May 30, 2001

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, L.L.C.	)	
	)	ASLBP No. 97-732-02-ISFSI
(Independent Spent Fuel Storage Installation)	)	
	)	

NRC STAFF'S RESPONSE TO
"STATE OF UTAH'S REQUEST FOR ADMISSION OF
LATE-FILED CONTENTION UTAH QQ (SEISMIC STABILITY)"

INTRODUCTION

Pursuant to 10 C.F.R. § 2.714(c) and the Atomic Safety and Licensing Board's "Order (Schedule for Responsive Pleadings)," dated May 18, 2001, the NRC Staff ("Staff") hereby responds to the "State of Utah's Request for Admission of Late-Filed Contention Utah QQ (Seismic Stability)," dated May 16, 2001 ("Request"). As discussed below, the Staff does not object to certain portions of Contention Utah QQ, but submits that other portions of the contention fail to satisfy the Commission's standards for late-filing and should 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 July 31, 1997, the Commission published in the *Federal Register* a Notice of Consideration and Notice of Opportunity for Hearing concerning this matter. *See* 62 Fed. Reg. 41,099 (1997). In accordance with the Notice and the Licensing Board's orders in this proceeding, on or before November 24, 1997, numerous contentions were timely filed by various petitioners, including the State of Utah ("State").

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. The State then filed two requests to modify Contention Utah L to challenge PFS' request for exemption, which the Board denied as premature because the Staff had

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[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.

not yet completed its review of the exemption request and it was unknown whether the request would be approved.[3]

On September 30, 2000, the Staff issued its Safety Evaluation Report ("SER") for the PFS facility,[4] in which it, *inter alia*, determined to approve the Applicant's seismic exemption request. *See* SER, § 2.1.6.2. On November 9, 2000, the State filed a further request to modify Basis 2 of Contention Utah L, challenging the Applicant's seismic exemption request.[5] 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 litigated in this proceeding. *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-01-3, 53 NRC 84, 101 (2001). That question is now pending before the Commission.

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 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, in accordance with the Licensing Board's scheduling Order of April 26, 2001,[7] the State filed the instant request for admission of late-filed Contention Utah QQ, challenging the Applicant's use of soil cement at the PFSF site and the seismic design of the facility.

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[3] *See Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-99-21, 49 NRC 431 (1999); *Id.*, LBP-00-15, 51 NRC 313 (2000).

[4] *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."

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

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

[7] *See* "Memorandum and Order (Schedule for Late-Filed Submissions Regarding License Application Amendment and Page Limit Extension)," dated April 26, 2001, at 3 ("Order").

As set forth below, the Staff submits that certain portions of Contention Utah QQ should be rejected on the grounds that they are impermissibly late.

DISCUSSION

In Contention Utah QQ, the state asserts that PFS's recent amendment of its license application is inadequate with respect to its proposed use of soil cement and its seismic design modifications. Specifically, Contention Utah QQ asserts as follows:

> **CONTENTION QQ Seismic Stability**
> PFS's site specific investigations, laboratory analyses, characterization of seismic loading, and design calculations, including redesign of soil cement [footnote omitted], fail to demonstrate that a) the newly revised probabilistic seismic hazard design basis ground motions have been correctly and consistently applied to the Canister Transfer Building ("CTB"), storage pads, and their foundations; b) PFS's general design approach, including the redesign of soil cement, for the CTB, storage pads, or storage casks can safety withstand the effects of earthquakes; and c) the foundation design of the CTB, storage pads, and the underlying soils, or the stability of the storage casks, are adequate to safely withstand the newly revised probabilistic seismic hazard design basis ground motions. 10 CFR §§ 72.102(c), (d); 72.122(b).[8]

As summarized by the State, late-filed Contention Utah QQ "in general" challenges the application of PFS's "newly revised design basis ground motions to the Canister Transfer Building ('CTB'), the storage pads, and their foundations"; PFS's "intended use and redesign of soil cement around the CTB and under and around the storage pads"; and "the foundation design of the CTB, storage pads, and their underlying soils, and the stability of the storage casks, to safely withstand the newly revised design basis ground motion" (Request at 1).

Significantly, much of Contention Utah QQ relates to the Applicant's proposed use of soil cement (a) under and around the storage pads, and (b) around the CTB. However, PFS proposed the use of soil cement under and around the storage pads long ago, to assure stability against

[8] In support of this contention, the State submitted the Declarations of three individuals: Drs. Farhang Ostadan ("Ostadan Declaration"), Steven Bartlett ("Bartlett Declaration"), and James Mitchell ("Mitchell Declaration").

sliding -- and this proposed use of soil cement under and around the pads was specifically evaluated in the Staff's SER of September 2000.[9] Thus, LA Amendment No. 22 does not constitute a wholly new concept; rather, in Amendment No. 22, PFS changed the mix and extent of the proposed use of soil cement under and around the pads,[10] and it proposed, for the first time, the use of soil cement around the CTB. Accordingly, the timeliness of the State's new contention must be closely evaluated to determine whether portions of the contention could and should have been filed by the State prior to PFS's submission of LA Amendment No. 22.

I. Portions of Contention Utah QQ Should Be Rejected as Impermissibly Late.

A. 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).

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[9] *See, e.g.*, SER § 2.1.6.4, at 2-48 ("Stability of Cask-Storage Pad Foundation"). As indicated therein, prior to the submission of LA Amendment No. 22, PFS had proposed a soil-cement mixture under and around the storage pads, in order to prevent lateral movement (*i.e.*, sliding) of the pads. The soil-cement was to extend at least 1 foot, but up to 3-5 feet, below each pad; there was to be a soil-cement wall extending at least four feet from the edge of each pad; and the soil-cement was to have an unconfined compressive strength of at least 36 ksf (250 psi). *Id.* at 2-48, 2-49. No soil-cement was proposed for use around the CTB; rather, a 1-foot deep cement perimeter key under the CTB foundation slab was proposed to prevent sliding of the CTB. *Id.* at 2-51, 2-52. LA Amendment No. 22, *inter alia*, revises the concrete key and places soil-cement around the CTB.

[10] As summarized by the State, LA Amendment No. 22 proposed a redesign of the soil cement in the pad emplacement in three "significant" respects: reduction of the depth of the soil-cement under the pads; reduction of the percentage of cement that is to be added to the soil immediately underneath the pads to achieve a minimum design strength of 100 psi (in contrast to the soil-cement around the pads, which will have a revised design strength of 340 psi); and an increase in the amount of cement treatment from 6.0 to about 8.5 percent in the soil adjacent to the pads. *See* Request at 4-5.

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 to provide a "real clue about what they 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).

B. Portions of Contention Utah QQ Were Late-Filed Without Good Cause.

Proposed late-filed Contention Utah QQ, set forth above, raises three general concerns: (1) whether PFS's "revised [PSHA] design basis ground motions have been correctly and consistently applied to the [CTB], storage pads, and their foundations; (2) whether PFS's "general design approach, including the redesign of soil cement, for the CTB, storage pads, or storage casks can safety withstand the effects of earthquakes"; and (3) whether "the foundation design of the CTB, storage pads, and the underlying soils, or the stability of the storage casks, are adequate to safely withstand the newly revised [PSHA] design basis ground motions." More particularly, the State identified the following areas of concern in support of this contention:

1. Application of the new design basis ground motions to the CTB and its foundation system (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).

The State asserts that it has "good cause" under 10 C.F.R. § 2.714(a)(1)(i), to raise matters relating to the placement of soil-cement around the CTB at this time, asserting that "this is an issue the State could not have raised in the past" (Request at 16). The Staff agrees that the State could not have challenged the use of soil-cement around the CTB previously, since this was only proposed in LA Amendment No. 22. However, the Staff notes that the placement of soil-cement around the CTB is intended to serve the same purpose as the soil-cement around the pads (resistance to sliding), and such general issues as the "survivability" or "durability" of the soil-cement, and the chemistry of local soils, could and should have been filed previously. Similarly, with respect to the soil-cement under and around the storage pads, despite the State's claim that Contention Utah QQ addresses "the reduction in the depth of soil cement," "the percentage of cement added to the soils immediately underneath the pads," and the "increase in the amount of cement treatment in the soil adjacent to the storage pads" (*Id.*), it is clear that Utah QQ challenges

not just the changes in PFS's use of soil-cement under and around the pads, but also challenges the basic concept of using soil-cement in the design -- which is an issue that the State could have raised previously.[11] Indeed, the Declarations submitted by the State address many general concepts and principles of using soil-cement, rather than any change in PFS's plans to use that material in the construction of its proposed facility.[12] Likewise, Contention Utah QQ challenges other aspects of PFS's design which could and should have been raised much earlier.

Indeed, the State appears to concede this point: The State admits that in their revised calculations, Holtec International "uses many of the same incorrect assumptions that it did in its original analyses (*e.g.*, assume the casks will slide in a controlled manner during an earthquake), as does Stone & Webster in its dynamic analyses of the CTB and storage pads" -- and it states that Contention "Utah QQ challenges those incorrect assumptions and also challenges PFS's novel concept in the use of soil cement" (Request at 16). While the State also asserts that "the newly revised ground motions significantly increase the seismic demand on the design of the storage

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[11] The State provides no support for its (incorrect) assertion that PFS has changed its purpose in using the soil-cement from "a construction cost savings measure" to "a structural design element of the storage pads" (Request at 16). Indeed, soil-cement was always proposed for use under and around the storage pads as a design measure, to resist sliding.

[12] In its general basis statement concerning this contention, the State observes that PFS proposes "to delay necessary strength testing until the construction phase, without first demonstrating that the soil cement concept will perform its intended function of providing seismic stability," and it asserts that "[p]rior to obtaining an ISFSI license, PFS must demonstrate compliance with Part 72, including 10 CFR § 72.122(b)(2)" (Request at 6-7). It is unclear whether or not this assertion constitutes a part of the contention. However, while the Staff does not oppose the timeliness of this issue, the State has failed to show why design details are required prior to licensing, where PFS has identified the design standard it seeks to apply (*i.e.*, the design strength of the proposed soil-cement). The provision of design details need not be provided prior to licensing, where the applicable design criterion has been identified and an applicant's satisfaction of that standard may readily be resolved by post-licensing inspection. *See, e.g., Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-00-13, 52 NRC 23, 33-34 (2000) (post-licensing resolution is appropriate where a hearing would be unlikely to affect the result, such as where a commitment or license condition is specific and the Staff's "review" is essentially ministerial and can be achieved by post-licensing verification of compliance with the condition or commitment, without requiring "difficult discretionary judgments").

pads, the CTB, and the unanchored casks" and "exacerbated the deficiencies in Holtec's site-specific cask analyses," and it asserts that "PFS has done no testing or analyses for determining the strength and durability properties of the cement-treated soils" (*Id.*), it fails to explain why it could not have raised these concerns in connection with PFS's previous licensing submittals.[13]

Specifically, the following issues raised in Contention Utah QQ could and should have been raised in connection with earlier iterations of the Applicant's Safety Analysis Report ("SAR"):

Basis 1 ("application of the new design basis ground motions to the CTB and its foundation system") (Request, at 8-9). While PFS only recently proposed the use of soil-cement around the CTB, which the State could not have contested earlier, this basis statement also contains matters that could have been raised before, such as generic issues pertaining to soil-cement performance, the (long-standing) analytical assumption of a rigid mat in the seismic analysis of the CTB, and "PFS's conclusion about the stability of . . . the storage pads" (*Id.* at 9). With respect to these subissues, Basis 1 is impermissibly late.

Basis 2 ("application of the new design basis ground motions to the storage casks and the storage pads"), paragraph 1 (Request, at 9-11). In the first paragraph of this Basis statement, the State raises a concern regarding the adequacy of Holtec International's sliding and tip-over analyses of the storage casks. In this regard, the State asserts that PFS has "made several potentially unconservative assumptions in applying the revised ground motions to the stability of the storage pads," and that "the stability analyses of the storage casks are deficient in a number of areas" (Id. at 9). However, while the State refers to Holtec International's analyses in *Multi Cask*

[13] As the State further indicates, it did raise "some of these issues" at an earlier date, in Contention Utah L. *See* Request at 17 and n.17, citing two Declarations filed on January 30, 2001 in response to PFS's motion for summary disposition of Contention Utah L. Significantly, while the State asserts that it raised these issues in response to PFS's motion for summary disposition, it fails to indicate that it raised these matters in Contention Utah L, itself. In this regard, see "Applicant's Motion to Strike Portions of State of Utah's Response to Applicant's Motion for Summary Disposition of Utah Contention L," filed February 9, 2001.

Response at PFS ISFSI from 2000-Yr Seismic Event, Rev. 2, claiming that the analysis "is nonlinear and has not considered the range of applicable phasing of the foundation pad motion and the casks motion, the actual interface conditions between the casks and the pad on cement-treated soil, and the applicable wide range of phasing relationship in input time histories and types of waves striking the pads" (*Id.* at 9-10), it fails to indicate why it could not have raised this concern previously, in connection with earlier versions of the Holtec analysis. Similarly, the State fails to explain why it could not have raised a concern previously concerning earlier versions of Holtec's analyses, with respect to the need for "a realistic evaluation of the foundation pad motion with cement-treated soil under and around the pads in relation to motion of the casks sliding on the pads," or the "stability of the free standing casks under such high intensity of ground motions," and "PFS's conclusion that the casks will not tip over" (*Id.* at 10). Moreover, similar issues concerning the adequacy of PFS's sliding and tipover analyses appear to have been raised previously, in Contention Utah GG concerning cask-pad stability for the TranStor casks. *See* discussion *infra,* at 15. Thus, these issues have not been shown to be timely raised in Contention Utah QQ.

Basis 2, paragraph 2. In the second paragraph of this Basis statement (Request, at 9-11), the State, *inter alia*, challenges the effect of the natural frequency of cask-pad-soil cement system on seismic loads, claiming this has been underestimated in the pad stability analysis reflected in Stone & Webster Calculation G(B)-04, Rev.7. However, the State fails to indicate that this alleged error relates to any change in the Stone & Webster calculation from its previous versions. Similarly, in this paragraph the State challenges PFS's alleged failure to evaluate "the actual load path under seismic loading," with respect to the effect of "pad-to-pad interaction" on seismic loading, the "behavior of the cement-treated soil under tensile and bending stresses," and the "cracked conditions and separation of cement-treated soil from the pads" (Request at 10). The State has not shown, however, why it could not have raised these issues previously. Moreover, while the State claims that the soil-cement may be unable to resist seismic loads, in that the

"differential settlement between the pad and surrounding cement-treated soil" will be 3.3 inches, and will "cause[ ] bending and cracking of the cement-treated soil propagating away from the pad," the State does not explain why it could not have raised this concern earlier; indeed, in support of this claim, the State cites SAR Rev. 17 (Request at 11) -- which was submitted on August 31, 2000, thus demonstrating the untimeliness of this portion of the State's current contention.

Basis 3 ("survivability and durability of cement-treated soil for the redesigned CTB and storage pad foundation systems"), paragraphs 1-2. In paragraph 1 of this Basis statement (Request at 11), the State challenges the use of soil-cement in connection with both the CTB and the storage pads, claiming, *inter alia*, that "this idea is still conceptual," that "PFS has not considered many necessary design elements," that the use of soil-cement here "has not been supported by precedent, site-specific evaluations and testing, and engineering analyses and design," and that additional documentation is needed to support PFS's application (*Id.*). As discussed above, however, 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.

Further, the State asserts in paragraph 2 of this Basis statement (Request at 11-12) that PFS "has not shown that its proposal to use cement-treated cement soil will perform as intended," *i.e.*, to "provide dynamic stability to the foundation system." This assertion is explicitly based on two Stone & Webster calculations (*see* Request at 11, n.12) -- but nowhere does the State indicate that it could not have raised this concern in connection with previous versions of those calculations. Similarly, the State asserts that "PFS has not addressed several possible failure mechanisms during conceptual design" (*Id.* at 11-12), and it asserts that "[s]ignificant concerns with soil treated cement's ability to withstand dynamic bending, torsional, and beam shear stresses; long-term durability without cracking or without significant shear strength degradation; and interaction with soil chemistry remain unaddressed" (*Id.* at 12). However, nowhere does the State indicate that it

could not have raised these concerns earlier, at least with respect to the concrete storage pads; and it appears that substantially similar concerns were raised previously in connection with other contentions. *See* notes 14 and 15, *infra.* Accordingly, the State has not shown good cause for the late filing of these concerns regarding the soil-cement under and around the storage pads.

Basis 3, subpart (a) ("overstressing and cracking due to dynamic bending, torsional, and beam shear stresses") (Request at 12). In this portion of Basis 3, the State asserts that "[t]he cement-treated soil will be subjected to tensile stresses from such factors as static loading, shrinkage and dynamic loading," that "the pads and the cement-treated soil could experience high bending stresses under seismic loads, especially given the large weight of the cask, its relatively small diameter, and the relative length of the pad," and that PFS failed to include "a large structural layer of asphalt concrete or Portland Cement Concrete to resist bending stresses," which are resisted in PFS's design only "by the relatively weak cement-treated soil" (*Id.*). According to the State, "PFS cannot demonstrate the seismic performance of the proposed cement treatment unless and until it calculates the magnitude of these bending stresses and their effect on the proposed cement-treated soil" (*Id.*) However, the State fails to explain why it could not have raised these concerns previously, in connection with PFS's previous design and analyses for the soil-cement under and around the storage pads. Accordingly, this concern has not been shown to be timely.

Basis 3, subpart (b) ("delamination or debonding along a cement-treated soil lift interface) (Request at 12-13). Here, the State asserts that PFS has failed to analyze the potential that "[d]ynamically induced bending stresses will also introduce beam shear stress, *i.e.*, shear stress between layers of a laminated material"; and that "cement-treated soil is constructed in lifts," with the result that "preferential planes of weakness may form along these planes and the layers may become debonded during a seismic event unless care is taken to properly prepare the interface before the placement of the next lift." *Id.* The State has not shown, however, why it could not raise this issue previously, concerning PFS's use of soil-cement under and around the storage pads.

Basis 3, subpart (c) ("shrinkage cracking due to drying and curing") (Request at 13). Here, the State asserts that "[c]ases of deleterious shrinkage cracking from curing of cement-treated soils are well documented in the literature," that any "significant shrinkage cracking" of cement-treated soils at the PFS site "will reduce the passive earth pressure, shear and tensile strengths available to resist seismic forces," and that "PFS has not addressed these concerns in its redesign of the CTB and pad emplacement areas" (*Id.*). Further, the State asserts that because of PFS's plan to cover the pad emplacement area with gravel, "it will be essentially impossible to observe and assess the degree and nature of shrinkage cracking with time" (*Id.*). Nowhere, however, does the State explain why it could not have raised these concerns earlier, in connection with PFS's previously described plan to use soil-cement under and around the concrete storage pads.

Basis 3, subpart (d) ("cracking due to vehicle loads") (Request at 13). In this portion of the basis statement, the State asserts that PFS has failed to evaluate "the structural capability of the cement-treated soil layer [around the storage pads] to resist wheel loading without fatigue damage," and that "[f]atigue damage at the interface of the cement-treated soil with the pads could seriously compromise the cement-treated soil's ability to resist the new design basis ground motions." However, the State has failed to explain why it could not have raised this concern previously, in connection with PFS's previous proposal to use soil-cement around the concrete pads, or why this concern only applies under the newly calculated seismic design loads.

Basis 3, subpart (e) ("long-term performance of cement-treated soil over a 40 year period") (Request at 13-14). In this subpart of Basis statement 3, the State asserts that PFS has failed to conduct any "site specific testing to determine the strength, survivability and durability properties of the cement-treated soil," that the "modest" amount of cement in PFS's "soil-cement" [which the States asserts is "cement-treated soil"] will lack sufficient durability to withstand "wet-dry and freeze-thaw cycles," that "PFS has not demonstrated durability of the proposed cement-treated soil from wet-dry and freeze-thaw cycles," and that PFS has not provided information concerning "the

chemistry of the surficial soils" such as salts and sulfates which, "if present, could interfere with the cement hydration, and thus affect the strength and durability of the cement-treated soils." Here too, however, the State has failed to explain why it could not have raised these concerns previously, in connection with PFS's previous proposal to use soil-cement around the concrete pads, or why this concern only applies under the newly calculated seismic design loads.

Basis 4 ("overestimation of the sliding resistance provided by the clayey-silt and silty-clay underlying the CTB and storage pads") (Request at 14-15). The State asserts here that PFS has "potentially" overestimated the sliding resistance to earthquake forces provided by the clayey-silt and silty-clay underlying the CTB and storage pads, in that "PFS has not considered the effects of adhesion and potential water content changes during cement-treated soil placement and other long-term moisture content changes; seismically generated pore pressures on the soil's shear strength during earthquake loading; and partial mobilization of the undrained shear strength by the free-field ground motion" (*Id.*, citations omitted). Further, the State asserts that "PFS has not demonstrated that the applied design shear strength value is representative of actual conditions and sufficiently conservative for design of the CTB and storage pads." However, the State has not explained why it could not have raised these concerns previously, in connection with PFS's previous proposal to use soil-cement around the concrete pads, or why this concern only applies under the newly calculated seismic design loads.

As discussed above, the State has failed to explain why many aspects of Contention Utah QQ could not have been raised previously, in connection with PFS's previous proposal to use soil-cement under and around its concrete storage pads. Many of the State's current concerns would appear to apply to PFS's previous proposal, and could have been raised before PFS revised its seismic ground motion analysis and the seismic design of its facility in LA Amendment No. 22. In this regard, the Staff notes that the State raised similar stability and design issues in Contention

Utah EE,[14] and it attempted to raise similar issues upon its withdrawal of Contention Utah GG ("Failure to Demonstrate Cask-Pad Stability During Seismic Event for TranStor Casks").[15] Accordingly, the State has failed to demonstrate good cause for the late filing of these portions of 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.

In addition, the State has not made a compelling showing that consideration of the other four factors set forth in 10 C.F.R. § 2.714(a)(1) support the late-filing of this contention. *See, e.g.,*

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[14] Contention Utah EE ("Failure to Demonstrate Cask-Pad Stability During Seismic Event") asserted that the Applicant failed to demonstrate that storage casks and pads will remain stable during a seismic event. In this regard, the contention asserted, *inter alia*, that Holtec's analysis was inadequate to support the safety of Applicant's proposed design during a seismic event at the facility (*Id.,* subpart 1); that Holtec's analysis was not based on an adequate inquiry into site conditions and how they affect the stability of the casks (*Id.*, subpart 2(b)); that PFS's cask-pad model oversimplifies the behavior of the dynamic loads at the PFS facility, by failing to sufficiently consider "the potential for bending, structural deterioration of the concrete surface, translation, and rotation of the pad" (*Id.*, subpart 3); that "the assumption that the pad will remain rigid is unreasonable and oversimplified," because differential upheaval and subsidence of the soil beneath the concrete could cause the pad to bend, crack, and possibly spall (*Id.*, subpart 3(d)); that PFS failed to consider the impact of dynamic loads on the structural integrity of the pad which may cause damage to the concrete surface, including cracking, spalling, and crushing of the concrete, which may contribute to the instability of the casks (*Id.*, subpart 5); that PFS failed to perform uncertainty or sensitivity analyses on the soil-pad interaction aspects of its seismic analysis (*Id.,* subpart 6); and that PFS's CTB earthquake analysis lacked any analysis of the seismic response of the cask, transfer cask, and overhead bridge crane (*Id.*, subpart 7). This contention was rejected as untimely, three years ago. *See Private Fuel Storage L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 206-09 (1998).

[15] Upon withdrawing Contention Utah GG, the State asserted:

> Whether the casks are Holtec casks or TranStor casks, PFS's cask sliding analysis fails to consider the potential range of conditions that may occur during a seismic event, such as whether the pad will remain rigid under casks [sic] loading; whether the simple frictional elements applied in the soil-structure interaction model are appropriate; and whether the analyzed coefficients of friction of 0.2 and 0.8 bound the actual behavior of the cask-pad interface under dynamic loading.

See "State of Utah's Request to Withdraw Contention Utah GG," dated September 14, 2000, at 2-3. Contention Utah GG was dismissed by "Order (Revising Scheduling Order and Granting Motion to Withdraw)," dated October 6, 2000.

Mississippi Power & Light Co. (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 NRC 1725, 1730 (1982).

With respect to the third factor, the experts named by the State appear qualified to assist in the development of a sound record. However, the State has not identified their proposed testimony, beyond stating that "[t]hey are all prepared to offer testimony as described in and consistent with their supporting declarations" (Request at 18). In the Staff's view, although the Declarations provide additional details regarding the witnesses' views, this general statement fails to provide a "real clue about what they 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). Accordingly, this factor weighs somewhat against the admission of these issues.

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. While factors two and four weigh in the State's favor, they are less important than the other factors, and are entitled to less weight. *Comanche Peak*, CLI-92-12, 36 NRC at 74.

With respect to the fifth factor of 10 C.F.R. § 2.714(a)(1), the admission of this contention will necessarily broaden the issues and result in delay in the proceeding. To be sure, the Staff currently has the Applicant's revised seismic analyses and design under review, and is awaiting the receipt of additional information from PFS. Nonetheless, the admission of this contention at this stage in the hearing process will require 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 appears to weigh somewhat against the admission of these portions of the contention.

In sum, the Staff submits that the State has failed to establish good cause for the late filing of the specified portions of Contention Utah QQ, inasmuch as the State could have framed those

issues long ago. Further, the State's lack of good cause for filing these concerns late 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 late-filed Contention Utah QQ should be rejected.

II. The Admissibility of Contention Utah QQ.

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).[16]

B. Applicable Regulatory Requirements Pertaining to the Applicant's Design.

In raising this contention, the State asserts that the Applicant's design fails to meet the requirements of 10 CFR §§ 72.102(c) and (d), and 10 C.F.R. § 72.122(b)(2).[17] Pursuant to 10 C.F.R. § 72.102 ("geological and seismological characteristics"), PFS is required, *inter alia*, to evaluate its site for liquefaction potential or other soil instability due to vibratory ground motion, and to show, through site-specific investigations and laboratory analyses, that soil conditions are adequate for the proposed foundation loading.[18]

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[16] 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 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).

[17] While Contention Utah QQ refers to 10 C.F.R. § 72.122(b) in general, the State's Request clarifies that this reference applies to § 72.122(b)(2), in particular. *See* Request at 7.

[18] Further, 10 C.F.R. § 72.122(b)(2) provides the following requirements for protection against environmental conditions and natural phenomena:

> Structures, systems, and components important to safety must be designed to withstand the effects of natural phenomena such as earthquakes . . . , without impairing their capability to perform safety functions. The design bases for these structures, systems, and components must reflect: (i) Appropriate consideration of the most severe of the natural phenomena reported for the site and surrounding area. . . , and (ii) Appropriate combinations of the effects of normal and accident conditions and the effects of natural phenomena. . . . The ISFSI . . . should also be designed to prevent massive collapse of building structures or the dropping of heavy objects as a result of building structural failure on the spent fuel . . . or on to structures, systems, and components important to safety.

C. Application of These Principles to Contention Utah QQ.

Based upon a review of Contention Utah QQ in accordance with these principles, the Staff does not oppose the admission of this contention apart from the timeliness issues discussed above. Nonetheless, the Staff notes that the contention and its various "general" and numbered basis statements often repeat many of the same issues, reiterate some issues raised in other contentions, and are unnecessarily redundant and confusing. Accordingly, the Staff believes that the language of the contention and its bases should be revised in order to assure clarity in the event that the contention is admitted.

III. Effect on the Pending Motion for Summary Disposition of Contention Utah L.

In its Order of April 26, the Licensing Board directed the parties to include in their filings a discussion of "the impact, if any, of the admission of the contention on the matters currently pending before the Board" in connection with the pending PFS motion for summary disposition of Contention Utah L (Order at 3). In this regard, the State asserts that "there are similarities and differences between Utah QQ and Utah L -- similar in that PFS has still failed to incorporate critical assumptions into its dynamic analyses that the State identified in Utah L, and different in that now ground motions have increased and PFS intends to use soil cement as a structural design element to overcome strong ground motions" (Request, at 2). The State further states as follows:

> Utah QQ does not relate to any of the issues in Bases 1 or 2 of Utah L. There is some overlap between Utah L, Basis 3 and Utah QQ, in that PFS has used the same invalid assumption in re-analyzing the dynamic stability of the CTB, storage pads, cement-treated soil in the pad emplacement area, underlying foundation soils, and cask stability for the newly revised ground motions. The newly revised ground motions, however, create greater seismic loads on the CTB, pads and stability of the casks. PFS's plans to use cement-treated soil around the CTB and change the soil cement treatment under and around the pads in an effort to solve many of the stability problems associated with foundation loading raised in Utah L. Most of the problems raised by the State in Utah L remain unaddressed in PFS's latest seismic evaluation and have been amplified due to the increase in design motion. PFS seems to have recognized the need to improve seismic stability at the site and yet

> it has not demonstrated that the new soil cement design element is able to solve the compelling foundation stability problems. Admission of Utah QQ does not support PFS's motion for summary disposition of Utah L. Instead, Utah QQ strengthens the record for denial of PFS's motion.

Id. at 19-20.

The Staff agrees with the State that Contention Utah QQ does not affect the litigation of Bases 1 or 2 of Contention Utah L. Further, however, the Staff believes that Contention Utah QQ does not affect any of the issues raised in Contention Utah L, because that contention only raises issues concerning PFS's site characterization efforts and nowhere raises any issues related to the Applicant's use of soil-cement or the design of its proposed facility.[19] Accordingly, the Staff believes that the Licensing Board may rule upon PFS's pending motion for summary disposition of Contention Utah L without regard to the pendency of Contention Utah QQ.

CONCLUSION

For the reasons set forth above, the Staff submits that portions of Contention Utah QQ 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 this contention.

Respectfully submitted,

/RA/

Sherwin E. Turk
Counsel for NRC Staff

Dated at Rockville, Maryland
this 30th day of May 2001

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[19] *See* "NRC Staff's Response to Applicant's Motion for Summary Disposition of Utah Contention L (Geotechnical)," dated January 30, 2001, at 9-10; "Applicant's Motion to Strike Portions of State of Utah's Response to Applicant's Motion for Summary Disposition of Utah Contention L," filed February 9, 2001. The State's assertions that Contention Utah QQ raises issues that were also raised in Utah L appear to be a further attempt to "backload" new issues into Contention Utah L that were never pleaded as part of that contention. A ruling on the Applicant's motion for summary disposition of Contention Utah L, and its motion to strike portions of the State's response thereto, would eliminate any disagreement as to the scope of Contention Utah L.

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 REQUEST FOR ADMISSION OF LATE-FILED CONTENTION UTAH QQ (SEISMIC STABILITY)'" 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 30th day of May, 2001:

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