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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Commission

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

In the Matter of

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PRIVATE FUEL STORAGE L.L.C.

)

Docket No. 72-22

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(Private Fuel Storage Facility)

)

ASLBP No. 97-732-02-ISFSI

**APPLICANT'S BRIEF OPPOSING ADMISSION AND
ADJUDICATION OF THE STATE OF UTAH'S REQUEST
FOR MODIFICATION TO BASIS 2 OF UTAH CONTENTION L**

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**APPLICANT'S BRIEF OPPOSING ADMISSION AND
ADJUDICATION OF THE STATE OF UTAH'S REQUEST
FOR MODIFICATION TO BASIS 2 OF UTAH CONTENTION L**

Applicant Private Fuel Storage L.L.C. ("Applicant" or "PFS") hereby responds to the Commission's Order, CLI-01-06, 53 NRC __ (February 14, 2001) ("February 14 Order") requesting briefs in conjunction with the "State of Utah's Request for Admission of Late-Filed Modification to Basis 2 of Utah Contention L," filed November 9, 2000 ("State Request"), portions of which were certified to the Commission by the Atomic Safety and Licensing Board ("Licensing Board" or "Board") in its Memorandum and Order of January 31, 2001.¹ The Commission in CLI-01-06 requested briefing on two issues: (1) whether the exemption request approved by the Staff authorizing PFS to use a probabilistic seismic hazard evaluation methodology based on a 2,000-year return period earthquake is or should be subject to adjudicatory challenge in the licensing proceeding for the Private Fuel Storage Facility ("PFSF"); and (2) whether the contention proposed by the State challenging the exemption would be admissible for adjudication in accordance with NRC regulations. PFS submits that the contention sought to be raised by the State would be inadmissible for adjudication, even assuming it were otherwise litigable in

¹ Memorandum and Order (Ruling on Admissibility of Late-Filed Modification of Contention L, Geotechnical, Basis 2; Referring Rulings and Certifying Question Regarding Admissibility), LBP-01-03, 53 NRC __ (January 31, 2001) ("January 31 Order").

the PFSF licensing proceeding, because it impermissibly challenges NRC regulations, fails to assert an admissible contention, and provides inadequate bases for the claims it seeks to advance. Moreover, the exemption request should not be subject to adjudicatory challenge in the PFSF licensing proceeding because it concerns generic issues that are, or will be, the subject of rulemaking. For these reasons, the Commission should deny the State's Request to modify Basis 2 of Utah Contention L.

I. BACKGROUND

Utah Contention L ("Utah L"), admitted in April 1998, challenges the adequacy of PFS's geo-technical investigations at the PFSF. Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation) LBP-98-7, 47 NRC 142, 253 (1998). Utah L, as admitted, raises issues concerning the adequacy of PFS's efforts to identify and characterize faulting in the site vicinity (Basis 1), the alleged failure by PFS to account for spatial variations in ground motion amplitude and duration because of near surface traces of potentially capable faults (Basis 2), the characterization of subsurface soils (Basis 3), and soil stability (Basis 4).² As recognized by the Licensing Board, these claims are not affected by whether the design-basis earthquake is calculated using a deterministic or probabilistic methodology, or by the type of earthquake used in a probabilistic seismic analysis. Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-21, 49 NRC 431, 436 (1999).

On April 2, 1999, PFS submitted an exemption request, pursuant to 10 C.F.R. § 72.7, which sought NRC Staff approval for using a probabilistic seismic hazard analysis ("PSHA") methodology based on a 1,000-year return period earthquake instead of the

² 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, pp. 80-95 (Nov. 23, 1997) ("State's Contentions").

deterministic methodology otherwise required by 10 C.F.R. Part 72.³ On August 24, 1999, PFS modified its exemption request to reflect a probabilistic analysis based on a 2,000-year return period earthquake, as a result of comments received from the Staff.⁴ Shortly thereafter, PFS revised its License Application to use a 2,000-year return period earthquake as the design basis earthquake.⁵ SAR at 2.6-68 [Rev. 6].

On December 15, 1999, the NRC Staff issued a Safety Evaluation Report ("SER") for the PFSF, in which it indicated that use of a PSHA and a 2,000-year return period earthquake would be an acceptable methodology. The SER, however, did not specifically approve the exemption request. On September 29, 2000, the Staff issued an updated SER in which it concluded that sufficient basis existed to grant an exemption. The relevant language in the updated SER states:

[T]he staff has determined that a 2,000-year return value with the PSHA methodology can be acceptable for the following reasons:

- The radiological hazard posed by a dry cask storage facility is inherently lower and the Facility is less vulnerable to earthquake-induced accidents than operating commercial nuclear power plants (Hossain et al., 1997). In its Statement of Consideration accompanying the rule-making for 10 CFR Part 72, the NRC recognized the reduced radiological hazard associated with dry cask storage facilities and stated that the seismic design basis ground motions for these facilities need not be as high as for commercial nuclear power plants (45 FR 74697, 11/12/80; SECY-98-071; SECY-98-126).
- Seismic design for commercial nuclear power plants is based on a determination of the Safe Shutdown Earthquake ground motion. This ground motion is determined with respect to a reference probability level of 10^{-5} (median annual probability of exceedance) as estimated in

³ Letter from John Parkyn, PFS, to Mark Delligatti, NRC, dated Apr. 2, 1999. The License Application was amended on May 19, 1999 to change the design basis earthquake to the 1,000-year return period earthquake. See SAR at 2.6-38 [Rev. 3]. Currently, 10 C.F.R. Part 72 provides for an ISFSI applicant to perform its seismic analyses using a deterministic approach for characterizing earthquake motion. 10 C.F.R. § 72.102(c). This is the same analytical approach that was previously required in licensing nuclear power plants prior to the amendment of 10 C.F.R. Part 100 to allow the use of a probabilistic analysis. See 61 Fed. Reg. 65,157-65,176 (1996).

⁴ Letter from John Parkyn, PFS, to Mark Delligatti, NRC, dated Aug. 24, 1999.

⁵ Letter from John Parkyn, PFS, to NRC, dated Sept. 8, 1999.

a probabilistic seismic hazard analysis (Reference Reg Guide 1.165). The reference probability, which is defined in terms of the median probability of exceedance, corresponds to a mean annual probability of exceedance of 10^{-4} (Murphy et al., 1997). That is, the same design ground motion (which has a median reference probability of 10^{-5}) has a mean annual probability of exceedance of 10^{-4} .

- On the basis of the foregoing, the mean annual probability of exceedance for the PFS Facility may be less than 10^{-4} per year.
- The DOE standard, DOE-TD-1020-94 (U.S. Department of Energy, 1996), defines four performance categories for structures, systems, and components important to safety. The DOE standard requires that performance Category-3 facilities be designed for the ground motion that has a mean recurrence interval of 2000 yrs (equal to a mean annual probability of exceedance of 5×10^{-4}). Category-3 facilities in the DOE standard have a potential accident consequence similar to a dry spent fuel storage facility.
- The NRC has accepted a design seismic value that envelopes the 2000-yr return period probabilistic ground motion value for the TMI-2 ISFSI license (Nuclear Regulatory Commission, 1998b; Chen and Chowdhury, 1998). The TMI-2 ISFSI was designed to store spent nuclear fuel in dry storage casks similar to the PFS Facility.

In summary, the staff agrees that the use of the PSHA methodology is acceptable. A 2,000-year return period is acceptable for the seismic design of the PFS Facility. As discussed in the subsequent chapters of this SER, the design analyses use a spectrum that envelopes the 2,000-year return period uniform hazard spectra.

SER at 2-41 to 2-42.⁶

The State filed its current Request on November 9, 2000, after the Board granted the State's motion to be allowed to file contentions based on the SER by that date.⁷ In its Request, the State seeks to modify Basis 2 of Contention L to directly challenge PFS's exemption request as found acceptable by the Staff. It seeks to require the use of a PSHA

⁶ See also Cover Letter from Mark Delligatti, NRC, to John Parkyn, PFS, dated Sept. 29, 2000 ("As discussed in Section 2.1.6.2 of the SER, the staff agrees that the use of the PSHA methodology with a 2,000 year return period is acceptable, and there is sufficient basis to grant an exemption to 10 C.F.R 72.102(f) at the time a license is issued for the Facility").

⁷ Order dated November 1, 2000. The State had previously sought to amend Utah L to challenge PFS's exemption request. The State's earlier requests were denied by the Board on the ground that they were not ripe for determination. LBP-99-21, supra, 49 NRC at 437; LBP-00-15, 51 NRC 313, 318 (2000).

with a return period of 10,000 years for determining the design basis earthquake, or the use of a deterministic seismic hazards analysis (“DSHA”).⁸

On January 31, 2001, the Licensing Board issued a Memorandum and Order in which it acknowledged, in accordance with its previous decisions, that because the State’s Request concerned an exemption from the Commission’s regulations it was not subject to challenge in an adjudicatory proceeding absent a Commission directive to the contrary. January 31 Order, at 8-9. In accordance with Applicant’s suggestion, however, the Board went on to determine whether the State had raised what would otherwise be an admissible contention.⁹ The Board clarified and restated (from its reading of the State’s current and previous pleadings) the matters in controversy as follows:

Relative to the PFS seismic analysis supporting its application and the PFS April 9, 1999 request for an exemption from the requirements of 10 C.F.R. § 72.102(f) to allow PFS to employ a probabilistic rather than a deterministic seismic hazards analysis, PFS should be required either to use a probabilistic methodology with a 10,000-year return period or comply with the existing deterministic analysis requirement of section 72.102(f), or, alternatively, use a return period significantly greater than 2000 years, in that:

1. The requested exemption fails to conform to the SECY-98-126 rulemaking plan scheme, i.e., only 1000-year and 10,000-year return periods are specified for design earthquakes for safety-important SSCs -- SSC Category 1 and

⁸ As an alternative to these two approaches, the State seeks to require use of a PSHA with an unspecified return period “significantly greater than 2,000 years to avoid placing undue risk on public safety and the environment.” State Request at 5.

⁹ Id. at 9, citing Applicant’s Response to State of Utah’s Request for Admission of Late-Filed Modification to Basis 2 of Utah Contention L, November 29, 2000 at 9 (“PFS Response”). As stated by Applicant there:

[T]he State has not raised a litigable contention with respect to the exemption. PFS therefore urges the Board to decide on the admissibility of the State’s Late-Filed Modification to Basis 2 of Utah Contention L, reject the proposed expansion of the contention, and allow the Board’s ruling to “abide the end of the case.” Should the Board so conclude, there would be no novel or unusual issue to certify to the Commission, since the situation would be analogous to one in which the Board rejects a proffered contention. If, on the other hand, the Board determines that the State has raised a litigable contention, the Board should certify the matter to the Commission, framing the issues as concretely as possible with an eye towards expediting resolution by the Commission. (Footnote omitted.)

SSC Category 2, respectively -- and any failure of an SSC that exceeds the radiological requirements of 10 C.F.R. § 72.104(a) must be designed for SSC Category 2, without any explanation regarding PFS SSC compliance with section 72.104(a).

2. PFS has failed to show that (a) its facility design will provide adequate protection against exceeding the section 72.104(a) dose limits; and (b) its facility and equipment, specifically the components within the CTB involved in the transfer of the spent fuel canister from a transportation cask to a storage cask, including the proposed single-failure transfer crane, are designed to withstand a 2000-year return period earthquake.
3. The PFS accident evaluation is inadequate because (a) it does not bound the design basis accident DE IV under American National Standards Institute (ANSI)/ANS-57.9-1999; (b) its leakage rate and breach hole assumptions are based on information in NUREG/CR-6487, "Containment Analysis for Type B Packages Used to Transport Various Contents" and NUREG-1617, "Standard Review Plan for Transportation Packages for Nuclear Spent Fuel;" which in turn is derived from ANSI standard N14.5 for transportation casks, despite the fact that PFS cannot meet the leak-testing, repair, and maintenance assumptions upon which standard N14.5 is based; and (c) it does not account for beyond design basis accidents involving sabotage using anti-tank devices.
4. The staff's reliance on the reduced radiological hazard of stand-alone ISFSIs as compared to commercial power reactors as justification for granting the PFS exemption is based on incorrect factual and technical assumptions about the PFS facility's mean annual probability of exceeding a safe shutdown earthquake (SSE), and the relationship between the median and mean probabilities for exceeding an SSE for central and eastern United States commercial power reactors and the median and mean probabilities for exceeding an SSE for the PFS facility.
5. In supporting the grant of the exemption based on 2000-year return period, the staff relies upon the DOE standard, DOE-STD-1020-94, and specifically the category-3 facility SSC performance standard that has such a return period, notwithstanding the fact the staff categorically did not adopt the four-tiered DOE category scheme as part of the Part 72 rulemaking plan.
6. In supporting the grant of the exemption based on the 2000-year return period, the staff relies upon the 1998 exemption granted to DOE for the INEEL ISFSI for the TMI-2 facility fuel, which was discussed in SECY-98-071 (Apr. 8, 1998), even though that grant was based on circumstances not present with the PFS ISFSI, including (a) existing INEEL design standards for a higher risk facility at the ISFSI host site; (b) a settlement agreement with the State of Idaho that required ISFSI construction by the end of 1998; and (c) the use of a peak design basis horizontal acceleration of 0.36 g that was higher than the 2000-year return period value of 0.30 g.

7. Because (a) design levels for new Utah building construction and highway bridges are more stringent; and (b) the PFS return period is based on the twenty-year initial licensing period rather than the proposed thirty to forty year operating period, the 2000-year return period for the PFS facility does not ensure an adequate level of conservatism.

January 31 Order, at 9-11.

In considering the admissibility of these seven items, the Board first determined whether the State had met its burden under the late filing standards of 10 C.F.R. § 2.714(a)(1) and concluded with respect to Item 3 of the restated contention that the State had not. Id. at 11-14. The Board then analyzed whether the remaining Items met the pleading requirements for contentions set forth in 10 C.F.R. § 2.714(b) & (d) for Commission adjudicatory proceedings and concluded that Item two, sub-item b and Item six, sub-item b did not meet these requirements. Id. at 14-21. Having concluded that the remaining matters raised by the State would constitute an admissible late-filed contention under the Commission's adjudicatory rules, the Board certified to the Commission the question of "whether the State's Utah L challenge to the April 1999 PFS seismic exemption request should be litigated in this proceeding, along with a referral of [its] rulings . . . on the admissibility of the items the State has framed in support of its challenge." Id. at 21-22.

The Commission Order requested briefing both on the Board's referral of its "holding that Utah's exemption related issues would be admissible" should the Commission "allow the Board to entertain Utah's exemption challenge" and on the certified issue of whether the State's challenge to the exemption request "should be adjudicated" in the PFS licensing proceeding. February 14 Order, at 1. Each of these issues is discussed in turn below. Following the Licensing Board's approach, we address first the issue of whether an admissible contention has been raised by the State, because if the answer is in the negative (as Applicant contends), there is no need for the Commission to decide whether an adjudicatory hearing should be held.

II. THERE IS NO BASIS FOR ADJUDICATION OF THE STATE'S CHALLENGE TO THE EXEMPTION REQUEST BECAUSE THE STATE HAS FAILED TO RAISE AN ADMISSIBLE CONTENTION

A. Introduction

The fundamental issue raised by the State Request is whether the State should be allowed to litigate in an adjudicatory licensing hearing the validity of the Staff's decision to grant PFS an exemption. In an analogous setting in Carolina Power & Light Co. (Shearon Harris Nuclear Power Plant), CLI-86-24, 24 NRC 769 (1986), affirmed, Edelman v. NRC, 825 F.2d 46 (1987), the Commission declined to hold a hearing on a contested exemption,:

Even if § 189a of the Atomic Energy Act required an adjudicatory hearing on this exemption request, as Petitioners assert, threshold procedural requirements for institution of a hearing would still have to be met. Since adjudicatory hearings are intended only for the resolution of disputed issues of material fact, one such procedural requirement is that a person seeking a hearing must tender sufficient information to establish that there are material issues of fact warranting a hearing. Petitioners have failed to meet this threshold requirement, and therefore the Commission need not address whether § 189a gives interested persons hearing rights on the exemption request at issue here, either within the operating license proceeding or as a separate matter.

Id. at 774 (citations and footnote omitted, emphasis added). As was made clear by the Commission in Shearon Harris, the “materials issue of fact” standard is nothing more than a showing that a party has raised “any litigable contentions” regarding the grant of the exemption, as determined under Commission pleading requirements. Id. at 772 n.3. Here, the State has failed to raise any litigable issues concerning the exemption, and therefore it has provided no basis for an adjudicatory hearing on the exemption request even assuming section 189 provided for such a hearing.

In its Request, the State raised three major arguments for challenging the exemption request. These were: “A. The Grant of the Exemption Request Fails to Comply with the NRC Rulemaking Plan” (restated as Board Items 1, 2 and 3); “B. The Staff's Reasons for Allowing the Applicant to Use a PSHA With a 2,000-Year Return Period are

Ad Hoc and Either Flawed or Not Compelling” (restated as Board Items 4, 5, and 6); and “C. Use of a PSHA With a 2,000-year Return Period Does Not Ensure an Adequate Level of Conservatism (restated as Board Item 7).” State Request at 6-12. These arguments focus almost exclusively on the Staff’s rationale for approving the exemption, as opposed to the specific conditions at the PFSF site.¹⁰ For that reason and others set forth below, none of the State’s arguments provide the basis for an admissible contention.

B. Failure to Comply with the NRC Rulemaking Plan Would Provide No Basis for Challenging the Staff’s Granting an Exemption

According to the State, “[b]y allowing PFS to conduct its seismic hazard analysis using a PSHA with a 2,000 year return period, the Staff has taken a position contrary to it’s the Rulemaking Plan” For 10 C.F.R. Part 72¹¹. State Request at 6. Items 1 and 2(a) of the Board’s restatement of the matters in controversy relate to this claim. January 31 Order at 14-15. Both PFS and the Staff pointed out that the rulemaking plan – which was issued over 30 months ago -- did not bind the Staff, and that even if the rulemaking plan were to be treated as a regulation, the NRC Staff would not be bound to comply with it when evaluating a request for exemption. The purpose of § 72.7, and other similar exemption provisions, is to allow the Staff the flexibility to deviate from the regulations and apply a more appropriate, but still prudent standard under the specific circumstances pre-

¹⁰ The only site-specific issues raised by the State were actually found by the Licensing Board not to raise litigable contentions. The site-specific issue are those in Items 2(b) (challenge to the design of components in the CTB) and Item 3(b) (challenge to various aspects of PFS’ accident evaluations). The Licensing Board appropriately found these Items inadmissible. January 31 Order, at 11-14 and 16. Because the Licensing Board only certified to the Commission its the issues it deemed admissible (*Id.* at 23-24), these Items are not before the Commission and need not be briefed. See also February 14 Order (“[T]he Board also referred to the Commission the Board’s holding that Utah’s exemption related issues would be admissible were we to allow the Board to entertain Utah’s exemption challenge.”) (emphasis added).

¹¹ US NRC SECY-98-126, from L. Joseph Callan (EDO) to the Commissioners, “Rulemaking Plan: Geological and Seismological Characteristics for Siting and Design of Dry Cask Independent Spent Fuel Storage Installations, 10 C.F.R. Part 72, dated June 4, 1998.

sented by the party requesting the exemption.¹² By arguing that the Staff must “comply with the NRC Rulemaking Plan,” the State is seeking to preclude the Staff from exercising its authority under 10 C.F.R. § 72.7. This constitutes an impermissible collateral attack on the NRC regulations that endow the Staff with authority to grant exemptions.¹³ Thus, in seeking to bind the Staff to the Rulemaking Plan, the State is attacking the validity of § 72.7, which it clearly is not permitted to do.

The Licensing Board correctly recognized that the Rulemaking Plan “does not preclude the Staff from allowing” PFS to use a PSHA with a return period of 2,000 years. February 14 Order at 15. However, the Board was of the view that the existence of the Rulemaking Plan creates the reasonable expectation that, as part of the rationale provided in support of the exemption, an explanation will be provided about why the scheme, as set forth in the plan, is not appropriate relative to the exemption and that such an “explanation is, in turn, subject to scrutiny in a properly pled contention.” *Id.* On that basis, the Board incorrectly ruled that Item 1 and Item 2(a), would be admissible under the pleading requirements of 10 C.F.R. § 2.714. *Id.*

In its exemption request, PFS did, however, address the graded approach reflected in the Rulemaking Plan which underlie the State’s claim concerning the Plan.¹⁴ The exemption request specifically states, in accordance with the graded approach, that the “bounding consequences of a major seismic event at the PFSF . . . are limited by a stor-

¹² The only factors that the Staff must consider when it decides whether to grant an exemption are whether the exemption is authorized by law, whether it would endanger life or property or the common defense and security, and whether it is otherwise in the public interest. See 10 C.F.R. § 72.7.

¹³ Commonwealth Edison Co. (Zion Nuclear Power Station, Units 1 and 2), CLI-00-5, 51 NRC 90, 97 (2000) (exemption provisions are an integral part of the regulations applicable to a license); Louisiana Energy Services, L.P. (Claiborne Enrichment Center), LBP-91-41, 34 NRC 332, 346-47 (1991) (bases that seek to require standards more stringent than regulatory requirements constitute an impermissible challenge to the Commission’s regulations).

¹⁴ See Request for Exemption to 72.102(f)(1) Seismic Design Requirement for the Private Fuel Storage Facility at 4-6, attached to April 2, 1999 letter from John Parkyn, PFS, to Mark Delligatti, NRC. This Request is attached to the Brief as Exhibit 1.

age cask tipover event” which the canisters would be “designed to withstand . . . with no breach and no release of radioactive material from inside the canister.”¹⁵ The same bounding consequence event would be applicable using a 2,000-year return period accepted by the Staff.

At any rate, even assuming that it might have been desirable that in granting the exemption the Staff an explanation why it was not rigidly following the rulemaking plan, there is no requirement in the regulations that the Staff explain the reasons for various courses of action it did not take in approving any exemption request, as long as the bases for granting the request are appropriate and well justified. As discussed below, the Staff’s bases meet both criteria.

C. The State’s Attempts to Challenge the Staff’s Bases for Granting the Exemption Are Improper and Do Not Give Rise to a Litigable Contention

1. The State’s Arguments Improperly Focus on the Staff’s Decision-Making Process Rather Than on the Merits of the Exemption Request

The second major argument raised in the State’s Request is its claim that the Staff’s reasons for allowing PFS to use a PSHA with a 2,000-year return period are “*ad hoc*” and either “flawed” or “not compelling.” This argument corresponds to Items 4, 5 and 6 in the Board’s definition of issues.¹⁶ The State asserts that the Staff 1) inappropriately differentiated ISFSIs from commercial power reactors in granting the exemption, (2) improperly relied upon DOE’s standard DOE-STD-1020-94, and (3) improperly relied upon an earlier exemption that varied from the present case.

¹⁵ *Id.* at 5. Memorandum and Order, _LBP-99-43, 50 NRC 306 (1999). In order to show the conservatism of its estimates and design, PFS discussed a hypothetical event, not required as part of the design basis, to underscore that in the event of such a scenario, that the radiological dose would be below the limits set forth under both 10 C.F.R. §§ 72.106(b) and 20.1301(a)(1). The State’s attempted attack on PFS’s analysis of a non-required, beyond design basis hypothetical event, is immaterial. Further, the issues raised by the State regarding the adequacy of this accident design in Item three were properly ruled inadmissible by the Board as being both late-filed (January 31 Order at 11-14) and previously ruled inadmissible as a Late-filed Amendment to Utah Contention C. Memorandum and Order, LBP-99-43 (Nov. 4, 1999)

¹⁶ The Board concluded that these items would be admissible under 10 C.F.R. § 2.714 except for Item 6, subpart b. February 14 Order at 2.

As recognized by the Licensing Board, these challenges go to the adequacy of the Staff's review and not to the adequacy of the license application itself and should not, as a general principle, be admissible.¹⁷ As the Commission has previously stated

Apart from NEPA issues, which are specifically dealt with in the rule, a contention will not be admitted if the allegation is that the NRC staff has not performed an adequate analysis. . . . [T]he sole focus of the hearing is on whether the application satisfies NRC regulatory requirements, rather than the adequacy of the NRC staff performance. . . .¹⁸

The Licensing Board, however, focused on the State's arguments that the Staff's review was the only source of justification for the 2,000-year return period, and overlooked that the State has not raised any material issues of fact regarding the sufficiency of PFS's request for an exemption.

The differentiation by the Staff of ISFSIs from nuclear power plants, the reference to the DOE standard, and the use of an earlier exemption in granting the PFS exemption clearly relate to the process by which the Staff decided to evaluate the PFS exemption request, rather than any site-specific application of the parameters derived from that process, or any showing that the 2,000-year return period would not provide adequate protection for public health and safety. Thus, in making these challenges, the State is attacking the Staff's decision-making process concerning PFS's exemption request, rather than the merits of the exemption itself.¹⁹ This constitutes an inappropriate challenge to the Staff's review process, as established by well-settled Commission precedent.²⁰

¹⁷ January 31 Order at 16-17.

¹⁸ 54 Fed. Reg. 33,168, 33,171 (1989) (Statement of Considerations for "Rules of Practice for Domestic Licensing Proceedings – Procedural Changes in the Hearing Process"). See also Duke Power Co. (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 1041, 1048-49 (1983) (safety-related contentions must be filed on the basis of the applicant's SAR, not the Staff's subsequently issued SER).

¹⁹ The Staff, for example, conducted extensive geotechnical analyses independent from those conducted by PFS. Nothing in the State's Request or supporting declarations evaluates the examination by Stamakatos (1999), or any other site-specific analysis by the Staff. Instead, the general methodology and appropriateness of probabilistic seismic hazard analysis and the choice of a 2,000-year return period are attacked. Likewise, the 2,000-year return period is not attacked because it is an improper return period based on site-specific characteristics or consequences, but because it did not follow the 1,000-year or 10,000-year return period options suggested in a proposal for rulemaking, SECY-98-126. The nonsensical nature of the

Footnote continued on next page

Moreover, the premise that there is no other justification, other than the Staff's review, to support a 2,000-year return period is incorrect. In fact, the Applicant provided extensive justification supporting an exemption for a 1,000-year return period in the April 1999 exemption request, as well as calculations establishing the design ground motion response spectra for both 1000-year and 2000-year return period earthquakes. None of the State's issues that the Board found would be admissible under 10 CF.R. § 2.714 challenged the accuracy or adequacy of that detailed analysis showing that a 1,000-year return period is adequate for the facility design basis.²¹ If the State has not raised any legitimate, factual basis for challenging the adequacy of a 1,000-year return period, it cannot logically be allowed to challenge the more conservative 2,000-year return period. Therefore, Items 4, 5, and 6 should not be admissible in this adjudicatory proceeding.

2. The State's Specific Attacks on the Staff's Bases for Approving the PFS Exemption Request Do Not Set Forth an Admissible Contention

Items 4, 5 and 6 identified by the Board attack directly the justifications offered by the Staff in approving PFS's exemption request. As will be seen, none of these attacks amounts to an admissible contention.

In Item 4, the State claims that the Staff improperly concluded that a mean annual probability of 10⁻⁴ per year for the design basis earthquake could be exceeded at an IS-

State's "either/or" argument is underscored by the fact that if the Staff had approved the 1,000-year return period as requested and supported by PFS the State would have no basis to contend the Staff erred in granting the exemption. Ironically, the State, in effect, is complaining that the Staff approved a more conservative return period.

²⁰ "An intervenor . . . may not proceed on the basis of allegations that the staff has somehow failed in its performance." *Pacific Gas & Elec. Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2)*, ALAB-728, 17 NRC 777, 807, review declined, CLI-83-32, 18 NRC 1309 (1983). In this case, admitting for litigation the State's attack on the Staff's review would be particularly anomalous, because the NRC's adjudicatory boards are not empowered to direct the staff in the conduct of its duties. *Carolina Power & Light Co. (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4)*, CLI-80-12, 11 NRC 514, 516-17 (1980). To allow a licensing proceeding to inquire into which documents the Staff used to make its exemption decision and to second-guess the Staff regarding how it should use those documents is beyond an adjudicatory board's powers.

²¹ Likewise, the State has no claim that the Board has held admissible that challenges the validity of the calculations submitted by PFS for a 2,000-year return period earthquake. See note 15 supra.

FSI site. State Request at 8-10. The State contends that, based on criteria used for the siting of commercial nuclear power plants, the correct parameter should be a median annual probability of 10^{-5} which, for western sites such as Skull Valley, would translate into a mean annual probability significantly greater than 10^{-4} per year. Id. However, the State's argument (whether or not technically correct) is irrelevant, because the State has failed to allege or provide any credible evidence to show that doses outside the PFS site in excess of the applicable regulatory limits will result if the facility is designed on the basis of the 2000 year design basis earthquake approved by the Staff. In other words, the State's claim challenges only the Staff's technical evaluation, not the appropriateness of the selected design basis earthquake for the PFSF.²²

With respect to Item 5, the State challenges the reference in the SER to the DOE's Performance-3 facilities, which as the Staff notes in the SER (and the State does not dispute) are required to be designed for a 2,000-year return period earthquake and have potential accident consequences similar to those from an accident at an ISFSI facility. The State seeks to negate the use of the DOE standard as a reference point because, in its Rulemaking Plan, the NRC did not use the various DOE facility performance categories, including the category corresponding to a 2,000-year return period. State Request at 12-13. However, as discussed above, the Rulemaking Plan is not controlling on the Staff's consideration of the PFS exemption request and thus whether the Rulemaking Plan adopts the DOE categorical standards is immaterial to whether the DOE standards pro-

²² In rejecting their argument, the Licensing Board concluded that graded approach between 1,000 year and 10,000 year return periods set forth in the NRC rulemaking provided a sufficient factual basis to challenge the merits of the design basis earthquake. January 31 Order at 19-20. However, as discussed above, PFS in its April 1999 exemption request showed that the PFSF could meet the requirements for the 1,000 year return period under the graded approach set forth in the Plan. See pp. 13-14 supra. The fact that the return period earthquake is 2,000 year only provides additional conservatism.

vided a valid reference point for the Staff's analysis.²³ No factual basis thus exists to raise a litigable contention based on such a rejection of the DOE standard.

With respect to Item 6, the State claims that the Staff reliance on the previous exemption granted the TMI-2 ISFSI is misplaced because of three differences between the PFSF and the TMI-2 ISFSI. The three differences asserted are: 1) use at the TMI-2 ISFSI of design standards for a higher risk facility; 2) approval of the use of the TMI-2 facility was part of a settlement agreement between DOE and the State of Idaho; and 3) the TMI-2 facility uses a peak design basis horizontal acceleration of 0.36g, rather than a 0.30g probabilistic near ground motion for a 2,000-year return period.²⁴ Once again, in Item 6 the State fails to show the relevance of these alleged differences in terms of impact on the health and safety of the PFSF from using a 2,000 year return period earthquake. Thus, again, the State creates distinctions without differences, and makes claims that do not rise to the level of litigable contentions.

D. There is no Adequate Basis for the State's Assertion that Using a PSHA with a 2,000-Year Return Period Fails to Provide Adequate Conservatism

The State's final basis for attacking the 2,000-year return period exemption by Staff is that Utah supposedly²⁵ has more stringent building codes, requiring a different design basis supposedly calling into question the conservatism of the exemption. The State's rationale for this assertion is that the design basis is not adequately conservative, because "it will be unconvincing to the citizens of Utah that the design ground motion level for a nuclear waste storage facility is adequately conservative when design levels

²³ Arabasz Decl. ¶ 9 merely asserts, without explanation of any significance, "The FSER's reliance on the DOE performance Category-3 facilities does not comply with the Rulemaking Plan to amend Part 72."

²⁴ State Request at 11-12.

²⁵ The State's claims are largely set forth through allegations by counsel, with the thinnest external support through one brief, general sentence in the Declaration of State witness Dr. Arabasz. See State Response at 14-16.

for new building construction and new highway bridges in Utah are more stringent.”²⁶

The State provides no citation to law or NRC regulations as setting forth conservatism standards which are not met by the exemption request or its approval by the Staff.

The Commission has specifically set forth criteria for the admissibility of contentions in license proceedings in a “Statement of Policy on Conduct of Adjudicatory Proceedings,” CLI-98-12 48 NRC 18, 22 (1998), stating “[t]he scope of a proceeding, and, as a consequence, the scope of contentions that may be admitted, is limited by the nature of the application and pertinent Commission regulations.”²⁷ The State does not cite (and, obviously, could not cite) any Commission regulation that would make Utah’s codes or the International Building Codes controlling in this proceeding. Indeed, no such standards exist: what the State is trying to do is impose a new regulatory standard on the seismic design of structures subject to regulation by the NRC, *i.e.*, that such structures must comply with State and local (and perhaps international) building codes, and failure to do so constitutes an impermissible lack of conservatism. The reality is that the State’s contention is irrelevant, because state and international are irrelevant until and unless they are recognized as applicable by NRC regulations. In addition, the State’s allegation is logically a non-sequitor: the fact (if it is a fact) that the earthquake design standards in Utah’s building code for highway bridges and buildings may be more stringent than the PSHA’s 2,000-year return period earthquake standard says nothing about the issue of concern here, *i.e.*, whether the PSHA’s earthquake standard is sufficiently conservative.

Likewise, the State’s assertion that use in the PSHA analysis of a 20-year operation period for the PFS (corresponding to the duration of the PFS initial license) also lacks the factual basis to support a contention. The State contends that a longer operation

²⁶ State Request at 12.

²⁷ See also In the Matter of Duke Energy Corp., (Oconee Nuclear Station, Units 1, 2, and 3), LBP-98-33, 48 NRC 381 (1998); Duke Energy Corp. (Oconee Nuclear Station, Units 1, 2, and 3), CLI-98-17, 48 NRC 123 (1998).

period should be used, but offers only the (unsupported) claims that “[f]or the PFS, a 99-percent probability of not being exceeded in 30 years would require a design value corresponding to a return period of 2,985 years, and for a 40 year exposure period the return period value should be 3,980 years.”²⁸ The State neither contends that a particular exposure period should be used, nor does identify what the consequences are on public health and safety if a 20 year operation period is used. Thus, this portion of the State’s Request is impermissibly vague and fails to raise a litigable contention.

For the foregoing reasons, Utah’s challenge to the “conservatism” of the 2,000 year PSHA return period earthquake is not supported by adequate bases and should be dismissed.

In sum, the State’s Request fails to set forth issues of material fact that would constitute admissible contentions under 10 C.F.R. § 2.714, and should be dismissed. Therefore, the Commission need not reach the certified question of whether the State’s challenge to the exemption should be the subject of adjudication in the PFSF licensing proceeding. See Carolina Power & Light Co., *supra*, CLI-86-24, 24 NRC at 774.

III. THE COMMISSION SHOULD NOT ORDER AN ADJUDICATORY HEARING ON APPLICANT’S SEISMIC EXEMPTION REQUEST

Should the Commission conclude that the State has raised an admissible contention under 10 C.F.R. § 2.714, it would then reach the issue certified by the Licensing Board whether the “State’s . . . challenge to the April 1999 PFS seismic exemption request should be litigated” in the ASLB licensing proceeding for the PFSF. January 31 Order, at 22. As is apparent from both the State’s challenge and the NRC’s Staff’s approval of the exemption, all the issues raised by the State that were certified by the Board are generic in nature. Each of the bases set forth in the Staff’s SER for concluding that a PSHA with a 2,000 year return period “is acceptable” would be applicable to any dry

²⁸ State Request at 16.

storage ISFSI, regardless of location. SER at 2-41 and 2-42, quoted above. None concern characteristics peculiar to the PFSF site or design. Thus, in reality, the Staff's approval of the PFS exemption request is a generic determination of the acceptability of a probabilistic seismic hazard analysis using a 2,000 year return period for dry storage ISFSIs. The Staff's analysis would be equally applicable to other proposed dry storage sites, just as this methodology has been adopted under other parts of NRC regulations.²⁹ Similarly, the State's challenge to the exemption, as discussed in Section II.A above, focuses almost entirely on the generic rationale provided by the Staff for approving the exemption, and not PFS site-specific features.

Thus, there is no compelling reason why this generic issue should be adjudicated in the context of the licensing proceeding for an individual facility. It is well established, on the other hand, that agencies may resolve matters of a generic nature through rule-making. Duke Energy Co. (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 343 (1999). In this instance, moreover, the State's challenges concerning the use of a probabilistic seismic hazard analysis and the appropriate return period are the subject of a rulemaking plan. Indeed, the State's reliance on the Rulemaking Plan in SECY-98-126 to challenge the Staff's granting of the exemption (discussed above) is evidence that these issues are in the process of being addressed via rulemaking. The Rulemaking Plan, while not binding on the Staff, indicates that a proposed rule will likely be forthcoming that deals with probabilistic seismic hazard analysis and the appropriate return period for facilities such as the PFSF. Indeed, the Staff indicated in its November 29, 2000 "Response to State of Utah's Request for Admission of Late-Filed Modification to Basis 2 of Contention Utah L" that it intends to recommend for Commission consid-

²⁹ See, e.g., 10 C.F.R. 100.23 (applying probabilistic seismic hazard analysis to certain nuclear power plant sites) and Statement of Consideration, "Reactor Site Criteria Including Seismic and Earthquake Engineering Criteria for Nuclear Power Plants," 61 Fed. Reg. at 65,176.

eration any changes deemed appropriate to the Rulemaking Plan with a view towards completing a proposed rule.³⁰

It is well established that a contention that is the subject, or about to become the subject, of a pending rulemaking generally should not be adjudicated in individual licensing proceedings. The Commission recently reaffirmed this principle in Duke Energy, supra, CLI-99-11, 49 NRC at 345, addressing a contention by petitioners that claimed Duke Energy's environmental report should have discussed the impacts of transporting high-level waste to a high-level waste repository site, a matter not governed by a current Commission rule. The licensing board in that case rejected the contention, because the transportation of spent fuel rods to an offsite repository was the subject of a pending rulemaking. In upholding the board's decision to reject the contention, the Commission stated:

It has long been agency policy that Licensing Boards "should not accept in individual license proceedings contentions which are (or are about to become) the subject of general rulemaking by the Commission." See Potomac Elec. Power Co. (Douglas Point Nuclear Generating Station, Units 1 & 2), ALAB-218, 8 AEC 79, 85 (1974); Duke Power Co. (Catawba Nuclear Station, Units 1 & 2), ALAB-813, 22 NRC 59, 86 (1985); Private Fuel Storage, L.L.C. (ISFSI), LBP-98-7, 47 NRC 142, 179 (1998).

Thus, under well-established Commission precedent, the PFS exemption request should not be subject to discrete adjudication in a licensing proceeding. Further, a rulemaking that covered both the probabilistic seismic hazard analysis and appropriate return period would promote efficiency and allow the Commission to evaluate and decide important policy issues that are not suitable for case by case adjudication. In short, the nature of the exemption granted to PFS is particularly amenable to a generalized rulemaking and should, most appropriately, be dealt with in a generic manner.

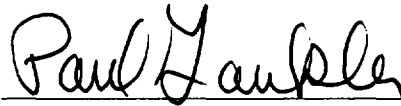
³⁰ Staff's November 29, 2000 Response at 8 n.12.

However, any such a rulemaking would need to occur expeditiously given the schedule for the present case. In Duke Energy, the Commission specifically noted that the final rule in that case was expected to be issued prior to the anticipated completion of the Oconee license renewal proceeding and, as such, would not be expected to delay the proceeding. 49 NRC at 345-46. Here, the recently revised schedule for the PFSF provides for the issuance of the final initial decision in April 2002,³¹ only slightly more than a year from now. Thus, PFS would urge the Commission to proceed with the planned rulemaking expeditiously.³²

IV. CONCLUSION

For the foregoing reasons, the Commission should deny the State's Request.³³

Respectfully submitted,



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Dated: March 2, 2001

³¹ Memorandum and Order (General Schedule Revision), February 22, 2001.

³² If the Commission were to conclude that the State had set forth an otherwise admissible contention and the Commission did not believe a rulemaking would not be completed by April 2002, the Commission should consider a more appropriate informal hearing to resolve the State's challenge. See, e.g., Kelley v. Selin, 42 F.3d 1501, 1513 (6th Cir. 1995) ("The applicable statute, 42 U.S.C. § 2239(a)(1)(A), provides for a 'hearing,' but does not provide for any particular format for this hearing"); 10 C.F.R. § 2.758(d) (waiver of regulation under § 2.758 may be determined by the Commission "on the basis of the petition, affidavit, and any response" or "the Commission may direct such further proceedings as it deems appropriate to aid its determination")

³³ Applicant respectfully requests that the Commission rule on the State's Request expeditiously, so that whatever decision the Commission reaches allows maintaining the current hearing schedule, which provides for pre-filed testimony (preceded by discovery and summary disposition) on the remaining admitted issues to be filed by October 29, 2001 and for the evidentiary hearing from November 26 to December 21, 2001.

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

Before the Commission

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

CERTIFICATE OF SERVICE

I hereby certify that copies of the "Applicant's Brief Opposing Admission and Adjudication of the State of Utah's Request for Modification to Basis 2 of Utah Contention L" were served on the persons listed below (unless otherwise noted) by e-mail with conforming copies by U.S. mail, first class, postage prepaid, this 2nd day of March 2001.

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A handwritten signature in black ink, reading "Paul Zankle". The signature is written in a cursive style with a horizontal line underneath the name.

EXHIBIT 1

REQUEST FOR EXEMPTION TO 72.102(f)(1) SEISMIC DESIGN REQUIREMENT FOR THE PRIVATE FUEL STORAGE FACILITY

BACKGROUND

The purpose of this submittal is to change the methodology for calculating the design earthquake for the Private Fuel Storage Facility (PFSF) from a deterministic approach to a probabilistic, risk-informed approach. The design earthquake presented in the PFSF SAR was calculated in accordance with the requirements of 10 CFR 72.102. 10 CFR 72.102(b) requires ISFSI sites west of the Rocky Mountain Front to evaluate seismicity by the techniques of 10 CFR 100 Appendix A. 10 CFR 100 Appendix A uses a deterministic approach for determining the safe shutdown earthquake at the site of a nuclear power plant, also referred to as the design earthquake (DE). 10 CFR 72.102(f)(1) states "For sites that have been evaluated under the criteria of Appendix A of 10 CFR part 100, the DE must be equivalent to the safe shutdown earthquake (SSE) for a nuclear power plant."

Recently, the NRC has revised its regulations (10 CFR Parts 50 and 100) to permit calculation of the design earthquake at new nuclear power plants based on probabilistic seismic hazard analysis (PSHA) methodology, instead of the deterministic methodology presented in 10 CFR 100 Appendix A. The NRC issued Regulatory Guide 1.165 (Reference 1) to provide guidance on PSHA methodology. In addition, the NRC recently amended 10 CFR Part 60 to permit use of probabilistic, risk-informed methodology in designing for hazards (including seismic) at the high-level radioactive waste geologic repository.

While the NRC has indicated that it plans to amend 10 CFR 72.102 to permit use of PSHA methodology and a risk-informed approach to calculate the DE at ISFSI sites, it is unlikely that the rulemaking will be completed before issuance of the PFSF license. Therefore, PFS is requesting an exemption from 10 CFR 72.102(f)(1), which requires that the DE at an ISFSI be equivalent to the SSE for a nuclear power plant. The exemption would permit the DE at the PFSF to be calculated using the more recent PSHA methodology, in accordance with the guidance in Regulatory Guide 1.165, and applying the risk-informed approach of 10 CFR Part 60.

PFS has determined that there is an adequate safety basis for an exemption to the requirements of 10 CFR 72.102(f)(1), supported by a site-specific radiological risk analysis, as discussed below. The exemption would be consistent with Commission policy and regulations applicable to other facilities (i.e. nuclear power plants and high level waste geologic repositories) that carry greater risk than a Part 72 facility. Considering the minor radiological consequences of accidents analyzed at the PFSF, PFS considers that the present Part 72 requirement for calculating the design earthquake is an unnecessary regulatory

burden. PFS considers that the use of probabilistic techniques and a risk-informed approach are compatible with the direction provided by the Commission on Direction Setting Issue 12, "Risk-Informed, Performance-Based Regulation" (Reference 2).

The probabilistic, risk-informed approach for establishing the PFSF DE described below is based on calculating the magnitude of a seismic event with a recurrence interval of 1,000 years. Use of a 1,000 year recurrence interval is justified in the PSHA based on dose consequences of accidents at the PFSF and consideration of relative risk, discussed below.

DISCUSSION

10 CFR 72.102(b) requires ISFSI sites west of the Rocky Mountain front, such as the PFSF site, to have seismicity evaluated by the techniques of Appendix A of 10 CFR Part 100, also known as a deterministic seismic hazard analysis (DSHA). PFS has evaluated seismicity of the PFSF site in accordance with 10 CFR 100 Appendix A. Appendix A calculates, based on site-specific investigations, the largest credible earthquake likely to affect a site, regardless of the probability of this event through time. Section 72.102(f)(1) states, "For sites that have been evaluated under the criteria of Appendix A of 10 CFR Part 100, the design earthquake must be equivalent to the safe shutdown earthquake (SSE) for a nuclear power plant." In this context, "DE" and "SSE" refer to the design peak ground acceleration (PGA), with an appropriate response spectrum, caused by the largest credible earthquake.

PFS performed a DSHA in accordance with the requirements of 10 CFR 72.102(f)(1), to calculate the magnitude of the design earthquake at the PFSF, as discussed in the PFSF SAR. PFSF SAR (Rev. 2) Section 3.2.10.1.1 describes the results of this methodology, indicating that the DSHA for the PFS site yields resultant PGA values for an SSE of 0.67 g in two directions of the horizontal plane and 0.69 g in the vertical plane, with an appropriate response spectrum.

Recent highly detailed seismological studies have found additional faulting in the vicinity of the PFSF site (Reference 3). If these faults were accounted for in the DSHA, the resulting PGA values would be slightly higher (approximately 10%) than those presently published in the SAR. The PSHA that is proposed to establish the DE at the PFSF, as discussed in the following paragraphs, does account for these faults.

When 10 CFR Part 72 was first promulgated in 1980, ISFSIs were largely envisioned to be spent fuel pools or single, massive dry storage structures. A DE equivalent to a nuclear power plant SSE seemed appropriate for these facilities, given the potential accident scenarios. Furthermore, for ISFSIs to be located at a nuclear power plant, the DE value was readily available without additional site

characterization work, save the geotechnical investigation at the specific ISFSI location. However, an ISFSI storing spent fuel in dry casks is inherently less hazardous and less vulnerable to earthquake-initiated accidents than is an operating nuclear power plant (Reference 4).

The U.S. Nuclear Regulatory Commission recognized this reduced vulnerability in the initial Part 72 "Statements of Consideration," and stated that the DE for cask and canister technology need not be as high as a nuclear power plant SSE: "For ISFSIs which do not involve massive structures, such as dry storage casks and canisters, the required design earthquake will be determined on a case-by-case basis until more experience is gained with licensing these types of units" (45 FR 74697).

Both the HI-STORM and TranStor canisters that will be stored at the PFSF are new "multi-purpose" canisters designed for transport as well as storage, which by virtue of their rugged design are less vulnerable to earthquake initiated accidents. Their rugged design is demonstrated to be capable of withstanding stresses resulting from a 30 ft drop of the transport cask, required by 10 CFR 71.73, as well as the hypothetical storage cask tipover accident. Seismic accelerations impose relatively low stresses on the canisters in comparison with those associated with the cask drop and tipover accidents.

On January 10 1997, 10 CFR Parts 50 and 100 were revised to allow the use of the probabilistic seismic hazard assessment (PSHA) methodology to address uncertainties inherent in determining nuclear power plant seismic design values. These revisions were accomplished through the addition of 10 CFR 100.23 and Part 50, Appendix S. The PSHA method considers the frequency, as well as magnitude, of earthquakes that may affect a site. Rather than base seismic design on the largest ground motion likely to ever affect a site, a PSHA derives a site-specific hazard curve showing ground motion level versus annual probability of exceedence or, inversely, ground motion return period. The NRC issued Regulatory Guide 1.165 to provide guidance on calculation of the DE using PSHA techniques.

Since 10 CFR 72.102 currently requires that seismicity be evaluated by the deterministic techniques of Appendix A of Part 100, applicants for ISFSI licenses are not able to utilize the improvements promulgated in the amendments to Part 100 and must follow the rules that applied to nuclear power plants before these amendments. In the proposed rulemaking for Part 72 (Reference 5) however, the staff has proposed to modify the Part 72 seismic requirement to a level commensurate with the risks of cask and canister ISFSIs by providing for the use of PSHA methodology.

In addition, the seismic design philosophy in 10 CFR Part 60 for high-level waste repository surface facilities (also known as the Design Basis Event (DBE) rulemaking) is based on a PSHA. On January 3, 1997, the definitions of design

basis event and important-to-safety in Part 60 were revised to allow a probabilistic, risk-informed approach in designing for hazards (including seismic) at a geologic repository, with two design levels based on risk (61 FR 64257). This set an NRC precedent by accepting a risk-informed approach in licensing an above-ground facility (preclosure operations area of the high level waste repository) intended to temporarily store spent nuclear fuel quite similar to an ISFSI licensed under 10 CFR 72. For seismic events, the staff has accepted a two-tier approach toward designing Part 60 structures, systems, and components (SSCs). This approach is summarized in the following quotes from the NRC staff.

In SECY-98-126, Reference 5, concerning the NRC's rulemaking for geological and seismological characteristics for siting and design of dry cask ISFSIs under 10 CFR 72, the NRC staff states under Option 3, its preferred option for amending Part 72, the following related to the Part 60 design basis event rulemaking:

"The specific approach proposed for dry cask ISFSI systems, structures, and components would be comparable to the 10 CFR Part 60 graded approach to design ground motion for SSCs of pre-closure facilities. This graded approach would allow the structures, systems, and components of dry cask ISFSIs to be designed to either Frequency-Category-1 design basis events or Frequency-Category-2 design basis events, depending upon their importance-to-safety. For seismic events, the staff has accepted the approach described in DOE Topical Report YMP/TR-003-NP, Rev. 2, Preclosure Seismic Design Methodology for a Geologic Repository at Yucca Mountain, pertaining to 10 CFR Part 60. In this approach, Frequency-Category-1 design basis ground motion refers to a mean annual probability of exceedance of $1.0\text{E-}03$, which corresponds to a 1,000-year return period. Frequency-Category-2 design basis ground motion refers to a mean annual probability of exceedance of $1.0\text{E-}04$, which corresponds to a 10,000-year return period."

In SECY-98-071, Reference 6, regarding DOE's request for an exemption from the deterministic seismic design requirements of 10 CFR 72.102(f)(1) for an ISFSI that would store TMI-2 spent fuel at INEEL, the NRC staff states:

"With the Part 60 Design basis event rulemaking, NRC adopted a graded approach similar to DOE Standard 1020 for natural hazard characterization and design. The Design basis event rulemaking defined a framework for two SSC design categories for repository surface facilities. For seismic events, the staff has accepted DOE's approach of designing SSCs with failure consequences within the public dose limit of 10 CFR 20.1301(a)(1), 1 mSv (100 mrem), to withstand the 1000-year return period mean ground motion. Meanwhile, SSCs with higher potential accident doses must be designed to withstand the 10,000-year return period mean ground motion."

PFS proposes to apply this same approach to establishing the DE at the PFSF. A detailed site specific seismic evaluation of the PFSF was performed, in accordance with the NRC's guidance in Regulatory Guide 1.165. This is compatible with the NRC's current requirements for establishing the DE at a new nuclear power plant site, and in keeping with the staff's plans for establishing DEs at dry cask storage ISFSIs in the future.

Applying the PSHA methodology of Regulatory Guide 1.165, the design earthquake was calculated at the PFSF site for a recurrence interval of 1,000 years. The attached report, prepared by Geomatrix Consultants, Inc., documents the results of this calculation. PFS proposes that the DE for the PFSF be calculated based on PSHA methodology for the 1,000 year recurrence interval, based on consideration of the relative risk associated with this event.

The bounding consequences of a major seismic event at the PFSF using the HI-STORM and TranStor systems technology are limited by a storage cask tipover event, although this would only occur at a ground motion well above the 0.67g horizontal and 0.69 g vertical PGA values presented in PFSF SAR (Rev. 2) Section 3.2.10.1.1. While cask tipover is not a credible event at the PFSF, the canisters are designed to withstand the stresses resulting from a non-mechanistic cask tipover event with no breach and no release of radioactive material from inside the canister. Hypothetical cask tipover accidents are analyzed in Section 8.2.6 of the PFSF SAR (Rev. 2).

PFS analyses of hypothetical, non-mechanistic accidents, beyond the design basis, involving leakage from the canisters calculate off-site doses well below the 0.05 Sv (5 rem) whole body dose limit of 10 CFR 72.106(b). In its second round RAI response letter (Reference 7), PFS presented an analysis of the effects of such a beyond-design basis accident involving failure of a SSC important to safety in which a canister is postulated to leak continuously for 30 days under hypothetical accident conditions with 100% of the fuel rod cladding assumed to have failed, in accordance with the NRC's Interim Staff Guidance-5. The response to RAI 7-1 shows that the total effective dose equivalent (TEDE) from this accident to an off-site individual was calculated to be 74.9 mrem. This analysis conservatively assumed that the individual was continuously located at the PFSF owner controlled area boundary for 30 days. The dose from this hypothetical accident condition, for which no credible mechanism has been identified, is not only well below the 0.05 Sv (5 rem) siting evaluation factor of 10 CFR 72.106(b), but also below the 100 mrem public dose limit of 10 CFR 20.1301(a)(1). The results of this accident analysis will be incorporated into a future revision to the PFSF SAR Section 8.2.7, replacing the hypothetical canister breach accident which will be removed from the SAR in accordance with the NRC's Interim Staff Guidance-3.

This 74.9 mrem TEDE represents the maximum dose from any accident analyzed for the PFSF that will be in the PFSF licensing basis. Based on the NRC's risk-informed policy for establishing the DE stated in the above SECY documents, the 1,000 year seismic recurrence interval is appropriate and conservative for use at the PFSF since worst-case accident consequences are below the 10 CFR 20.1301(a)(1) public dose limit of 100 mrem.

This recurrence interval is the same as that selected by the DOE for preclosure seismic design of important-to-safety SSCs for Frequency-Category 1 design basis events at the Yucca Mountain high level waste geologic repository in Reference 8, which the NRC staff accepted. As stated by the DOE in Reference 8, use of a 1,000 year recurrence interval represents a conservative translation of the qualitative frequency description of Frequency-Category 1 design basis events in 10 CFR 60, i.e., "events that are reasonably likely to occur regularly, moderately frequently, or one or more times before permanent closure of the geologic repository operations area." The use of a 1,000 year recurrence interval would be similarly conservative for the PFSF. In addition, the license for the PFSF will be for 20 years with the potential for license renewal for another 20 years per 10 CFR 72.42, or up to 40 years, which is a shorter duration than the 150 years considered in Reference 8 (Section 3.1.1) for the Yucca Mountain preclosure facility.

Thus, use of a 1,000 year recurrence interval for the PFSF will be conservative and appropriate. As documented in the attached report prepared by Geomatrix Consultants, Inc., the DE calculated using the methodology of Regulatory Guide 1.165 for the 1,000 year recurrence interval is characterized by 0.40 g horizontal and 0.39 g vertical PGAs.

CONCLUSION

PFS has completed both a DSHA and a PSHA for the PFSF site. As discussed in Section 8.2.1 of the PFSF SAR (Rev. 2), the current SSE design basis of 0.67g developed by the deterministic method required by 10 CFR 72.102(f)(1) would not result in cask tipover and no radioactivity would be released. Moreover, even if a cask tipover did occur there is no credible scenario under which the canister confinement barrier would be breached and radioactivity would be released. Based on this absence of radiological consequences from any credible seismic event and the minor radiological consequences from hypothetical beyond-design basis accidents, the present Part 72 requirement for an ISFSI DE is considered an unnecessary regulatory burden. A PSHA was performed using the methodology permitted by 10 CFR 100.23 and 10 CFR 50 Appendix S for new nuclear power plants, applying the guidance of Regulatory Guide 1.165 (documented in the attached report prepared by Geomatrix Consultants, Inc.), resulting in the DE with a 1,000-year recurrence interval to be 0.40 g horizontal and 0.39 g vertical PGA.

The 1,000-year recurrence interval is justified by the low consequences of a worst-case hypothetical beyond-design basis accident at the PFSF, having dose consequences below the 100 mrem TEDE public dose limit of 10 CFR 20.1301(a)(1). Given the absence of radiological consequences from any credible seismic event, it is considered that application of the probabilistic risk-informed approach for calculating the seismic hazard, that the NRC staff adopted in the Part 60 rulemaking, is adequately conservative for the PFSF. Moreover, the expected life span of the PFSF, 20 years with the potential for renewal for another 20 years per 10 CFR 72.42, justifies use of this ground motion as the DE.

The PFSF DE is calculated in accordance with the latest probabilistic methodology that applies to new nuclear power plants, using the risk-informed approach determined to be acceptable in the Part 60 rulemaking that applies to preclosure facilities of Yucca Mountain, considered to be similar to an ISFSI with dry cask storage. Thus, while reducing regulatory burden, granting the requested exemption from 10 CFR 72.102(f)(1) will still maintain an adequate design margin for seismic events and will not be inimical to public health and safety.

REFERENCES

1. U.S. NRC Regulatory Guide 1.165, "Identification and Characterization of Seismic Sources and Determination of Safe Shutdown Earthquake Ground Motion," March 1997.
2. U.S. NRC Direction Setting Issue 12 of the Commissions Strategic Assessment Issue Paper, release date: September 16, 1996.
3. Geomatrix Consultants, Inc., Fault Evaluation Study and Seismic Hazard Assessment, Private Fuel Storage Facility, Skull Valley Utah; Final Report, February 1999.
4. Hossain, QA. A.H. Chowdhury, M.P. Hardy, K.S. Mark, J.E. O' Rourke, W.J. Silva, J.C. Stepp, and F.H. Swan, III, "Seismic and Dynamic Analysis and Design Considerations for High-Level Nuclear Waste Repositories," J.C. Stepp, ed., American Society of Civil Engineers, New York, New York, 1997.
5. U.S. NRC SECY-98-126, from L. Joseph Callan (EDO) to the Commissioners, "Rulemaking Plan: Geological and Seismological Characteristics for Siting and Design of Dry Cask Independent Spent Fuel Storage Installations, 10 CFR Part 72, dated June 4, 1998.
6. U.S. NRC SECY-98-071, from L. Joseph Callan (EDO) to the Commissioners, "Exemption to 10 CFR 72.102(f)(1) Seismic Design Requirement for Three Mile Island Unit 2 Independent Spent Fuel Storage Installation, dated April 8, 1998.
7. PFS letter J.D. Parkyn to U.S. NRC Director of Office of Nuclear Material Safety and Safeguards, "Response to Request for Additional Information;" dated February 10, 1999.
8. DOE Topical Report YMP/TR-003-NP, Rev. 2, "Preclosure Seismic Design Methodology for a Geologic Repository at Yucca Mountain", August 1997.