

RAS 5659

72-22-ISFSI - State Exhibit 197A - Rec'd 7/31/02

NSP

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Information6/6/02  
AlanFacsimile Cover Sheet  
Northern States Power Company

To: John Vincent  
 Company: % Best Western Motel Tooele  
 Phone: 435/882 5010  
 Fax: 435/882-5746

From: Max DeLong  
 Address: 414 Nicollet Mall, Ren Sq 7  
 Minneapolis, MN 55401  
 Phone: -5650  
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DOCKETED  
USNRC

2003 JAN 31 PM 2: 15

OFFICE OF THE SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

Date:  
 Number of pages  
 including this  
 cover sheet:

## Comments:

1. Background for issue on  
 funding request for supporting  
 HI work

## NUCLEAR REGULATORY COMMISSION

2. Docket No. \_\_\_\_\_ Official Exh. No. 197A  
 In the matter of PFS  
 Staff \_\_\_\_\_ IDENTIFIED ☒  
 Applicant \_\_\_\_\_ RECEIVED ☒  
 Intervenor ☒ REJECTED \_\_\_\_\_  
 Other \_\_\_\_\_ WITHDRAWN \_\_\_\_\_  
 DATE 7-31-02 Witness \_\_\_\_\_  
 Clerk pmp

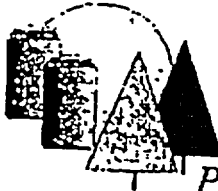
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Attachment I

PFS-32569



Private Fuel Storage, LLC

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jed  
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c/o NSP, 414 Nicollet Mall, RS7  
Minneapolis, MN 55401  
phone: 612/337-2183  
fax: 612/330-5958  
Scott Northard, Project Manager

Date: March 5, 1998

To: John Vincent;  
cc; Scott Northard; John Parkyn

From: Max DeLong

Subject: Request for Authorization to cover estimated Costs of Change  
Order for Seismic Analysis acceptable to NRC

Holtec used a three dimensional kinematics analysis to demonstrate cask stability in the Mar97 version of the HI-STORM SAR. The PFS referenced that version of the HI-STORM SAR, and in addition had a site specific analysis done for the Utah site seismic conditions. So the PFS SAR is not totally dependent on the Holtec SAR for seismic analysis.

As Holtec proceeded to advance the NRC review of its HI-STAR and HI-STORM Dockets, NRC made it clear that obtaining a C of C for high seismic conditions would substantially lengthen the time for NRC review. In a Jul97 Holtec/NRC meeting, the NRC suggested decoupling the high seismic issue (and three other issues) from the HI-STAR and HI-STORM Dockets and in a Holtec/PG&E/NRC meeting in Nov97 the NRC endorsed the Holtec proposal to experimentally confirm the seismic analysis approach. Holtec indicated they would forward an outline of a Topical Report to the NRC in Mar98, and forward the completed Topical in Aug/Sept98.

In a letter from Holtec in Nov97(11/22/97 ltr, attached), they proposed to verify the analytical work by conducting scale model tests on a shake table, and asked for financial support to complete the work (\$250k for the Topical report preparation, \$180k for experimental work, and \$150k allowance for responding to NRC questions). More recent information from Holtec (3/5/98 ltr., attached) indicates that experimental data from CREIPI in Japan (Japan's EPRI) might be sufficient to validate the analysis and reduce the cost of the experimental work from \$180k to \$90k.

I think it is clear from the NRC that they do not want to review the high seismic situation on the initial HI-STAR/HI-STORM dockets. Whether the NRC will allow amending the initial C of C, or treat seismic issues on the high seismic sites only on the site specific docket isn't clear. They haven't indicated, nor to my

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knowledge have they been asked, if experimental verification is necessary for a site specific application.

At this point SPPT may have to further clarify what is the likely course for the PFS docket on this issue. I did have a conference call today with Jay Silberg and Gary Tjersland of Holtec on some of the licensing issues on this subject. I will review the Holtec submittal on HI-STORM going in Mar98 to assure that appropriate options for PFS are not precluded.

This memo is also to request authorization from the PFS Board to negotiate an arrangement with Holtec to complete this work for \$100k or less. Although our contract with Holtec is for a system to meet our seismic conditions, within the NRC regulatory requirements, this verification may very well be extraordinary enough to warrant support to help maintain the PFS schedule.

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SENT BY TELEFAX

November 22, 1997

Dr. Max M. DeLong, PFS, LLC  
Northern States Power Company  
414 Nicollet Mall (RS-7)  
Minneapolis, MN 55401

Rc: Seismic Qualification of HI-STORM in Support of the Skull Valley ISFSI  
Holtec Project 60531

Dear Dr. DeLong:

Here is a summary of the current situation in the seismic arena and our recommendation for action by PFS, LLC.

1. Present Situation:

- a. The NRC labelled nonlinear dynamic analysis in Revision 4 of the TSAR is too complicated to handle as merely an item within the HI-STAR/HI-STORM certification process. Accordingly, we have replaced the dynamic treatment with a simple-minded static analysis in our general certification topical reports.
- b. The NRC, however, did review our dynamic analysis and asked a number of questions. Responding to these questions presented in Revision 4 of the TSAR through a proper forum is necessary, and satisfying the NRC is clearly the right path of action.
- c. The questions asked are:
  - (i) Demonstrate that the multi-body dynamic model is conservative in comparison to a single body solution.
  - (ii) Demonstrate numerical convergence.
  - (iii) Prove out stability under a full range of ISFSI/cask friction coefficient conditions.

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Dr. Max DeLong  
Northern States Power Company  
November 22, 1997  
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*Alan Siler*  
6/6/02  
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- (iv) Perform parametric studies for different fuel types, fabrication tolerances, etc.
- (v) Perform scale model testing on a shaketable.
- d. Following the NRC's instructions, we have secured a docket for a general license for high seismic scenarios.
- e. We must prepare a topical report which draws upon the previously done work and answers the outstanding NRC questions.
- f. PG&E has agreed to provide partial support. They want an anchored ISFSI utilizing the concept which I presented in the November 6, 1997 NRC meeting. That leaves the free-standing HI-STORM on a high seismic ISFSI pad out of the current framework of the project.

## 2. Recommendation:

We recommend that we perform the HI-STORM seismic qualification on the Skull Valley pad as a *free-standing* structure as part of the ongoing new docket effort. This will eliminate seismic considerations as a matter of regulatory contention in the site-specific licensing effort. PFS's licensing and engineering costs will also be reduced because of PG&E's support and Holtec's contribution to the project.

We ask that PFS provide funding which is roughly equal to PG&E's. The requested funding is:

- \$250,000 towards preparation of the topical report.
- \$180,000 for experimental work.
- Payment not to exceed \$150,000 to respond to *all* NRC questions
- No payment towards the NRC's fees charged to us on the docket.

*Alan Siler* 6/6/02  
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Dr. Max DeLong  
Northern States Power Company  
November 22, 1997  
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*jd*  
6/6/02  
*Mr. DeLong*  
6/6/02

We can hold the above prices if PFS is able to lead its support in time which is before Christmas. The analysis work will begin in earnest as of January 2, 1998; backfitting PFS's needs at a later date would add to the overall cost.

Sincerely,

*K.P. Singh*

K.P. Singh, Ph.D.  
President  
KPS:mlm *mlm*

Document ID: 605316

*Mr. DeLong* 6/6/02  
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March 5, 1998

Dr. Max DeLong  
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Reference: Holtec Project 70651  
Private Fuel Storage L.L.C. Contract Dated 3/19/97, Rev. 4

Dear Dr. DeLong:

If PFS joins in our ongoing effort to secure certification for high seismic sites, then our topical report will need to have the following additional material (items with daggers have been previously completed).

- a. Acceptance criteria for rack kinematics
- b. Formulation of Dynamic Model for HI-STORM with MPC-68, MPC-32, and MPC-24 incorporating the NRC's comments (on HI-STAR, Revision 4 submittal)
- c. Development of generic Reg. Guide 1.60 time-histories<sup>†</sup>
- d. Time-histories for Sub-Reg. Guide 1.60 spectra
- E. Demonstration that the cask's response can be bounded by response spectra comparison.
- F. Numerical results<sup>†</sup> (partially completed)
- G. Demonstrate numerical convergence
- H. Stability of solution with respect to interfacial friction coefficient
- I. Comparison with Japan test data (this item is priced separately) \*
- J. Comparison with response spectrum method based solution
- K. Sensitivity studies (e.g., partially filled canister)

\*

This funding requested to support experimental demonstration item (originally requested at \$180,000.00).

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*Jul 6/6/02*  
*Allen Sles 6/6/02*

- L. Establish margins of safety
- M. Technical Specification
- N. Prepare Topical Report chapters

The M.H. and code usage cost for the above items are estimated as follows:

<u>Task</u>	<u>Amount</u>
a.	\$10,000.00
b.	\$45,000.00
c.	-0-
d.	\$ 20,000.00
e.	\$ 50,000.00
f.	\$ 30,000.00
g.	\$ 30,000.00
h.	\$ 40,000.00
i.	\$ 90,000.00**
j.	\$ 30,000.00
k.	\$ 40,000.00

\* \* This funding requested to support experimental demonstration item (originally requested at \$180,000.00).

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*Jul 6/6/02*  
*Allen Sles 6/6/02*

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Dr. Max DeLong  
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March 5, 1998  
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*John*  
6/6/02

*Andrew*  
6/6/02

1.	\$ 25,000.00
m.	\$ 15,000.00
n.	\$ 45,000.00
Project Management	<u>\$ 25,000.00</u> \$405,000.00 (without item (i))

- Of the above total expense directly attributed to free-standing cask certification, we request that PFS provide \$250K; the balance of the funding will come from our internal R&D. \$90K is requested for the Japan test data work item (i).
- The above costs are estimates based on our standard T&M rates (Forms CF.1 and CF.4)
- If PFS elects to not support this effort, then we can provide all high seismic material shipped from Rev. 1 of the HI-STORM TSAR for direct incorporation in the Skull Valley site-specific submittal, and we will proceed with only anchored cask certification on this new docket.
- PFS will have the right to require Holtec to run the SNC system also (for a mutually negotiated fee).

In terms of the promised schedule to the NRC, we are literally behind the "8" ball.

Regards,

*K.P. Singh*  
K.P. Singh, Ph.D., PE  
President and CEO  
KPS:nlm

Attachments: CF.1, Standard T&M Rates  
CF.4, Computer Code Utilization Cost Schedule

Document ID: 706518

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*Andrew*  
6/6/02

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DeLong, Max M

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NRC Question 3-11 to Sierra Nuclear (January, 1998)

RE: Calculation TSL01.10.06-68

Re-analyze the cask for overturning stability incorporating the following:

(a) In past applications, SNC showed that the cask would not overturn by applying the three orthogonal design accelerations statically at the center-of-gravity (c.g.).

This also showed that the restoring moment exceeded the overturning moment. The NRC has accepted this approach.

The use of non-linear finite element analysis is a new method for determining seismic stability. If SNC wants to calculate overturning stability by a new methodology, it must be appropriately validated. As stated in RAI 1, Question 1-41, the damping ratio used in the analysis must be shown acceptable to model the energy dissipation mechanism for rocking of the cask on the pad. Confirmatory testing of the cask or cask models must be used to demonstrate the adequacy of the analytical results.

The response spectrum for the acceleration time history chosen for the nonlinear analysis or confirmatory testing must be enveloped by the response spectrum in Regulatory Guide 1.60 for the damping ratio chosen to model the nonlinear system. Furthermore, the duration of the seismic event must be consistent with high acceleration levels. Large earthquakes that have high acceleration levels are associated with long strong ground motion durations.

Page 1

(b) The horizontal acceleration for which the cask is stable must include the effects of simultaneous excitations in two horizontal (orthogonal) directions.

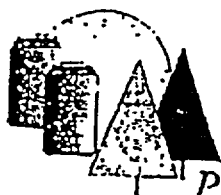
The use of the 100-40-40 method and the square-root-sum-of-the-squares (SRSS) methods are mutually exclusive.

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*Private Fuel Storage, LLC*

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Scott Northard, Project Manager

Date: March 19, 1998  
To: John Parkyn;  
cc; John Vincent Scott Northard;  
From: Max DeLong  
Subject: Update on BNFL acquisition of SNC

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*6/16/02*

#### BNFL Acquisition of SNC

BNFL's due diligence review of SNC was completed at the end of January. The results of the due diligence review and the staff recommendation were submitted to the BNFL,plc Review of Acquisitions and Ventures (RAV) Committee on 2/11/98. The RAV Committee accepted the results of the financial review of SNC. The BNFL Chief Executive and the Board of Directors approved the acquisition in early March. Signing of documents is scheduled for March 31 and the new company will be incorporated April 1. The new company will be a wholly owned subsidiary of BNFL Inc. (the U.S. subsidiary of BNFL, plc.).

BNFL has budgeted funds to assist SNC with the DFI response, the RAI response, and other ongoing activities while the due diligence process is underway.

Senior management of BNFL, Inc. met with the NRC staff from the Spent Fuel Project Office (SFPO) on March 9, 1998 to discuss the status of the acquisition activities, and to understand, first hand, the concerns of NRC SFPO management on canister system design, licensing, manufacturing and quality assurance issues. I understand a broader scope public meeting will be held in early Apr98 where BNFL, Inc. will present in more detail their approach to resolving the issues facing the VSC-24 and TranStor systems.

The current staff at SNC continues to support licensing assistance as requested, but is proceeding under the assumption that a Change Order will be processed to cover those costs.

I am also working with attorney's Bruce Colt, NSP and Mary Ann Courtney from Hogan & Hartshorn on the settlement agreement between PFS,LLC and BNFL, plc that the latter wants to have in place to delineate their cost exposure for the contract that we have with SNC.

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