RAS 6574

June 26, 2003
DOCKETED 06/27/03

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

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 PETITION FOR REVIEW OF LBP-03-08

INTRODUCTION

Pursuant to 10 C.F.R. § 2.786(b)(3) and the Commission's Orders of June 2 and June 20, 2003, the NRC Staff ("Staff") hereby files its response to the "State of Utah's Petition for Review of LBP-03-08" ("Petition"), filed by the State of Utah ("State") on June 11, 2003. The State seeks review of three aspects of the Licensing Board's comprehensive "Partial Initial Decision (Regarding Geotechnical Issues)" ("PID"), in which the Board resolved all outstanding geotechnical issues in favor of Private Fuel Storage, L.L.C. ("PFS" or "Applicant").[1] Significantly missing from the State's Petition, however, is any challenge to the Board's ultimate conclusion -- that even if all the storage casks at the PFS Facility were to tip over in a seismic event, the spent fuel canisters inside the casks would remain intact and the Commission's regulatory dose limits would not be exceeded. *See* PID at 5, 313, 315, 352-56, 360-62, 370. For this reason and reasons set forth below, the Staff submits that the State fails to demonstrate that Commission review of the Board's decision is warranted under 10 C.F.R. § 2.786(b)(4). The Petition therefore should be denied.[2]

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[1] *See Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-03-08, 57 NRC __ (slip op.) (May 22, 2003).

[2] A response to the State's Petition was filed by PFS on June 23, 2003. *See* "Applicant's Response in Opposition to State of Utah's Petition for Review of LBP-03-08" ("Applicant's Response"), dated June 23, 2003.

BACKGROUND

The Licensing Board's decision provides a detailed history of the litigation of this contention. *See* PID at 10-25. In brief, Contention Utah L (admitted in April 1998) challenged the adequacy of PFS's site and subsurface geotechnical and seismic investigations; the contention was modified in June 2001 to include a challenge to PFS's request for an exemption from the deterministic seismic requirements in 10 C.F.R. Part 72; and it was further modified in December 2001 to incorporate late-filed Contention Utah QQ ("Seismic Stability") and two modifications thereof, challenging PFS's revised calculations concerning the design basis ground motions anticipated at the site. In January 2002, the parties submitted Unified Contention Utah L/QQ, which set forth all of the outstanding geotechnical issues; two issues were then resolved by stipulation. *Id.* at 10-19.

Evidentiary hearings on Unified Contention Utah L/QQ were held in Salt Lake City, Utah on April 29 - May 17 and June 3 - 8, 2002, and in Rockville, Maryland on June 17 - 27, 2002. During 28 days of hearings, the Licensing Board heard testimony from 28 expert witnesses, including 13 witnesses presented by PFS, eight witnesses presented by the Staff, and seven witnesses presented by the State. The parties then submitted extensive proposed findings of fact and conclusions of law, and replies thereto, on September 5 and October 16, 2002, respectively.[3]

On May 22, 2003, the Licensing Board issued its 372-page Partial Initial Decision, in which it resolved all outstanding geotechnical issues raised in Unified Contention Utah L/QQ in favor of PFS. *See* PID at 4-5. As summarized by the Board, these involved the following six topics:

- the characterization of the site's subsurface soils, which the State charges was inadequate;
- the proposed uses of soil-cement to overcome foundation sliding, which the State asserts involve novel and untested techniques;

[3] *See, e.g.*, "NRC Staff's [Proposed] Findings of Fact and Conclusions of Law Concerning Unified Contention Utah L/QQ (Geotechnical Issues)," dated September 5, 2002 ("Staff PFF").

- the assumptions about facility behavior which underlie the seismic design, which assumptions the State says are flawed;

- the stability of the casks during a design basis earthquake, which the State urges has not been adequately demonstrated;

- the exemption from the long-standing "deterministic" standard for predicting ground motion in favor of a "probabilistic" one, which the State challenges as unsupported; and

- the ability of the facility to comply, after a design basis earthquake, with established radiological dose consequences standards, which the State believes will not be met.

PID at 4. The Board reviewed the parties' evidence and legal arguments, and concluded: "On the facts presented, we find that the Applicant has met its burden of proof on all these seismic-related issues. Although the State presented thoughtful, valuable evidence that tested many aspects of the Applicant's presentation, the Applicant's position essentially withstood that scrutiny." *Id.*

In its Petition, the State now seeks review of only three issues addressed in LBP-03-08:[4]

(1) "PFS's post license soil-cement testing program and absence of license conditions";

(2) the Licensing Board's approval of PFS's request for an "exemption from the existing seismic standard" set forth in 10 C.F.R. Part 72; and

(3) the Licensing Board's use of an allegedly "erroneous 10 C.F.R. § 72.106(b) legal standard relating to accident duration."

Petition at 1. The Staff submits that these matters were correctly resolved by the Board, and its decision is supported by a preponderance of substantial and reliable evidence. Further, the State has not shown that Commission review is warranted under 10 C.F.R. § 2.786.

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[4] The State had raised dozens of issues in Unified Contention Utah L/QQ, all of which were squarely addressed by the Board in LBP-03-08. The State eschews its opportunity to challenge those determinations, asserting, "because the record and findings surrounding PFS's facility design are of such technical complexity, the State does not hold out any hope that the Commission will re-visit those issues on appeal." Petition at 1. However, the State provides no reason to believe that the Board's decision is flawed in its treatment of any such "technically complex" matters.

DISCUSSION

I. Legal Standards Governing Petitions for Review

Pursuant to 10 C.F.R. § 2.786(b)(4), Commission review of a Licensing Board decision may be undertaken in accordance with the following principles:

> (4) The petition for review may be granted in the discretion of the Commission, giving due weight to the existence of a substantial question with respect to the following considerations:
>
> > (i) A finding of material fact is clearly erroneous or in conflict with a finding as to the same fact in a different proceeding;
> > (ii) A necessary legal conclusion is without governing precedent or is a departure from or contrary to established law;
> > (iii) A substantial and important question of law, policy or discretion has been raised;
> > (iv) The conduct of the proceeding involved a prejudicial procedural error; or
> > (v) Any other consideration which the Commission may deem to be in the public interest.

10 C.F.R. § 2.786(b)(4). *Accord, Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-01-09, 53 NRC 232, 234 (2001).

II. The State's Petition Fails to Demonstrate that Commission Review Is Warranted in Accordance With the Requirements of 10 C.F.R. § 2.786.

A. The Licensing Board Properly Approved the Applicant's Deferral of Its Soil/Cement Testing Program, Subject to Post-Licensing Verification of the Test Results by the Staff.

The PFS Facility is to consist of a number of structures, principally including a Canister Transfer Building ("CTB") in which sealed multipurpose canisters ("MPCs") containing spent fuel are to be transferred from shipping casks to HI-STORM 100 storage casks, and 500 reinforced concrete storage pads on which up to 4,000 loaded storage casks are to be placed (eight per pad, in a four-by-two array). As part of its structural/seismic design, PFS will place a mix of "cement-treated soil" under the storage pads, and a mix of "soil cement" around and between the pads and around the CTB. *See* PID at 2-3, 109-11, 144-45.

PFS has established the design requirements which must be met by the cement-treated soil and soil-cement mixtures. The cement-treated soil under the pads must have a minimum unconfined compressive strength of 40 pounds per square inch (psi) and a modulus of elasticity or Young's Modulus (vertical stress to strain ratio) less than or equal to 75,000 psi. *Id.* at 145. The soil-cement to be placed around and between the storage pads and around the CTB must have a minimum unconfined compressive strength of at least 250 psi. *Id.* at 145-46. As the Board found: "All parties agree that these design requirements can be met by the use of appropriate soil-cement mixtures. . . . Indeed, the State soil-cement expert testified that he knew of nothing that would preclude PFS from meeting its design objectives for the soil-cement program." *Id*. at 146 (citations omitted, emphasis added). Significantly, the State does not challenge this determination.

While PFS has identified its seismic design requirements, it has not yet completed its program for testing various soil and cement mixtures to determine the appropriate mixture that will meet those design requirements. The State challenges PFS's deferral of its testing program, claiming that such a deferral violates the State's hearing rights and improperly relies upon post-licensing "discretionary evaluation" by the Staff, in violation of *Union of Concerned Scientists v. NRC*, 735 F.2d 1457 (D.C. Cir. 1984), *cert. denied*, 469 U.S. 1132 (1985). Petition at 3-4.[5] These arguments are without merit.

It is undisputed that PFS has identified the testing program it will use to establish the acceptability of its soil/cement mixtures. *See* PID at 44, 157-62.[6] As the Board found, "the testing

[5] The State asserts that the Staff will perform a post-licensing "evaluation of whether PFS's soil testing program will prove its design concept." Petition at 3. This is incorrect. The Staff completed its review of PFS's design and analyses, and concluded that the design would be safe and the material properties used in the design are achievable. *See* Tr. 11016-17, 11021 (Ofoegbu). Thus, PFS has already "proven its design." Tr. 11021 (Ofoegbu).

[6] This program includes, *inter alia*, soil index property tests, moisture density tests, and durability tests, to be conducted in accordance with a documented plan which was litigated before the Board. *See* "Engineering Services Scope of Work for Laboratory Testing of Soil-Cement Mixes," ESSOW 05996.02-G010 (2001) (PFS Exh. GGG), cited in PID at 157-58.

program being implemented by PFS to develop soil-cement mixtures that meet applicable design requirements is in accordance with well-established regulatory guidance and industry standards," and draws upon appropriate guidance with respect to laboratory test methods for soils, including NRC Regulatory Guide 1.138 and standards issued by the American Society for Testing and Materials (ASTM), and the Portland Cement Association. *Id.* at 157. PFS also identified other tests it will conduct, to establish the mixture of materials it will use to meet its design requirements. *See Id.* at 158-60. As the Board found, all parties agree that PFS's testing program is adequate:

> **C.47** All parties agree that PFS has developed a suitable program for testing the properties of the soil-cement, which is embodied in the ESSOW. . . . The program will be effective in establishing whether the properties of the soil-cement specified in the design have been achieved. . . .
> **C.48** The parties also agree that the program is based on appropriate industry standards, . . . and that it includes the proper tests and suitable test methodology. . . .
> **C.49** Finally, the parties agree that the program to which PFS has committed in the SAR (SAR at 2.6-118, 2.6-119 (PFS Exh. JJJ)) is reasonable and should lead to proper soil-cement and cement-treated soil installation. . . . The program -- including the construction procedures it calls for - is based on well-accepted, standard practices . . . .

Id. at 161-62; citations omitted. Significantly, the State nowhere challenges these critical findings.

PFS has formulated a soil cement testing program; identified design criteria; and specified the test standards, methodologies, and acceptance criteria to be used. Trudeau/Wissa Post Tr. 10834, at 33-35. The properties of the soil cement are within well-established, attainable parameters, and PFS has committed to developing a soil-cement mix design using standard industry practice, and to performing a soil-cement testing program in accordance with specified industry standards. *Id.* at 34-35. The soil/cement testing program, to be performed later, would merely verify that PFS has satisfied its specified design criteria. *Id.* at 35; Ofoegbu, Post Tr. 11001, at 13, 14-15, 18-19, 19-20; Tr. 11016-17 (Ofoegbu).

In these circumstances, PFS's deferral of its testing program and the Staff's post-licensing verification of its test results is not improper. Commission case law establishes that where tests

and criteria are clearly defined and the test results may be verified objectively, testing may be deferred.[7] Further, the Commission's rules in 10 C.F.R. Part 72 establish a "one-step licensing procedure" for ISFSIs.[8] Accordingly, it should be expected that tests which verify that an applicant has satisfied its design commitments would be performed post-licensing.

The State asserts that the Licensing Board erred in citing *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), ALAB-729, 17 NRC 814, 886-87 (1983), in support of the Board's conclusion that PFS's soil/cement testing program may be deferred. Petition at 4, *citing* PID at 46-47. The State argues that the *TMI* decision is inapposite because the equipment at issue in TMI was of standard design and had been tested already, in contrast to the soil/cement mixtures to be used here, and it asserts that the Staff's evaluation here "will likely involve more than ministerial action." *Id.* at 4-5. These arguments are without merit. As discussed above, PFS's testing program is well-defined and is consistent with appropriate industry and NRC guidelines. In addition, the required design properties which must be exhibited by the soil/cement are well-defined and are not challenged by the State. Like the pre-operational testing discussed in *TMI,* PFS's soil/cement testing program is intended to ensure that the soil/cement mixtures "meet established, objective 'acceptance criteria'" -- in contrast to emergency preparedness exercises

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[7] *See, e.g., PFS,* CLI-00-13, 52 NRC 23, 33-34 (2000) (matters may be left for post-licensing verification where the Staff's inspection would involve a ministerial-type compliance check, required adjudicatory findings can be made without awaiting the inspection results, and a hearing would be unlikely to affect the result); *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Unit 1), CLI-96-13, 44 NRC 315, 327-28, 330 (1996) (post-hearing verification that "objective, technical, preestablished criteria" have been satisfied is within the Staff's technical expertise and regulatory role, and does not trigger hearing rights), *citing UCS*, 735 F.2d at 1451; *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-940, 32 NRC 225, 235-36 (1990) (hearing rights do not apply to low power and power ascension testing, as they relate to license compliance rather than the granting of a license); *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), ALAB-729, 17 NRC 814, 886-87 (1983) (post-hearing procedures may be used for confirmatory tests). *Cf.* Administrative Procedure Act, 5 U.S.C. § 554(a)(3) (hearings not required with respect to inspections, tests or elections).

[8] Statement of Consideration, "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation," 45 Fed. Reg. 74693 (1980).

which "are not evaluated in terms of preestablished criteria." *UCS*, 735 F.2d at 1451. Contrary to the State's assertion, this task involves an "objective" determination rather than any discretion or "decisional responsibility," *TMI*, 17 NRC at 886-87. The Board therefore properly allowed PFS to defer completion of its soil/cement testing, subject to post-licensing verification by the Staff that the test results show PFS has satisfied its pre-established design criteria.[9] The State has not shown that the Board's resolution of this matter was in error or warrants review under 10 C.F.R. § 2.786.

B. The Licensing Board Correctly Determined That PFS's Seismic Exemption Request Satisfies the Requirements of 10 C.F.R. § 72.7.

The State seeks Commission review of the Licensing Board's determination to uphold the Staff's proposed approval of PFS's request for an exemption from the deterministic seismic requirements in 10 C.F.R. Part 72, thereby allowing PFS to establish its seismic design basis using a probabilistic seismic hazard analysis ("PSHA") with a 2,000-year return period ground motion. Petition at 5-14. According to the State, "the grant of an exemption to PFS is unjustified, contrary

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[9] The State also asserts that "PFS's promises as to how it will achieve soil cement properties, and implement that program, are scattered throughout the licensing process," raising a concern as to "what promises and material properties the Staff will evaluate post license and whether those promises are enforceable," and it urges that license conditions should have been imposed. Petition at 4, 5. This concern is without merit. PFS's commitments are set forth in its Safety Analysis Report and written testimony, and are addressed by the Licensing Board in LBP-03-08. The State has shown no reason to believe that PFS will not adhere to the commitments it has made in its license application and statements made by its witnesses under oath. Moreover, applicants or licensees that make material false statements in an NRC proceeding run the risk of criminal penalties and agency enforcement actions. *See generally*, 10 C.F.R. §§ 72.12, 72.60; Atomic Energy Act of 1954, as amended, §§ 186, 223 and 234, 42 U.S.C. §§ 2236, 2273, 2282. Accordingly, the State has not shown that a license condition is required.

Finally, the State asserts that "should PFS discover post-license that the soil cement properties do not work as intended and do not support PFS's seismic design, the NRC's licensing basis will be invalid and arbitrary." Petition at 4; emphasis added. This concern is wholly speculative and, in any event, it fails to establish an issue that requires Commission review. PFS, like all NRC applicants and licensees, has a duty to inform the NRC of any information it identifies as having "a significant implication for public health and safety or common defense and security." *See* 10 C.F.R. § 72.11. If, in the course of its post-licensing testing activities, PFS perceives a need to modify its test procedures or evaluations demonstrating that its design requirements will be met, it would have to do so in accordance with 10 C.F.R. § 72.48. This could require a license amendment, in appropriate circumstances. *See* 10 C.F.R. § 72.48(c)(2)(i)-(viii).

to public interest and a departure from existing seismic standards." *Id.* at 5. The Staff respectfully submits that the State fails to demonstrate that Commission review of this matter is warranted.

The Staff determined it would approve PFS's exemption request in its SER of September 2000.[10] The State filed a contention challenging the bases for the Staff's determination, which the Licensing Board and the Commission accepted for litigation.[11] The State was then afforded a full opportunity to develop and litigate each of the issues it raised, in the course of which it presented witnesses and conducted extensive cross-examination of PFS's and the Staff's witnesses. As reflected in LBP-03-08, the Licensing Board gave thorough consideration to the State's evidence and legal arguments, but determined that the facts and arguments presented by PFS and the Staff outweighed those of the State. *See* PID at 88-99, 287-350.

In its Petition, the State renews many of its arguments against the grant of the exemption, asserting: (1) the Board erred in relying on the testimony of the Staff's expert witness, Dr. John Stamatakos, rather than the State's allegedly "more credentialed and more knowledgeable" expert, Dr. Walter Arabasz (Petition at 7); (2) in the State's view, portions of the Staff's rationale for approving the exemption request are flawed (*Id.* at 8-11); (3) safety margins may not be as large as PFS and the Board believe (*Id.* at 11-12); and (4) the Board failed to consider where the public interest lies, as required in 10 C.F.R. § 72.7 (*Id.* at 13-14). These assertions lack merit.

1. Evidentiary Assertions.

The State does not argue that the Licensing Board committed any procedural error that may have prejudiced the State's case; rather, the Petition presents a selective sampling of evidence and

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[10] The Staff has not "granted" the exemption request; rather, the exemption would be incorporated into the PFS license itself, if and when such a license is issued. In accordance with 10 C.F.R. § 2.764(c), any initial decision directing the issuance of a license for the construction and operation of an away-from-reactor ISFSI "shall become effective only upon order of the Commission"; and the Staff may not issue that license "until expressly authorized to do so by the Commission." 10 C.F.R. §§ 2.764(c), 72.46(d).

[11] *See Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-01-12, 53 NRC 459, *aff'g* LBP-01-3, 53 NRC 84 (2001).

argues that the Board erred in concluding that the Staff's and PFS's evidence and arguments had outweighed those of the State. Petition at 7-12. This does not create an issue that warrants review under 10 C.F.R. § 2.786. The Board considered all of the evidence submitted by the State in support of its challenge to the PFS seismic exemption. The Board then carefully weighed the State's evidence along with the evidence presented by other parties -- including each party's thorough cross-examination of each other's witnesses (*see* PID at 292-350) -- and concluded that the Applicant's and Staff's evidence outweighed that of the State. *Id.* at 4. While the State may favor and champion the views of its own expert (Dr. Arabasz), whose testimony largely challenged the Staff's rationale for approving the exemption request, it is indisputable that the Board observed and evaluated the testimony presented by each witness, and reached its own conclusion as to the proper weight to accord their opinions and supporting rationales. The State's argument that Dr. Arabasz' views deserved to be given more weight than those of Dr. Stamatakos fails to establish a basis for review under 10 C.F.R. § 2.786(b)(4).[12]

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[12] The State attempts to minimize Dr. Stamatakos' expertise and his knowledge of seismic conditions in Utah. Petition at 7. There is no basis for that attack. Dr. Stamatakos is employed as a Principal Scientist at the Center for Nuclear Waste Regulatory Analyses ("CNWRA"), a division of the Southwest Research Institute ("SwRI"), in San Antonio, Texas. He has a Ph.D. degree in Geology from Lehigh University, and is a structural geologist and geophysicist with international research experience in regional and global tectonics. He serves as Principal Investigator for several projects involving the technical evaluation of structural deformation and seismicity, including tectonics and neotectonics research. His work specifically includes field analyses of the structural and tectonic elements of the Basin and Range province in the southwestern United States (in which Skull Valley is situated), and evaluation of seismic and faulting hazards at various NRC-regulated nuclear facilities. Stamatakos/Chen/McCann, Post Tr. 8050, at 1-3; Stamatakos Qualifications, at 1. Further, Dr. Stamatakos closely studied seismic conditions in Skull Valley, having co-authored a comprehensive report entitled "Seismic Ground Motion and Faulting Hazard at Private Fuel Storage Facility in the Skull Valley Indian Reservation, Tooele County - Final Report," issued in September 1999 (Staff Exh. Q), and assisted in preparing the Staff's SER on seismic and geotechnical issues at the PFS Facility (Staff Exh. C). Contrary to the State's suggestion, he demonstrated a profound understanding of the geotechnical and seismic conditions in Utah. *See, e.g.*, PID at 327-31, 342-44, 347-48.

Moreover, Dr. Stamatakos testified as part of an expert panel that included two co-authors of the SER and CNWRA report, Drs. Martin W. McCann, Jr. and Rui Chen. Stamatakos/Chen/McCann, Post Tr. 8050, at 3-5. Dr. McCann is President of Jack R. Benjamin & Associates, Inc., (continued...)

Further, while the State may disagree with the Board's view of the evidence, it fails to show that "a finding of material fact is clearly erroneous," as required under 10 C.F.R. § 2.786(b)(4)(i).[13] Indeed, each of the issues raised by the State in its Petition (at 6-13) was addressed extensively in the Staff's and/or Applicant's direct and rebuttal testimony, as well as in the parties' cross-examination of each others' witnesses -- and the Board explicitly addressed each of the arguments raised in the State's Petition in a thorough and careful exposition of these matters.[14] Accordingly, the State's selective recitation of evidence and arguments it had presented to the Board fails to demonstrate any basis that warrants Commission review under 10 C.F.R. § 2.786.

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[12](...continued)
serves as a Consulting Professor of Civil and Environmental Engineering at Stanford University, and is a renowned expert on seismic engineering. *See* McCann Qualifications at 1-4. Dr. Chen is a consultant in geological engineering and geosciences, and teaches geotechnical engineering and geosciences at California State University (Chico); she was formerly employed as a Senior Research Engineer at the CNWRA, and has substantial experience in evaluating seismic hazard analyses and seismic design related to spent fuel storage facilities. *See* Chen Qualifications at 1-4. The State nowhere addresses these witnesses' expertise.

[13] Pursuant to the "clearly erroneous" standard in 10 C.F.R. § 2.786(b)(4)(i), the Commission generally declines to second-guess plausible Board decisions that rest on carefully rendered findings of fact, but will undertake review only where the Board decision contains "obvious error." *See Dominion Nuclear Connecticut, Inc*. (Millstone Power Station, Unit 3), CLI-02-22, 56 NRC 213, 222 (2002); *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), CLI-01-11, 53 NRC 370, 382 (2001).

[14] Thus, with respect to the issues raised by the State (Petition at 6-13), the Board considered (1) the appropriate reference probability for a safe shutdown earthquake for a hypothetical nuclear power plant in the Western United States ("WUS"), *see* PID at 293-97, 330, 333-34; (2) whether the Geomatrix PSHA was "conservative" or merely "adequate" (as conceded by the State), *Id.* at 95, 97-99, 298-300, 324, 326-31, 341-48; (3) the value of Dr. Stamatakos' slip-tendency analysis, *Id.* at 97-98, 327-30, 342-44, 347; (4) the merits of Dr. Stamatakos' comparison of ground motions at the PFS site and other sites, *Id.* at 97-99, 298-99, 330-31, 344-48; (5) the immateriality of the fact that the 2,000-year ground motion in DOE-STD-1020 (1994) was replaced by a 2,500-year ground motion in the 2002 revision of that Standard, *Id.* at 96, 297-98, 304, 334-38 (the State neglects to mention that when DOE revised this standard, it also applied a scaling factor of 0.9, with the result that the change to a 2,500-year ground motion was of no effect, *see* PID at 338); (6) PFS witness Dr. Alan Cornell's use of risk reduction factors and his analysis of safety margin demands at the PFS Facility, *Id.* at 89-95, 300-23; (7) the lower radiological risk of an ISFSI as compared to a nuclear power plant, *Id.* at 95, 301, 332-33; (8) the precedential value of the exemption granted to the TMI-2 ISFSI at INEEL, *Id.* at 96-97, 325, 334-35, 338-41; and (9) the low relevance of the 2,500-year standard used for Utah highway bridges or buildings constructed under the 2000 International Building Code, *Id.* at 99, 297-98, 348-50.

2. The Public Interest.

The State argues that the Licensing Board's decision is flawed in that it is contrary to the public interest (Petition at 6), or fails to consider whether granting the exemption is in the public interest as required in 10 C.F.R. § 72.7 (*Id.* at 14).[15] The State fails to note, however, that it never mentioned the "public interest" standard in its contention; rather, its contention challenged the technical merits of the exemption request and the Staff's rationale for approving it. *See* PID at 23-25 (reciting the contention).[16] In accordance with 10 C.F.R. § 2.714(b)(2)(i)-(iii), the State's contention framed the specific issues to be litigated in this proceeding. Because the "public interest" was never mentioned in the contention, none of the parties -- including the State -- proffered any evidence that was specifically directed to the public interest standard.[17] The State's attempt to raise this issue only after hearings concluded should be rejected as an improper attempt to raise a late-filed contention without showing good cause to do so. *See* 10 C.F.R. § 2.714(a)(1).

(C) The Licensing Board's Application of the Accident Dose Standard in 10 C.F.R. § 72.106(b) to Seismic Events Involving Cask Tipover Was Correct As A Matter of Law.

Relying upon the testimony of its expert, Dr. Marvin Resnikoff -- whose opinions were otherwise repeatedly shown to be unreliable (*see* PID at 105, 362-64, 366-68) -- the State urges

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[15] Pursuant to 10 C.F.R. § 72.7:

> The Commission may, upon application by any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

[16] Indeed, the State fails to identify any record citation where it had raised this issue previously, contrary to 10 C.F.R. § 2.786(b)(2)(ii). *See* Petition at 6, 14.

[17] The State and Chairman Farrar questioned the Staff's expert witnesses (none of whom is employed by the NRC) as to whether the Staff considered the public interest in approving the PFS and/or TMI-2 INEEL ISFSI exemptions. *See* Tr. 8249-55. These witnesses, however, were not proffered by the Staff to address this standard -- and, indeed, as the State noted, their testimony does not address this issue or cite 10 C.F.R. § 72.7. *See* Tr. 8249 (Chancellor).

the Commission to find that the Board misinterpreted and/or misapplied the radiological accident dose limit set forth in 10 C.F.R. § 72.106(b). *See* Petition at 14-15.[18] According to the State, the Board (1) "erroneously interpreted the 5 rem accident dose limit in 10 C.F.R. § 72.106(b), as applying only during operational hours at the PFS site," *Id.* at 14; (2) ignored testimony "on the potential future residential land use in Skull Valley", *Id.*; (3) "ignored the difference in the wording in section 72.104(a) operational conditions ('a real individual') and section 72.106(b) accident conditions ('any individual'); (4) "fail[ed] to consider that an individual would be located at the boundary all year, [and] lowered the accident dose limit at the PFS site by at least fourfold," *Id.*; and (5) disregarded the fact that the certificate of compliance for the HI-STORM 100 cask was "supported by an analysis using 8,760 hours per year for the exposure duration rather than the 2,000 hours per year accepted by the Board for accident conditions at the PFS site." *Id.* at 14-15. Each of these matters was carefully examined and addressed by the Board. *See* PID at 101-05, 356-61, 365-66. There is no merit in the State's impassioned argument that the Board erred in its treatment of these matters or that "the Board's erroneous legal conclusion, resting upon unreliable hearing testimony, creates a legal standard that eviscerates any conservatism in the accident dose standard and sets a precedent for future litigation in this proceeding." *Id.* at 15.

The radiological dose standards applicable to design basis accidents and events were addressed by the parties in assessing the consequences of cask tipover during a seismic event. PFS presented four witnesses on this part of the contention, including Dr. Everett L. Redmond II (Manager of the Nuclear Physics Department at Holtec International), who performed shielding analyses of the HI-STORM 100 cask system and PFS site boundary dose evaluations, and who testified about Holtec's dose calculations for the PFS Facility. *See* Staff PFF at 230-31, 243-48. The Staff presented Michael D. Waters, a Health Physicist in the Spent Fuel Project Office, who

[18] The State had previously argued -- contrary even to the views of Dr. Resnikoff -- that the dose limits for normal operations, set forth in 10 C.F.R. § 72.104(a) should apply to design basis earthquake events. *See, e.g.,* Tr. 12379, 12449-50 (Resnikoff); PID at 100.

described the applicable regulations and how they have been interpreted and applied in NRC regulatory guidance, and presented the results of the Staff's independent calculation of the dose consequences of a multiple cask tipover event at the PFS site. *See Id.* at 231-32, 248-61.[19] The State presented Dr. Marvin Resnikoff, a high-energy theoretical physicist, who testified about the dose calculations he had performed. *See Id.* at 232-41.

As Mr. Waters explained, the dose limits in 10 C.F.R. § 72.104(a) establish dose limits for any "real individual" located beyond the owner controlled area ("OCA") boundary during "normal operations and anticipated occurrences." In contrast, a cask tipover accident or design basis seismic event would have to meet the limits in 10 C.F.R. § 72.106(b). Staff PFF at 248-49. In calculating accident doses under § 72.106(b), the Staff considers a "hypothetical person" at the site boundary who "is unshielded, stationary, and continually exposed to the accident dose rate for thirty days after the hypothetical tipover event." *Id*. at 257; emphasis added.[20]

The State cites Dr. Resnikoff's testimony in arguing that the Board should have disregarded the agency's established regulatory guidance and practice so as to apply an occupancy time of 8,760 hours (*i.e.,* 365 days x 24 hours) in calculating accident doses. However, as set forth in n.20, *supra*, ample reason existed for the Licensing Board to reject that argument. Further, there is no basis for the State's assertion that the Board afforded "undifferentiated treatment of the exposure

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[19] *See* "NRC Staff Testimony of Michael D. Waters Concerning Radiological Dose Considerations Related to Unified Contention Utah L/QQ, Part E (Seismic Exemption)," Post Tr. 12215. Mr. Waters has an M.S. degree in Nuclear Engineering Sciences; in his position as a Health Physicist, he performs technical reviews of spent nuclear fuel storage casks, ISFSIs, and transportation packages, primarily in the areas of shielding, confinement, containment, radiation protection, and criticality. *Id*. at 1; Waters Qualifications, at 1. *See* Staff PFF at 231-32.

[20] This approach is supported by considerable NRC regulatory guidance and practice, cited by Mr. Waters. *See* Tr. 12216-38 (Waters); Staff PFF at 261-64; *see also*, Staff PFF at 247-48 (citing the testimony of PFS witness Dr. Redmond and other NRC guidance). In particular, NRC regulatory guidance in NUREG-1567 (Staff Exh. 53) specifically provides for the use of a 30-day occupancy time in accident dose calculations. Staff PFF at 266. This is appropriate, as set forth in NUREG-1567, in that protective actions could be taken to assure that any persons located near the OCA boundary are evacuated or otherwise protected if any casks involved in a hypothetical tipover event cannot be uprighted within 30 days. *Id.* at 266-67.

time for accident conditions and normal operations," Petition at 15. Rather, the Board merely found that PFS's accident dose calculations, which used a 2,000-hour occupancy time, were acceptable. *See* PID at 101-02, 356-58. Indeed, PFS could have followed NRC guidance and used an occupancy time of only 720 hours (30 days x 24 hours/day) in its accident dose calculations.[21]

Moreover, even if the Board had adopted the State's unilateral interpretation of NRC regulatory requirements, the outcome of its decision would have been the same: As the Board observed, even Dr. Resnikoff agreed (using his own calculations), that a cask tipover event at the PFS site would not cause the 5 rem dose limit in § 72.106(b) to be exceeded for 36 years, even if no mitigative measures were taken. *See Id.* at 103, 360-61; Tr. 12,618 (Resnikoff); Staff PFF at 235-36, 239-41. For all of these reasons, the State has not shown that Commission review of radiological dose issues resolved in LBP-03-08 is warranted .

CONCLUSION

For the reasons set forth above, the State's Petition fails to demonstrate that Commission review of LBP-03-08 is warranted under 10 C.F.R. § 2.786. The Petition should therefore be denied.

Respectfully submitted,

/RA/
Sherwin E. Turk
Counsel for NRC Staff

Dated at Rockville, Maryland
this 26th day of June, 2003

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[21] Similarly, ample reason existed for the Board to reject Dr. Resnikoff's assertion that the occupancy time for a "real individual" at the OCA boundary should be greater than 2,000 hours per year, considering the potential for future land development near the site (Resnikoff, Post Tr. 12349, at 7; Tr. 12439). Persuasive evidence was presented to dispel that concern, including the fact that the nearest residence to the PFS Facility is two miles away; only about 30 persons live on the Reservation, and only 36 persons live within a 5-mile radius of the facility; there are no transient or institutional populations within 5 miles of the site, and no public facilities are located or planned within that radius; Dr. Resnikoff was not familiar with any potential future land use development in the area; and PFS witness John Donnell testified concerning the low potential for future land development close to the site. *See* Staff PFF at 267 n.140.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

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 PETITION FOR REVIEW OF LBP-03-08,'" 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 26th day of June, 2003:

Michael C. Farrar, Chairman*
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555
(E-mail copy to **MCF@NRC.GOV)**

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

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

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

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

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

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

Jay E. Silberg, Esq.**
Paul A. Gaukler, Esq.
Sean Barnett, Esq.
Shaw Pittman
2300 N Street, N.W
Washington, DC 20037-8007
(E-mail copy to jay_silberg,
paul_gaukler, and sean_barnett
@shawpittman.com)

Tim Vollmann, Esq.**
3301-R Coors Road N.W.
Suite 302
Albuquerque, NM 87120
(E-mail copy to **tvollmann@hotmail.com**)

Denise Chancellor, Esq.**
Fred G. Nelson, Esq.
James Soper, Esq.
Laura Lockhart, Esq.
Utah Attorney General's Office
160 East 300 South, 5th Floor
P.O. Box 140873
Salt Lake City, UT 84114-0873
(E-mail copies to dchancellor, fnelson,
jsoper, and **llockhart@utah.gov,** and
attygen@xmission.com

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

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

John Paul Kennedy, Sr., Esq.**
David W. Tufts, Esq.
Durham, Jones & Pinegar
111 East Broadway, Suite 900
Salt Lake City, UT 84105
(E-mail copy to **dtufts@djplaw.com)**

Joro Walker, Esq.**
Land and Water Fund of the Rockies
1473 South 1100 East, Suite F
Salt Lake City, UT 84105
(E-mail copy to utah@lawfund.org

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

Paul C. EchoHawk, Esq.
EchoHawk PLLC
P.O. Box 6119
Pocatello, Idaho 83205-6119
E-mail copy to:
pechohawk@hollandhart.com

/RA/

Sherwin E. Turk
Counsel for NRC Staff