

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:)	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, LLC)	ASLBP No. 97-732-02-ISFSI
(Independent Spent Fuel)	
Storage Installation))	April 30, 1999

STATE OF UTAH'S MOTION REQUIRING APPLICANT
TO APPLY FOR RULE WAIVER UNDER 10 CFR § 2.758(b)
OR IN THE ALTERNATIVE
AMENDMENT TO UTAH CONTENTION L

On April 7, 1999, the State received a copy of the Applicant's "Request for Exemption to 10 CFR 72.102(f)(1), Seismic Design Requirement, Docket No. 72-22/Tac No. L22462, Private Fuel Storage Facility, Private Fuel Storage L.L.C." dated April 2, 1999, addressed to Mr. Mark Delligatti at NRC's Spent Fuel Project Office (hereafter "PFS Exemption Request," attached as Exhibit A). PFS's exemption request, if granted and applied to this adjudication, would substantially lower the standards of conservatism against which seismic issues in Utah Contention L would be judged.

PFS has submitted the Exemption Request to the Staff pursuant to 10 CFR § 72.7, rather than applying to the Board for a regulatory waiver under 10 CFR §

2.758(b).¹ Under established Commission precedent, PFS is required to seek a waiver under 10 CFR § 2.758(b). See e.g., Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit No. 1), 11 NRC 674, CLI-80-16 (1980). Accordingly, the State moves the Board to require the Applicant to apply for a waiver of the seismic siting rules under 10 CFR § 2.758(b).

In the alternative, or to the extent that the Board finds that 10 CFR § 2.758(b) is not applicable in these circumstances, the State seeks leave to amend Contention L for the purpose of contesting the proposed diminution of the standard for determining the seismic design the PFS facility as currently required by 10 CFR § 72.102(f)(1).²

The State recognizes that this motion may be deemed premature, in light of the fact that the NRC Staff has not yet made a determination regarding PFS's application. The State is submitting this amendment to Contention L now because the State does not want to risk being found to have filed inexcusably late under 10 CFR § 2.714 by

¹ 10 CFR § 2.758(b) requires:

A party to an adjudicatory proceeding involving initial ... licensing ... may petition that the application of a specified commission rule or regulation ... be waived or an exception made for the particular proceeding. The sole ground for petition for waiver or exception shall be that special circumstances with respect to the subject matter of the particular proceeding are such that the application of the rule or regulation ... would not serve the purposes for which the rule or regulation was adopted.... (*emphasis added*).

² This pleading is supported by the Declaration of Dr. Walter J. Arabasz, attached hereto as Exhibit B.

waiting until the NRC grants the Exemption Request before challenging it. If the Board determines that this amendment is premature, the State requests the Board make such a ruling and hold this motion in abeyance until such time as the Staff may approve the Exemption Request.

ARGUMENT

The Applicant's exemption request directly affects Utah Contention L. In LBP-98-7, 47 NRC 142, 191 (1998), the Licensing Board admitted Utah Contention L (Geotechnical) in its entirety. The contention asserts that:

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

Under the current regulations, ISFSI sites west of the Rocky Mountain Front, such as the PFS site,

will be evaluated by the techniques of appendix A of part 100 of this chapter. Sites that lie within the range of strong near-field ground motion from historical earthquakes on large capable faults should be avoided.

10 CFR § 72.102(b). Appendix A of 10 CFR Part 100 describes the procedures for determining the quantitative vibratory ground motion design basis at a site due to earthquakes and describes the extent to which a facility must be designed to withstand the effects of surface faulting.

PFS's request is to be exempted from the following requirement:

The design earthquake (DE) for use in the design of structures must be determined as follows: (1) 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.

10 CFR § 72.102(f)(1). The Design Basis Earthquake or Safe Shutdown Earthquake ("SSE"), applicable to the PFS site, is:

that earthquake which is based upon an evaluation of the maximum earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material. It is that earthquake which produces the maximum vibratory ground motion for which certain structures, systems, and components are designed to remain functional.

10 CFR Part 100, App. A, III(c) (*emphasis added*).

Part 100 requires a deterministic or worst case approach based on a site-specific investigation of the largest credible earthquake likely to affect a site. *Id.* at V(1)(i). The Applicant maintains: "PFS performed a DSHA [deterministic seismic hazard analysis] in accordance with the requirements of 10 CFR 72.102(f)(1)." PFS Exemption Request at 2. This is not correct.

The SAR evidences that the Applicant deviated from established deterministic methodology for assessing design ground motions from the maximum event by incorporating probabilistic approaches for maximum magnitude, minimum source-to-site distance, and attenuation relationships in the estimation of the 84th percentile ground motion levels. SAR, App. 2D at 37 (Rev. 0). The recent Geomatrix Report intending to present an update of deterministic ground motion assessments for the PFS

site continues to assess the controlling ground motion by using the same hybrid deterministic-probabilistic methodology used in the SAR. Geomatrix Report, *Update of Deterministic Ground Motion Assessments*, submitted by PFS to Mr. Mark Delligatti, NRC Spent Fuel Project Office as part of PFS Commitment Resolution No. 3, dated April 8, 1999 (hereafter "Geomatrix April 8, 1999 Report"). If results using the Geomatrix hybrid methodology are to be viewed as satisfying the requirements of 10 CFR 100, Appendix A, then, at a minimum, a ground motion level higher than the 84th percentile should more correctly be considered because of the chain of uncertainties incorporated in the Geomatrix methodology.

PFS claims to the contrary, it has not computed the peak ground acceleration at the PFS site, taking into account the largest credible earthquake likely to affect the site.

The most conservative site-specific seismic analysis, as currently required by Part 72, is not before the Staff. If such a computation exists, PFS has not shared it with the Staff or the State. Accordingly, it is premature to analyze PFS's exemption request until the baseline deterministic seismic hazard analysis has been satisfactorily completed.

For reference, the 84th percentile peak ground accelerations determined in the SAR for the PFS site, using the hybrid deterministic-probabilistic approach, were 0.67 g and 0.69 g for the horizontal and vertical directions, respectively. SAR, App. 2D at 40 (Rev. 0). Based on the same methodology, a revised characterization of seismic sources now yields a value of 0.72 g for the 84th percentile peak horizontal acceleration

at the PFS site and 0.80 g for the 84th-percentile peak vertical acceleration. Geomatrix April 8, 1999 Report.

PFS now wants to take an even less conservative or less safe approach than under its hybrid deterministic analysis. Using the rationale associated with the U.S. Department of Energy ("DOE") geologic repository at Yucca Mountain, and potential rulemaking changes to Part 72, PFS argues that its SSE design basis should be premised on whether or not the consequences of a seismic event at the PFS site would cause an exceedence of the 100 mrem public dose limit in 10 CFR § 20.1301(a)(1). PFS Exemption Request at 3. Under this approach the design earthquake would be based on a probabilistic seismic hazard analysis and calculated for a ground motion with a return period of 1,000 years. PFS maintains that even in the event of cask tipover, the radiological release to the public would be less than 100 mrem. All of this, according to PFS, translates into a design earthquake of 0.40 g horizontal and 0.39 vertical peak ground acceleration. PFS Exemption Request at 6.

There are a number of important reasons for not relaxing the standard to which PFS must design its facility. First, Part 72 as currently written requires a deterministic analysis and despite PFS's claims, PFS has not conducted a deterministic analysis. Moreover, PFS has failed to meet the requirement of 10 CFR § 2.758 because it has given no justification why it cannot design to a deterministic standard. Under 10 CFR § 2.758 a petitioner for rule waiver must show that "special circumstances" would not

serve the purposes for which the regulation was adopted.

Second, during a design life of 40 years, there is a 4% probability of exceeding the 1,000 year ground motion at the site, assuming random occurrence.³ Such a risk to the storage pads and the canister transfer building is unacceptably high.

Third, the use of radiation dose to the public as the basis for designing to a less safe standard is inappropriate at this site. The PFS site is a large centralized ISFSI that may contain as many as 4,000 casks. The casks use a passive cooling system requiring each cask to be up-righted within 48 hours. Failure to timely up-right the casks will increase the temperature in the casks and degrade the fuel. Furthermore, some casks may become dented and fail to stand up-right. Additionally, during a fall casks may crack allowing neutron and gamma radiation to stream through the cracks. Moreover, a seismic event that creates a tipover of a significant number of casks would overwhelm the PFS staff. Even if PFS had a capable crane on site, which it does not, PFS does not have the staff to be able to deal with such an event.⁴

Fourth, it is important that the public have confidence that the centralized high level waste storage facility can withstand an earthquake. In Utah, for example, some

³ The 4% probability of exceeding the 1,000-year ground motion is based on the formula:

$$p = 1 - e^{-\lambda t}$$

where "p" is the probability of exceedence for a given time period, t;
"t" is the exposure time (40 years); and "1/λ" is the return period (1,000 years).

⁴ For example, if PFS could up-right one cask per hour, it would take PFS about six months to up-right all 4,000 casks.

highway bridges are being designed to a much higher earthquake standard than what PFS is proposing for storage of highly radioactive material.⁵

Finally, should the NRC Staff grant PFS some relief from the regulations, the use of a 1,000 year return period is totally inadequate to meet a design earthquake standard for the Skull Valley site. The Applicant's reference to NRC's grant of an exemption request to the DOE Idaho National Engineering and Environmental Laboratory (INEEL) does not support granting PFS's exemption request. The NRC staff granted the DOE some relief from Part 72 for an ISFSI that would store TMI-2 spent fuel at INEEL. Notably, "[t]he deterministic SSE at the INEL [sic] site was assessed to be 0.56g." Geomatrix Consultants, *Final Report, Fault Evaluation Study and Seismic Hazard Assessment, Private Fuel Storage, Skull Valley Utah*, February 1999 (hereinafter "Geomatrix February 1999 Report") at 55. This is substantially lower than the 0.72g to 0.80g now assessed by the hybrid deterministic methodology for the PFS site. *See supra* at 5. Yet, for the INEEL site, the NRC staff concluded: "Dry spent fuel storage facilities such as the TMI-2 ISFSI are PC 3 and must have a design earthquake equal to the mean ground motion with a 2,000-year return period." Geomatrix February 1999 Report at 55. The 1,000 year return period requested by PFS is inappropriate given the 2,000 year return period the Staff applied to the less seismically hazardous INEEL site.

⁵ The State uses a return period of approximately 2,500 years in the design of such structures.

Late Filed Factors:

If this motion is treated as an amendment to Utah Contention L, the State meets the 10 CFR § 2.714(a) late filed factors for amending its contention.

First, the State received a copy of the Applicant's exemption request on April 17, 1999 and had no other formal document notifying it of the Applicant's exemption request. Thus, the State had good cause for amending Contention L now.

Second, the State's participation will assist in developing a sound record. The State has seismic experts with a wide array of expertise specific to the Skull Valley area.

Third, the State's position will not be represented by any other party. The State does not know how the Staff will react to the Applicant's exemption request. There is no other mechanism, other than the Board ordering the Applicant to file a rule waiver petition under 10 CFR § 2.758(b) to protect the State's interest.

Fourth, the State's participation will not broaden the proceeding. In fact, the State is arguing for the status quo.

CONCLUSION

The Applicant has not shown any "special circumstance" to warrant consideration of an exemption to existing regulations. If a less conservative design standard is to apply to Contention L in this proceeding, PFS must make its case of "special circumstances" before this Board. In the alternative, the State has met the

requirements for amending Contention L in order to preserve the application of current Part 72 regulations to the PFS site.

DATED this 30th day of April, 1999.

Respectfully submitted,



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CERTIFICATE OF SERVICE

I hereby certify that a copy of STATE OF UTAH'S MOTION REQUIRING APPLICANT TO APPLY FOR RULE WAIVER UNDER 10 CFR § 2.758(b) OR IN THE ALTERNATIVE AMENDMENT TO UTAH CONTENTION L was served on the persons listed below by electronic mail (unless otherwise noted) with conforming copies by United States mail first class, this 30th day of April, 1999:

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