient. Bartlett Dec. ¶10.

Second, PFS has not considered the potential for unsymmetrical sliding, which will produce larger displacement than those calculated in Cal. G(B)-04, Revision 9. *Id.* Third, the design basis earthquake ground motion for the PFS site may be significantly different than those from which Newmark based his analyses. The design charts in Newmark are applicable for peak horizontal ground acceleration normalized to 0.5 g whereas the design basis ground motion for this site is approximately 0.7 g. *Id.* Fourth, PFS has not justified that the earthquakes used in the Newmark analysis are similar to the design basis earthquake in amplitude, frequency and phasing of the ground motion and whether the Newmark events incorporate near source effects, such as fling. *Id.* Second Modification Request at 7.

Neither of the State's first two additional concerns appear to have been prompted by the Applicant's submission of Revision 9 to the calculation; rather, these are issues that could have and should have been raised in connection with the Applicant's previous submittals. As stated above, the State has previously raised the first issue, which involves PFS's long-standing analytical assumption that the pads will behave in a rigid manner, in an untimely manner. See discussion at 12, *supra*. Similarly, the second issue of "unsymmetrical sliding" relates to the stability and movement of the storage pad. This issue could have and should have been presented previously in connection with prior PFS pad stability analyses. As such, these issues are untimely, and the State has not shown good cause for its late submission of these issues.

The third and fourth issues, which pertain to potential differences between PFS's design basis earthquake characteristics and ground motions and those used by Newmark, appear to be timely, in that they first arose in connection with Revision 9 to the calculation. Accordingly, the Staff does not oppose the admission of the third and fourth issues, in the event that the Board determines to admit proposed Contention Utah QQ.

4. "Other Incorrect Calculations in the Pad Stability Analyses"

The State asserts that Revision 9 to Calculation No. 05996.01-G(B)-04 revised the calculation of "the dynamic active lateral earth pressure," but that "the revised calculation is still incorrect." Second Modification Request at 8 (emphasis added). Specifically, the State claims that

the revised calculation “fails to recognize the potential for pad-to-pad interaction, an issue raised by the State in Utah QQ at 10, and an issue that still remains unaddressed by PFS in Revision 9.”

Id. (emphasis added). As the underscored language indicates, this concern is not prompted by Revision 9 to the calculation *per se*, but rather, echoes a concern previously articulated by the State. In fact, the Staff has previously observed, in responding to the issue of pad-to-pad interaction in its May 30, 2001 response to the State’s Utah QQ Request, that the State failed to show why it could not have raised this issue previously. See Staff Response to Utah QQ at 10. Accordingly, this issue is untimely, without any showing of good cause for its late submission.

5. Canister Transfer Building Sliding Stability Analyses

With respect to Calculation No. 05996.01-G(B)-13, Revision 6 (“Stability Analyses of Canister Transfer Building”), the State asserts:

The *CTB Sliding Stability Analyses*, Cal. G(B)-13, Revision 6, does not shed any light onto the issues raised by the State in Utah QQ. Ostadan Dec. ¶¶ 7 and 8. In Cal. G(B)-13, Revision 6, Stone and Webster used soil cement to show additional resistance that is available for the stability of the building without regard to the actual behavior of the soil cement under tensile stresses; separation caused by vibration of the building; and the impact of settlement, as calculated in Calculation G(B)-13, on the integrity of the soil cement around the CTB. Such loading will indeed cause cracking and separation of the soil cement and invalidate the assumptions used in the stability analyses of the CTB. Ostadan Dec. ¶ 8.

Second Modification Request at 8 (emphasis added). The foregoing concerns are not related to specific changes in Revision 6; instead, they relate generally to PFS’s previous reliance on the soil-cement to resist sliding of the CTB and appear to have been raised previously by the State in an untimely manner.¹⁵ Indeed, the portions of Dr. Ostadan’s Declaration which support these

¹⁵ See *supra*, at 4 and 5 n.9; see also NRC Staff’s Response to Utah QQ Request at 9-15 and NRC Staff’s Response to First Modification Request at 11-13. For example, the State raised its concern with respect to tensile stresses and their potential effects on soil-cement in both proposed Contention Utah QQ (at 10) and its First Modification Request (at 6).

concerns state, in part, that “none of the revised calculations provide any information that addresses the concerns I raised in previous declarations,” and that “the concerns I raised in ¶ 13 of my Declaration in support of [proposed Contention] Utah QQ still apply.” Ostadan Dec. ¶¶ 7-8 (emphasis added). Accordingly, these concerns are untimely and do not support the admission of the State’s modification of proposed Contention Utah QQ.

6. Holtec’s New Cask Sliding Calculation

The State also asserts that the new Holtec calculation (submitted as PFS Commitment Letter #37 on August 7, 2001) is “over-simplified and incorrect” (Second Modification Request at 8), and notes that the calculation “incorporates nonlinear soil springs under the storage pad to allow sliding of the pad and it attempts to show that the casks are still stable even though the pad can slide by as much as six inches.” *Id.* at 8-9. The State’s concern regarding Holtec’s use of the simplified method of representing soils as nonlinear springs in its latest calculation appears timely, as the State could not have raised this concern earlier because Holtec did not use this method in its previous calculations.

Apart from this item, the State does not identify any other errors or flaws associated specifically with the new Holtec calculation; instead, it simply states that the “concerns expressed by Dr. Ostadan in his Declaration ¶ 11(a) through (f) in support of Contention Utah QQ still apply to the revised calculation.” *Id.* at 9 (emphasis added). Thus, these issues are not new. Furthermore, the specific concerns identified by the State with respect to Holtec’s modeling assumptions - i.e., “the effect of the soil-cement around the pad,” the “unsymmetric loading” imparted on the pad by the soil-cement, the “cracking and potential crushing of the soil-cement on the passive side and the separation of the soil-cement on the active side due to lack of tensile capacity” (*Id.*), are untimely. These issues could have and should have been presented earlier -- and, to a large extent, appear to have been presented in proposed Contention Utah QQ and/or the

State's First Modification Request. Accordingly, these concerns are untimely raised without any showing of good cause for their late submission.

Finally, the State asserts that "it is clear that PFS has not formulated a sound design concept that can properly include the real behavior of the cement-treated soil on the seismic response and stability of the cask-pad system." Second Modification Request at 9. This statement challenges the general concept of using soil-cement and fails to identify any new changes in PFS's analyses or plans to use that material in the construction of its proposed facility. This concern thus fails to establish a timely issue, and the State has not shown good cause for its late submission.

D. Application of the Other Factors in 10 C.F.R. § 2.714 (a)(1).

The Staff's views with respect to the timeliness of the concerns presented in the State's second modification request of proposed Contention Utah QQ are set forth above. In sum, some issues raised by the State's second modification request appear to be timely, while other issues, as described above, could have and should have been raised previously. Furthermore, the State has failed to demonstrate good cause for the late filing of the untimely portions of its modification of proposed Contention Utah QQ, as required under 10 C.F.R. § 2.714(a)(1). *See, e.g., Catawba*, CLI-83-19, 17 NRC at 1045; *Seabrook*, ALAB-737, 18 NRC at 172 n.4; *PFS*, LBP-98-29, 48 NRC at 292.

Further, the State has not made a "compelling showing" that the other four factors set forth in 10 C.F.R. § 2.714(a)(1) support the admission of the untimely portions of its second modification of proposed Contention Utah QQ. *See, e.g., Mississippi Power & Light Co.* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 NRC 1725, 1730 (1982).

Regarding factors two and four, the State's interest is not represented by existing parties with respect to the issues raised in late-filed Contention Utah QQ, and other means are not available whereby the State's interest will be protected regarding such issues. Accordingly, these

factors weigh in the State's favor, although they are less important than the other factors and are therefore entitled to less weight. *Comanche Peak*, CLI-92-12, 36 NRC at 74.¹⁶

With respect to the third factor, the experts named by the State in its proposed Contention Utah QQ and associated modification requests appear qualified to assist in the development of a sound record. However, while the State and its experts make generalized assertions about the Applicant's alleged failure to "formulate" and "provide proof of" a sound design concept (See Ostadan Declaration ¶ 11; Second Modification Request at 9, 12), they fail to provide "a real clue about what [they] would say to support the contention beyond the minimal information [they] provide for admitting the contention." *PFS*, LBP-98-7, 47 NRC 142, 208-09 (1998). On the contrary, the State contends that it is "unable to summarize proposed expert testimony until PFS provides proof of its novel soil-treated cement [sic] design concept." Second Modification Request at 12. This assertion is without merit. It is incumbent upon the State, upon filing its contention or any modification thereof, to satisfy this criterion. Accordingly, this factor weighs against the admission of the untimely portions of the State's second modification request.

With respect to the fifth factor of 10 C.F.R. § 2.714(a)(1), the admission of the State's modification of proposed Contention Utah QQ will broaden the issues and result in delay in the proceeding. The Staff recognizes that it currently has the Applicant's revised seismic analyses and design under review, and approximately 3-4 months will be required for the Staff to complete its review.¹⁷ Nonetheless, the admission of this contention at this stage in the hearing process will

¹⁶ The State asserts that its proposed modification should be admitted, in part, because "a significant and important level of objective seismic expertise and knowledge" would otherwise "be muted." Second Modification Request at 12. This allegation does not establish a reason to admit the modification.

¹⁷ The Staff anticipates completing its review of geotechnical issues and issuing a Supplement to its Safety Evaluation Report on geotechnical issues on or before December 21, 2001. This will be reflected in the Joint Scheduling Report to be filed by the parties on September 10, 2001.

require additional time for discovery, summary disposition motions, and the preparation of testimony, all of which would have to be accounted for in the schedule. Thus, this factor weighs against the admission of the State's requested modification of proposed Contention Utah QQ.

In sum, the Staff submits that the State has failed to establish good cause for the late filing of certain portions of its modification of Contention Utah QQ, as set forth above, in that the State could have framed those issues previously. Further, the State's lack of good cause for its late filing of these concerns is not overcome by a "compelling" showing that the other factors specified in 10 C.F.R. § 2.714(a)(1) favor their admission. *State of New Jersey* (Department of Law and Public Safety's Requests Dated October 8, 1993), CLI-93-25, 38 NRC 289, 296 (1993). For these reasons, the Staff submits that the specified portions of the State's second proposed modification of late-filed Contention Utah QQ should be rejected.

CONCLUSION

For the reasons set forth above, the Staff submits that portions of the State's proposed modification of late-filed Contention Utah QQ, as set forth above, fail to satisfy the basis and specificity standards for admission of a contention and/or are untimely and do not meet the

standards for late-filed contentions in 10 C.F.R. § 2.714(a)(1), and should be rejected. In other respects, the Staff does not oppose the admission of the State's second modification of this proposed contention, to the extent that the Licensing Board determines that the contention should be admitted.

Respectfully submitted,

/RA/

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Counsel for NRC Staff

Dated at Rockville, Maryland
this 7th day of September 2001

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 RESPONSE TO 'STATE OF UTAH'S SECOND REQUEST TO MODIFY THE BASES OF LATE-FILED CONTENTION UTAH QQ IN RESPONSE TO MORE REVISED CALCULATIONS FROM THE APPLICANT'" 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 7th day of September, 2001:

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