

April 22, 2002

Denise Chancellor, Esq.  
Utah Attorney General's Office  
160 East 300 South, 5th Floor  
P.O. Box 140873  
Salt Lake City, Utah 84114-0873

In the Matter of  
Private Fuel Storage, L.L.C.  
(Independent Spent Fuel Storage Installation)  
Docket No. 72-22-ISFSI

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Dear Ms. Chancellor:

By letter dated April 17, 2002, the NRC Staff ("Staff") produced various documents to the State of Utah ("State") related to the March 31, 2002 report by Dr. Vincent Luk, concerning the potential for cask tipover or sliding at the proposed PFS Facility. In accordance with our telephone conversation of last week, the Staff is herewith producing or identifying additional documents related to Dr. Luk's report, as set forth in the attached list.

The documents identified herein consist of four types: (a) documents in paper format, which are enclosed herewith; (b) documents in electronic format, which I will transmit to you by E-mail later today or tomorrow; (c) computer files available in electronic format, which will be transmitted to you upon your request, and (d) documents which are being withheld by the Staff as privileged, predecisional documents. I trust that the Staff's production of these documents will further assist the State in preparing for hearings with respect to Dr. Luk's report and his prefiled testimony of April 1, 2002.

In our conversation last week, we discussed the State's renewed interest in taking Dr. Luk's deposition. While the Staff has not objected to the State's request to depose Dr. Luk, we believe that his report and prefiled testimony are self-explanatory -- and that the Staff's production of documents provides ample information for the State's use in preparing for hearing. Also, please recall that the Staff had previously expressed its willingness to make Dr. Luk available for a deposition during the last ten days of March, but that opportunity was not pursued by the State. Unfortunately, due to the travel demands that a deposition would impose on Dr. Luk and all parties at this time -- just a few days before the start of seismic hearings on Monday, April 28 -- I do not believe that we could make Dr. Luk available for a deposition at this late date. Accordingly, I am unable to respond favorably to your interest in conducting Dr. Luk's deposition at this time.

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Please do not hesitate to contact me if you have any questions about the attached list of documents, if you wish to receive copies of the computer files listed therein, or if I can provide any further assistance to the State in this regard.

Sincerely,

**/RA/**

Sherwin E. Turk  
Counsel for NRC Staff

By: Federal Express  
Enclosures: As stated

cc w/Encl.: Service List

April 22, 2002

**Additional Documents Related to the  
March 31, 2002 Report by Dr. Vincent Luk  
Concerning Unified Contention Utah L/QQ**

**A. Documents Produced by Letter of April 22, 2002**

PFS Calculation Sheets, Pages 94-100, sent via telefax by Michael Waters (NRC) to Vincent Luk (SNL), on July 26, 2001 (providing design information concerning the PFS site) (transmittal sheet plus seven pages).

**B. Documents Being Produced in Electronic Format**

1. Luk, V. K., et al., "NRC Project on Seismic Behavior of Spent Fuel Storage Cask Systems - Final Report on Seismic Analysis of Three-Module Rectangular Transnuclear West Module/Cask," dated December 21, 2001. [This is Item 4 in the list of References in Dr. Luk's March 31, 2002 Report, which the State of Utah specifically requested during the week of April 15-19, 2002.]
2. Luk, V. K., et al., "NRC Project on Seismic Behavior of Spent Fuel Storage Cask Systems - Final Report on Seismic Analysis of HI-STORM 100 Casks at Hatch Nuclear Power Plant," dated June 28, 2001. [This is Item 5 in the list of References in Dr. Luk's March 31, 2002 Report, which the State of Utah specifically requested during the week of April 15-19, 2002.]
3. E-mail from Khalid Shaukat (NRC) to Vincent Luk (SNL), May 30, 2001.
  - Design information on HI-STORM 100 cask, including basic cask dimensions, weight, and C.G. location.
4. E-mail and computer disk from Mahendra Shah (NRC) to Vincent Luk (SNL), June 14, 2001.
  - Dimension and material properties of concrete pad
  - PFS soil profile data.
  - Response spectra of three independent components (two horizontal and one vertical) for the PFS site-specific seismic event based on a 2,000-year return period.
  - Time histories of three independent seismic acceleration components (two horizontal and one vertical) for the PFS site-specific seismic event based on a 2,000-year return period.
5. E-mail from Mahendra Shah (NRC) to Vincent Luk (SNL), November 28, 2001.
  - The PFS data on strain vs. shear modulus and damping for soil layers used in the seismic analysis for the site-specific seismic event based on a 10,000-year return period.

**C. Computer Files Available in Electronic Format, Upon Request**

Input files and associated earthquake excitation files. This list has been organized to coincide with Tables 8, 9, and 10 of the report of March 31, 2002. The files are listed in groups in the following order:

PfsfXscXX_dlX.inp	Implicit dead load step input file, friction fX (cask/pad), friction scXX (soil cement surfaces), iteration number dlX, (32 printed pages)
PfsfXscXX_eqdX.inp	Explicit earthquake dynamic step input file, friction fX (cask/pad), friction scXX (soil cement surfaces), iteration number eqdX, (10 pages)
XXXXXX.data	Earthquake acceleration input data file, U1 (normal) direction, (36 pages)
XXXXXX.data	Earthquake acceleration input data file, U2 (parallel) direction, (36 pages)
XXXXXX.data	Earthquake acceleration input data file, U3 (vertical) direction, (36 pages)

**1. Files Used in Analysis Included in Table 8, PFS 2000 Year Return Period Seismic Event.**

For Friction  $\mu=0.2$  (cask/pad), and Friction  $\mu =1.0$  (all other surfaces), Best Estimated Soil Profile data, and the PFS 2000 Year Return Period Seismic Record, Model Type 1

(pfsf2sc1\_dl2.inp, pfsf2sc1\_eqd2.inp, pfsd072301h1.data, pfsd072301h2.data, pfsd072301v.data)

For Friction  $\mu =0.2$  (cask/pad), and Friction  $\mu =0.31$  (all other surfaces), Best Estimated Soil Profile data, and the PFS 2000 Year Return Period Seismic Record, Model Type 1

(pfsf2sc31\_dl6.inp, pfsf2sc31\_eqd6.inp, pfsd072301h1.data, pfsd072301h2.data, pfsd072301v.data)

For Friction  $\mu =0.8$  (cask/pad), and Friction  $\mu =1.0$  (all other surfaces), Best Estimated Soil Profile data, and the PFS 2000 Year Return Period Seismic Record, Model Type 1

(pfsf8sc1\_dl4.inp, pfsf8sc1\_eqd4.inp, pfsd072301h1.data, pfsd072301h2.data, pfsd072301v.data)

For Friction  $\mu =0.2$  (cask/pad), and Friction  $\mu =0.31$  (all other surfaces), Best Estimated Soil Profile data, and the PFS 2000 Year Return Period Seismic Record, Model Type 2

(smpfsf2sc31\_dl5.inp, smpfsf2sc31\_eqd5.inp, pfsd072301h1.data, pfsd072301h2.data, pfsd072301v.data)

For Friction  $\mu = 0.2$  (cask/pad), and Friction  $\mu = 0.31$  (all other surfaces), Best Estimated Soil Profile data, and the PFS 2000 Year Return Period Seismic Record, Model Type 3

(pfsf2sc31d7\_dl1.inp, pfsf2sc31d7\_eqd1.inp, pfsd072301h1.data, pfsd072301h2.data, pfsd072301v.data)

For Friction  $\mu = 0.2$  (cask/pad), and Friction  $\mu = 0.31$  (all other surfaces), Lower Bound Soil Profile data, and the PFS 2000 Year Return Period Seismic Record, Model Type 1

(pfsf2sc31l\_dl1.inp, pfsf2sc31l\_eqd1.inp, pfslbn\_091801.data, pfslbp\_091801.data, pfslbv\_091801.data)

For Friction  $\mu = 0.2$  (cask/pad), and Friction  $\mu = 0.31$  (all other surfaces), Upper Bound Soil Profile data, and the PFS 2000 Year Return Period Seismic Record, Model Type 1

(pfsf2sc31u\_dl1.inp, pfsf2sc31u\_eqd1.inp, pfsubn\_091801.data, pfsubp\_091801.data, pfsubv\_091801.data)

## **2. Files Used in Analysis Included in Table 9, San Fernando Earthquake Record.**

For Friction  $\mu = 0.2$  (cask/pad), and Friction  $\mu = 0.31$  (all other surfaces), Best Estimated Soil Profile data, and the San Fernando Earthquake Record, Model Type 1

(pfsf2sc31sb\_dl1.inp, pfsf2sc31sb\_eqd1.inp, sfd101701-be-h1.data, sfd101701-be-h2.data, sfd101701-be-v.data)

For Friction  $\mu = 0.2$  (cask/pad), and Friction  $\mu = 0.31$  (all other surfaces), Lower Bound Soil Profile data, and the San Fernando Earthquake Record, Model Type 1

(pfsf2sc31sl\_dl1.inp, pfsf2sc31sl\_eqd1.inp, sfd101701-lb-h1.data, sfd101701-lb-h2.data, sfd101701-lb-v.data)

For Friction  $\mu = 0.2$  (cask/pad), and Friction  $\mu = 0.31$  (all other surfaces), Upper Bound Soil Profile data, and the San Fernando Earthquake Record, Model Type 1

(pfsf2sc31su\_dl1.inp, pfsf2sc31su\_eqd1.inp, sfd101701-ub-h1.data, sfd101701-ub-h2.data, sfd101701-ub-v.data)

For Friction  $\mu = 0.8$  (cask/pad), and Friction  $\mu = 1.0$  (all other surfaces), Best Estimated Soil Profile data, and the San Fernando Earthquake Record, Model Type 1

(pfsf8sc1sb\_dl1.inp, pfsf8sc1sb\_eqd1.inp, sfd101701-be-h1.data, sfd101701-be-h2.data, sfd101701-be-v.data)

**3. Files Used in Analysis Included in Table 10, PFS 10,000 Year Return Earthquake Seismic Event.**

For Friction  $\mu = 0.2$  (cask/pad), and Friction  $\mu = 0.31$  (all other surfaces), Best Estimated Soil Profile data, and the PFS 10,000 Year Return Earthquake Seismic Event, Model Type 1

(pfsf2sc31\_10kbedl.inp, pfsf2sc31\_10kbeeqd.inp, 10kdec-fn-1-15-02.data, 10kdec-fp-1-15-02.data, 10kdec-up-1-15-02.data)

For Friction  $\mu = 0.2$  (cask/pad), and Friction  $\mu = 0.31$  (all other surfaces), Lower Bound Soil Profile data, and the PFS 10,000 Year Return Earthquake Seismic Event, Model Type 1

(pfsf2sc31\_10klbdl.inp, pfsf2sc31\_10klbeqd.inp, 10kdec-fnlb-11502.data, 10kdec-fplb-11502.data, 10kdec-uplb-11502.data)

For Friction  $\mu = 0.2$  (cask/pad), and Friction  $\mu = 0.31$  (all other surfaces), Upper Bound Soil Profile data, and the PFS 10,000 Year Return Earthquake Seismic Event, Model Type 1

(pfsf2sc31\_10kubdl.inp, pfsf2sc31\_10kubeqd.inp, 10kdec-fnub-11502.data, 10kdec-fpub-11502.data, 10kdec-upub-11502.data)

For Friction  $\mu = 0.8$  (cask/pad), and Friction  $\mu = 1.0$  (all other surfaces), Lower Bound Soil Profile data, and the PFS 10,000 Year Return Earthquake Seismic Event, Model Type 1

(pfsf8sc1\_10klbdl.inp, pfsf8sc1\_10klbeqd.inp, 10kdec-fnlb-11502.data, 10kdec-fplb-11502.data, 10kdec-uplb-11502.data)

**D. Predecisional Documents Withheld as Privileged**

1. E-mail from Vincent Luk (SNL) to Khalid Shaukat and Mahendra Shah (NRC), dated July 27, 2001 (Subject: Information on details of coupled finite element model for review by the NRC Staff).
2. E-mail from Mahendra Shah (NRC) to Vincent Luk (SNL), dated August 2, 2001 (Subject: Dr. Shah's comments on the coupled finite element model of the PFS cask).
3. E-mail from Vincent Luk (SNL) to Khalid Shaukat and Mahendra Shah (NRC), August 21, 2001 (Subject: Coefficients of friction at the interfaces between cask/pad, pad/soil-cement layer, and soil-cement layer/soil foundation).
4. E-mail from Mahendra Shah (NRC) to Vincent Luk (SNL), dated September 19, 2001 (Subject: Time histories of the three components of seismic acceleration for the 1971 San Fernando Earthquake, Pacoima Dam Record).

5. E-mail from Mahendra Shah (NRC) to Vincent Luk (SNL), dated November 26, 2001 (Subject: Time histories of the three components of seismic acceleration for the PFS site-specific seismic event based on a 10,000-year return period).