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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF THE
GENERAL COUNSEL
ADJUDICATORY

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

NRC STAFF'S STATEMENT OF ITS POSITION
CONCERNING GROUP I-II CONTENTIONS

In accordance with the Licensing Board's "Memorandum and Order (Revised General Schedule)" ("Order"), dated September 20, 1999, the NRC Staff ("Staff") herewith files a statement of its positions with respect to the outstanding "Group I" and "Group II" contentions in this proceeding. As indicated in the Board's Order, the contentions in this group are as follows:

- Utah E/ Confederated Tribes F (financial assurance)
- Utah H (thermal design)
- Utah K/ Confederated Tribes B (aircraft and munitions hazards)
- Utah L (geotechnical)
- Utah R (emergency planning)
- Utah S (decommissioning)
- Utah GG (TranStor cask-pad stability)
- Security C (security plan)

With respect to the following contentions, the Staff has completed its review and is prepared to proceed to hearing: (1) Utah E/Confederated Tribes F (financial assurance); (2) Utah H (thermal design); (3) Utah R (emergency planning); (4) Utah S (decommissioning funding plan); and (5) Utah Security-C (security plan). The Staff's positions with respect to these contentions are set forth in the Attachment hereto.

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With respect to three other contentions in Groups I and II, the Staff's review has not yet been completed, and the Staff therefore is not able to state a final position with respect to those issues at this time. These contentions are as follows: Utah K/Confederated Tribes B (aircraft and munitions hazards); Utah L (geotechnical); and Utah GG (TranStor cask-pad stability). These remaining issues are the subject of continuing Staff review, and involve recent site-related submittals by PFS to the Staff or cask-specific issues which have not yet been closed. The Staff will advise the Licensing Board and parties as to when its review of these remaining issues is expected to be concluded.¹

Accordingly, the Staff herewith files its position with respect to all remaining Group I and II contentions, other than the issues set forth above for which its review has not yet been completed.

Respectfully submitted,



Sherwin E. Turk
Counsel for NRC Staff

Dated at Rockville, Maryland
this 15th day of December 1999

¹ In view of the information presented above, the Staff believes that a telephone conference call should be scheduled to allow the parties and Licensing Board to address potential impacts on the hearing schedule.

ATTACHMENT

NRC STAFF POSITION ON GROUP I AND II CONTENTIONS

(December 15, 1999)

**NRC Staff's Position Concerning Contention
Utah E / Confederated Tribes F (Financial Assurance)**

CONTENTION:

Contrary to the requirements of 10 C.F.R. §§ 72.22(e) and 72.40(a)(6), the Applicant has failed to demonstrate that it is financially qualified to engage in the Part 72 activities for which it seeks a license it that:

1. The information in the application about the legal and financial relationship among the owners of the limited liability company (i.e., the license applicant PFS) is deficient because the owners are not explicitly identified, nor are their relationships discussed. See 10 C.F.R. §§ 50.33(c)(2) and 50.33(f) and Appendix C, § II of 10 C.F.R. Part 50.
2. PFS is a limited liability company with no known assets; because PFS is a limited liability company, absent express agreements to the contrary, PFS's members are not individually liable for the costs of the proposed PFSF, and PFS's members are not required to advance equity contributions. PFS has not produced any documents evidencing its members' obligations, and thus, has failed to show that it has a sufficient financial base to assume all obligations, known and unknown, incident to ownership and operation of the PFSF; also, PFS may be subject to termination prior to expiration of the license.
3. The application fails to provide enough detail concerning the limited liability company agreement between PFS's members, the business plans of PFS, and the other documents relevant to assessing the financial strength of PFS. The applicant must submit a copy of each member's Subscription Agreement, see 10 C.F.R. Part 50, App. C., § II, and must document its funding sources.
4. To demonstrate its financial qualifications, the applicant must submit as part of the license application a current statement of assets, liabilities and capital structure, see 10 C.F.R. Part 50, Appendix C, § II.
5. The applicant does not take into account the difficulty of allocating financial responsibility and liability among the owners of the spent fuel nor does it address its financial responsibility as the "possessor" of the spent fuel casks. The applicant must address these issues. See 10 C.F.R. § 72.22(e).
6. The applicant has failed to show that it has the necessary funds to cover the estimated costs of construction and operation of the proposed ISFSI because its cost estimates are vague, generalized, and understated. See 10 C.F.R. Part 50, App. C, § II.

7. The applicant must document an existing market for the storage of spent nuclear fuel and the commitment of sufficient number of Service Agreements to fully fund construction of the proposed ISFSI. The applicant has not shown that the commitment of 15,000 MTUs is sufficient to fund the Facility including operation, decommissioning and contingencies.
8. Debt financing is not a viable option for showing PFS has reasonable assurance of obtaining the necessary funds to finance construction costs until a minimum value of service agreements is committed and supporting documentation, including service agreements, are provided.
9. The application does not address funding contingencies to cover on-going operations and maintenance costs in the event an entity storing spent fuel at the proposed ISFSI breaches the service agreement, becomes insolvent, or otherwise does not continue making payments to the proposed PFSF.
10. The Application does not provide assurance that PFS will have sufficient resources to cover non-routine expenses, including without limitation the costs of a worst case accident in transportation, storage, or disposal of the spent fuel.

NRC STAFF POSITION:

1. Identity of the Owners and Their Relationship.

The PFS License Application (LA) did not directly identify the eight owners of PFS and provided limited information about owner relationships. But in its September 15, 1998, response to an NRC Request for Additional Information (RAI), PFS supplied the names of all eight owner companies. In this response PFS also provided the PFS Amended and Restated Limited Liability Company Agreement (PFS Agreement), much of which is proprietary and cannot be discussed herein. The PFS Agreement describes in significant detail the legal, financial, and organizational relationships among PFS members. Other RAI responses from PFS provide additional details pertinent to this issue. Based on its review of this matter, the NRC Staff (Staff) concludes that the applicant's RAI responses provide an adequately detailed description and explanation of the owner relationships and the organizational approach and plan which PFS proposes to use in the construction, operation, and decommissioning of the PFS Facility (PFSF), pursuant to 10 C.F.R. § 72.22(e).

The contention refers, in part, to 10 C.F.R. Part 50. The provisions of Part 50 are not directly applicable to an application for an ISFSI submitted under 10 C.F.R. Part 72. See *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), CLI-97-15, 46 NRC 294 (1997).

The PFS application has some significant similarities to the LES application, such as being for a new entity, requesting approval of a non-Part 50 facility application that has less health and safety risks associated with it than with operation of nuclear reactors, and making financial commitments that it will not proceed with construction of the proposed facility in the absence of sufficient advance funding commitments. The Staff has considered such similarities in its review of the PFS application

and in recommending in its Safety Evaluation Report (SER) two financial license conditions that should be part of any order approving the PFS application, as described in section 2 below.

2. Inadequacy of the PFS Financial Base and the Obligations of Its Owners

Various PFS RAI responses explain the nature of the financial obligations among PFS owners. PFS states that its eight members plan to sign a Subscription Agreement pledging an equity contribution for the construction phase. The agreed upon aggregate amount of equity for construction is \$6 million (to be divided equally among the eight members), which is about 6.5 percent of the total estimated construction costs of approximately \$92 million. PFS states that the bulk of construction funding "is expected to be provided by member and non-member purchasers (collectively, the 'Customers') of storage services for spent nuclear fuel pursuant to agreements (collectively, the 'Service Agreements')."

PFS has provided the NRC with the estimated planned usage of the facility by its members as Customers over the life of the project, although the specific figure is proprietary and cannot be provided herein. The estimate of member usage is at a level that should provide sufficient funding for construction and operation of the proposed facility in accordance with the "reference case" scenario in the PFS Business Plan.

PFS further states that, if the actual level of executed Service Agreements is not sufficient in the aggregate to provide the required construction funding for the facility, PFS members then will determine the feasibility of proceeding with construction of the facility, including but not limited to, the use of alternative financing options for obtaining commitments for the necessary funds, such as debt financing. PFS states that it will not commence construction "unless and until it has committed funds sufficient to provide fully for the construction" of the facility (including PFS administrative and operational costs during the construction phase of the project), "whether these funds are obtained through equity contributions, Service Agreements, or other committed forms of financing." PFS states that Customer payments under the Service Agreements are "due and payable after the granting of the NRC license."

Since PFS does not expect to have Service Agreements executed by both member and nonmember Customers until after a license is granted, PFS cannot document commitments by Customers to demonstrate that aggregate commitment to facility usage will be sufficient either to provide adequate funding for construction and/or to provide adequate support for securing other committed forms of financing for construction, pursuant to 10 C.F.R. § 72.22(e). Also, there is no guarantee that each member will provide its share of the planned \$6 million aggregate equity contribution and that, if a member fails to provide its share, other members will make up the deficiency. While there are specific terms in the PFS Agreement related to such potential deficiencies in equity payments by members, there is no guarantee that these deficiencies will be made up by other members.

Regarding facility operating costs, a PFS RAI response states that "all PFS Customers will be obligated under the Service Agreements to pay to PFS an annual aggregate amount sufficient to fund PFS's operational expenses that are not funded by the capital contributions of the PFS members." While the staff recognizes that businesses generally rely on unguaranteed future revenue streams to cover their operating expenses and to remain solvent and viable, the same

problem exists for operating funding as for the construction phase in that, prior to any license approval, the staff will not receive documentation of commitments showing that adequate operating funds will be available for the operational phase, which is expected to last at least 20 years. Nonetheless, the PFS estimate that its own members will utilize the facility at a significant level provides an indication that adequate revenue to meet operating costs is likely to be available.

Before construction can commence, PFS must demonstrate that an adequate combination of revenue plus equity and/or debt financing can be attained to provide reasonable assurance of funding for construction and operating costs, pursuant to 10 C.F.R. § 72.22(e). Therefore, as stated in section 1 above, the Staff is recommending as conditions for any order granting a license that, before construction and operations can commence, PFS shall demonstrate sufficient levels of committed debt and equity, combined with sufficient executed Service Agreements, to produce adequate funding for both the construction of the facility and the initiation of operations. This is similar to the commitment that PFS made in its application and also is very similar to the financial conditions imposed by the Commission on Louisiana Energy Services, L.P. ("LES"), concerning its application to construct and operate a uranium enrichment facility. See *Louisiana Energy Services, L.P.* (Claiborne Enrichment Center), CLI-97-15, 46 NRC 294 (1997). With these conditions in place, the Staff considers that the Commission's financial assurance requirements are satisfied.

3. PFS Limited Liability Company Agreement, Business Plan, and Subscription Agreement

While the LA itself fails to provide adequate detail concerning the limited liability company (LLC) agreement among PFS members, the business plans of PFS, and other documents relevant to assessing financial qualifications, PFS has subsequently provided many of these documents in proprietary RAI responses to the NRC. These documents provide a high level of detail concerning the key financial relationships anticipated among PFS members. However, because PFS has not provided copies of each member's executed Subscription Agreement, and because PFS has provided neither blank forms of Service Agreements nor copies of any executed Service Agreements, the staff has concluded that the documents supplied to date are insufficient to support reasonable assurance that PFS is financially qualified to construct, operate, and decommission the proposed facility, pursuant to 10 C.F.R. § 72.22(e). The Staff considers that this issue will be resolved upon PFS' compliance with the Staff's recommended license conditions, supported by adequate documentation, before construction is allowed to commence.

4. PFS Current Statement of Assets, Liabilities, and Capital Structure

PFS has provided its Business Plan as of January 1997. This is a proprietary document with extensive data of a pro forma nature regarding expected revenues, expenses, and other PFS financial information. Neither this document nor other documents provided by PFS contain a statement of current assets, liabilities, and capital structure for PFS. However, as would be expected from descriptions of planned equity contributions and revenue streams, PFS will have no significant assets, liabilities, and capital available until after a facility license is granted. The Staff therefore concludes that, at this point, it is not necessary for PFS to supply a statement of its current assets, liabilities, and capital structure to meet the requirements of 10 C.F.R. § 72.22(e).

5. Allocation of Financial Responsibility and Owner Liability for Spent Fuel

In its licensing submittals, PFS has stated that Customers will retain title to their own fuel during storage and that PFS will only offer storage on the condition that Customers must retain title to their own fuel throughout the storage period. PFS plans to state in the Service Agreement the terms of assignment of legal and financial responsibility among the Customers as owners of the spent fuel and the owners of the facility. PFS must address such considerations in the PFS Service Agreements, pursuant to 10 C.F.R. § 72.22(e). This requirement will be satisfied with the execution of Service Agreements that include these provisions.

6. Insufficiency of Funds for Facility Construction and Operation

While cost estimates provided in the LA are stated generally, PFS has provided much more detailed estimates in its RAI responses, especially in its Business Plan. PFS has stated to the NRC that its estimates are based on standard costs for typical components and procedures used in spent fuel storage facilities. The Staff believes that the information provided in the RAI response contains sufficient detail to satisfy NRC requirements.

7. Documentation of an Existing Market for Fuel Storage and Customer Commitment Levels

The contention states a concern regarding the need to document an existing market for the storage of spent fuel and the commitment of a sufficient number of Service Agreements to fully fund construction. Also, this contention states that PFS has not shown that a commitment of 15,000 MTUs is sufficient to fund the facility, including its costs of operation, decommissioning, and contingencies.

The Staff is aware of the general market need to store spent fuel from nuclear power reactors and the rapidly diminishing ability of certain utilities to provide for adequate onsite storage. However, the specific issue of the financial viability of the PFS project must be addressed in terms of the volume of usage that can reasonably be expected to be used by PFS members and other likely PFS Customers at planned fee levels, to determine if sufficient revenue is likely to be produced to fund the project, pursuant to 10 C.F.R. § 72.22(e). In the absence of executed Service Agreements, the Staff is recommending the imposition of certain license conditions, as described above, to assure that adequate revenues are realized to cover the cost of the facility's construction and operation.

This portion of the contention also asserts that PFS has not shown that a commitment of 15,000 MTUs is sufficient for funding the facility. PFS has submitted a proprietary Business Plan showing that facility usage in that approximate range would be likely to produce revenue that would be adequate to cover funding needs based on the PFS reference case in that plan. In any event, the Staff's recommended license conditions provide additional assurance that sufficient commitments will be in place before construction and operation is commenced.

8. Viability of PFS Debt Financing for Demonstrating Reasonable Assurance of Funding

The contention states that PFS debt financing cannot be considered a viable option for reasonable assurance of adequate funding to finance construction until a minimum level of Service Agreements is committed, accompanied by supporting documentation.

PFS has submitted proprietary figures indicating that its current forecast of total use over the life of the facility by its eight members will be at approximately the minimum level required to finance construction of the facility; these figures cannot be cited herein because they are proprietary. In a nonproprietary portion of its response, PFS proposes that, if executed Service Agreements are not adequate to provide the required construction funding, it will pursue other means of financing, such as: (1) commercial bank loans secured by mortgages, assignment of Service Agreements, and other contracts and security interests in other project-related assets; (2) the issuance of bonds in the capital markets; and, if necessary, (3) requests to its members for additional equity or company guarantees of PFS debt to provide credit support. While these additional means of contingent support, in the aggregate, may provide adequate funding, PFS has not yet provided adequate evidence that these sources will be available to them. The Staff's recommended license conditions, however, provide reasonable assurance that PFS will obtain adequate funding prior to the commencement of construction and operation, in accordance with 10 C.F.R. § 72.22(e).

9. Funding Contingencies for Ongoing Operations and Maintenance Costs

The contention states that PFS does not address funding contingencies to cover ongoing operations and maintenance (O&M) costs in the event that a Customer breaches the Service Agreement, becomes insolvent, or otherwise stops making payments to PFS.

In the normal course of operations for any business, it is expected that some Customers will not make sufficient payments or will stop payment completely, and there are standard legal remedies for such problems. PFS has stated to the NRC that it will collect most of a Customer's storage payment in advance before its fuel can be stored at the facility. Once fuel is stored, if a Customer does not pay a required nominal annual storage fee, its fuel will be removed from the facility. Also, pages 1-6 and 1-7 of the LA state that the Service Agreements will provide assurance for the continued payment of O&M costs by requiring Customers to meet creditworthiness requirements and, if necessary, provide additional financial assurances (such as irrevocable letters of credit or a third-party guarantee). The Staff considers that PFS has provided reasonable assurance of adequate measures to minimize deficiencies in Customer payments.

10. Assurance of Sufficient Resources for Non-Routine Expenses

The contention states that the LA does not provide assurance of sufficient resources to cover non-routine expenses, such as costs of a worst-case accident involving spent fuel.

The Staff considers that PFS' application, with the Staff's recommended license conditions in place, provides reasonable assurance of adequate funding to cover non-routine expenses. In addition, PFS has stated that it will pursue the largest commercial insurance policy available to it. The Staff believes that, as a spent fuel storage provider, PFS can purchase up to \$200 million of insurance from the nuclear insurance pools. This amount should be sufficient to provide a reasonable level of insurance for contingency funding, in the event that such additional funding is required by PFS.

**NRC Staff's Position Concerning Contention
Utah H (Inadequate Thermal Design)¹**

CONTENTION:

The design of the proposed ISFSI is inadequate to protect against overheating of storage casks and of the concrete cylinders in which they are to be stored in that:

1. Storage casks used in the License Application are not analyzed for the PFS maximum site design ambient temperature of 110°F.
2. The maximum average daily ambient temperatures for unnamed cities in Utah nearest the site do not necessarily correspond to the conditions in Skull Valley; PFS should provide information on actual temperatures at the Skull Valley site.
3. PFS's projection that average daily temperatures will not exceed 100°F fails to take into account the heat stored and radiated by the concrete pad and storage cylinders.
4. In projecting ambient temperatures, PFS fails to take into consideration the heat generated by the casks themselves.
5. PFS fails to account for the impact of heating the concrete pad on the effectiveness of convection cooling.
6. PFS has not demonstrated that the concrete structure of the TranStor cask is designed to withstand the temperatures at the proposed ISFSI.
7. PFS has not demonstrated that the concrete structure of the HI-STORM cask is designed to withstand the temperatures at the proposed ISFSI.

NRC STAFF POSITION:

The Staff has reviewed the matters raised by this contention, concerning the independent spent fuel storage installation (ISFSI) application submitted by Private Fuel Storage, L.L.C. (PFS or Applicant). Based on its review, the Staff concludes that the design of the proposed ISFSI is adequate to

¹ By Order of May 18, 1998, the Licensing Board clarified that Paragraphs 3 through 7 of this contention are limited to site-specific issues --i.e., whether the PFS site conditions fall within the envelope of the cask vendors' designs, "with the understanding that the site conditions at issue may include conditions resulting from the effects of the site specific cask interactions specified in the contention."

protect against overheating of storage casks and of the concrete cylinders in which they are to be stored. The Staff's position with respect to each subpart of this contention is as follows.

1. Storage casks used in the License Application are not analyzed for the PFS maximum site design ambient temperature of 110°F.

The HI-STORM 100 system was analyzed for an ambient temperature up to 125°F. Holtec International's analyses were reviewed by the staff and found to be acceptable, as noted in the Staff's safety evaluation report for the HI-STORM 100 system dated July 30, 1999.

2. The maximum average daily ambient temperatures for unnamed cities in Utah nearest the site do not necessarily correspond to the conditions in Skull Valley; PFS should provide information on actual temperatures at the Skull Valley site.

PFS has submitted data pertaining to actual temperatures in Skull Valley, Utah, sufficient to demonstrate the ambient temperature conditions at the PFS site. The PFS Safety Analysis Report (SAR) provided temperature data for Salt Lake City, and other meteorological data collected closer to the site, including temperature data recorded at Dugway (approximately 12 miles south of the proposed site at an elevation of 4,340 feet above mean sea level (M.S.L.)), and Iosepa South Ranch (about 12 miles north of the proposed site at an elevation of 4,415 feet above M.S.L.). In response to a Request for Additional Information, PFS also submitted hourly average data on wind speed, air and soil temperature, relative humidity, precipitation, barometric pressure, and solar radiation from the On-site Meteorological Monitoring Program, which included data from a meteorological tower located approximately 2 miles southeast of the proposed site.

3. PFS's projection that average daily temperatures will not exceed 100°F fails to take into account the heat stored and radiated by the concrete pad and storage cylinders.

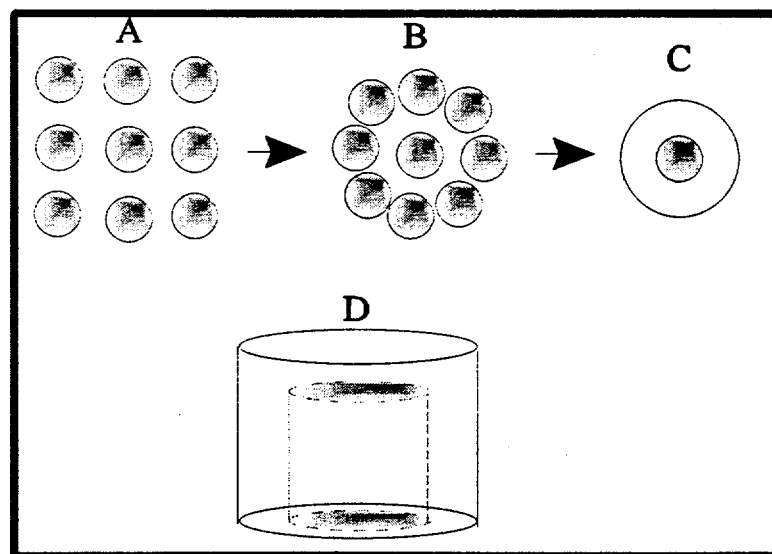
Holtec's thermal analysis was performed with a bounding ambient temperature of 125°F. The bounding analysis assumed that the 125°F ambient temperature plus solar heat input from the sun were held constant until steady-state cask temperature profiles were established (in reality, the peak ambient temperature and sun input would exist for a short duration, compared to the time required to obtain steady-state temperature profiles). These analyses incorporated radiation from the concrete pad and neighboring storage cylinders. The results of the analysis were well below the temperature limit for the clad, canister shell and cask surface. The Staff has found these bounding analyses to be acceptable.

4. In projecting ambient temperatures, PFS fails to take into consideration the heat generated by the casks themselves.

Holtec's analyses calculated the impact of radiant heat transfer from the cask surface, as well as the radiant heat transfer interaction between neighboring casks and the concrete mat upon which the casks will be placed.

The Staff reviewed the assumptions or inputs used in Holtec's Thermal Analysis ("EHT"), dated February 9, 1999. The input was reviewed in detail for the 100 degree F ambient temperature case.

The Staff then reviewed changes to those input, as they relate to the 125 degree F analysis. The Staff found those input to be bounding and appropriate. For example, as illustrated in the following figure, Holtec simulated the impact of neighboring casks by a hypothetical shell surrounding the cask. The impact of neighboring casks (e.g., Array A, below), can be bounded by encircling the neighboring casks around the center cask (Array B, below). This can be further simplified by simulating the contribution of the neighboring casks with an equivalent cylinder, as illustrated in Array C, below. Array D provides a side view representation of the calculation performed by Holtec. The inside surface of the hypothetical shell is modeled as a reflecting boundary which simulates the radiant energy input from the surrounding casks. In addition, the hypothetical cylinder does not permit air to flow from the radial direction (between the neighboring casks). This requires the ambient air to enter from above, traveling down the annulus formed by the HI-STORM overpack and the hypothetical cylinder. The Staff questioned Holtec on the method used to calculate the distance between the outer surface of the overpack and the inner shell of the hypothetical cylinder. For this arrangement, one would assume the use of an equivalent heated diameter. Holtec agreed that an accurate thermal-hydraulic representation of the hypothetical cylinder diameter is derived by using four times the area divided by the heated perimeter. With the use of bounding assumptions, the equivalent diameter used in Holtec's evaluation was significantly less than would be obtained using the equivalent heated diameter. This assumption provides greater resistance for air circulation and increases the temperature of the cask and the ambient air as it travels toward the bottom of the overpack. The Staff found Holtec's assumption to be acceptable. In addition, at the Staff's request, Holtec performed a sensitivity study that assumed no sunset (i.e., the sun was assumed to shine on the overpack 24 hours per day). With this bounding assumption, the peak cladding temperature remained below the fuel design short-term temperature limit.



5. PFS fails to account for the impact of heating the concrete pad on the effectiveness of convection cooling.

The analysis performed by Holtec for the HI-STORM 100 system accounts for the impact of radiation heating from the concrete pad. The impact of radiative heating on the effectiveness of convective cooling was integrated in the model using the FLUENT computer code. The hot concrete pad had an approximately 10 degree F impact on the cask surface temperature, as shown in the Table below. This temperature increase does not significantly reduce the effectiveness of the casks' convective cooling, given the higher temperatures that are found on the surface of the canisters within the casks. The convective cooling within the concrete overpack accounts for the removal of approximately 80 percent of the heat generated by the fuel. Without accounting for the heating of the concrete pad, the peak clad temperature is reduced by six degrees Fahrenheit.

Issues relating to radiative heat transfer discussed in LBP-99-42.

On November 2, 1999, the Licensing Board denied the Applicant's motion for partial summary disposition of paragraphs 3, 4 and 5 of Contention H, based on concerns that (a) an incorrect cask spacing may have been assumed in the cask analyses, (b) radiative heat may not be accounted for in the analyses, and (c) the impact of pad heating on convection cooling effectiveness may not be accounted for. LBP-99-42, 50 NRC ____ (Nov. 2, 1999), slip op. at 9-10, 16-17. The Staff's position with respect to these matters is as follows:

Cask Spacing. The analyses performed in support of the HI-STORM 100 cask assumed a center-to-center spacing of 13.5 feet. The minimum PFS center-to-center spacing is 15 feet. Therefore, the assumption used in the HI-STORM 100 SAR is more limiting than the cask spacing proposed at the PFS site. The staff finds the analyses acceptable.

Radiative Heat Transfer. As discussed above, radiative heat transfer is accounted for in the Holtec analysis, notwithstanding the fact that Holtec's presentation of its calculations did not provide comparisons of surface temperatures for the cask with and without the presence of neighboring casks and the concrete mat.

Following the Board's issuance of its decision, the Staff requested that Holtec present a set of calculations that explicitly quantifies the effects of radiative heat from the surrounding casks and the concrete pad. In a letter to the NRC dated December 13, 1999, Holtec provided the results of a new run of its licensing calculations, in which it analyzed three cases, utilizing the FLUENT computer code: Calculation A increased the distance between the neighboring casks by a factor of five to demonstrate the contribution that neighboring casks have on the surface temperature of the cask, at ambient temperatures of 100°F and 125°F; Calculation B removes any radiated heat from the concrete pad at an ambient temperature of 125°F.

The results of Holtec's analysis modeling the contribution of radiation heat transfer from neighboring casks and the concrete pad on a subject cask are shown in the Table below. As illustrated in the Table, spacing the casks further apart (moving the reflective boundary by a factor of five) and eliminating the effect of concrete pad radiative heating results in a reduction in calculated temperature below that which was determined in Holtec's SAR analyses. This demonstrates that

the SAR analysis accounted for the effects of heat radiated from surrounding casks and the concrete pad.

Impact of pad heating on convection cooling effectiveness. The Table below demonstrates that the impact of pad heating on convection cooling effectiveness is accounted for in the HI-STORM analysis. The annulus air flow and heat exchange via air cooling through heat vents continues to function, and the design basis temperature limits are not exceeded as a result of concrete pad heating.

Model Description	Cask Surface Temperature (active fuel zone) °F	Canister Shell Temperature °F	Peak Cladding Temperature °F
SAR Calculation (100°F ambient)	144	324	765
Effect on SAR Calculation (100°F ambient) with neighboring casks at a distance five times further apart	128	314	759
SAR Calculation (125°F ambient)	169	351	784
Effect on SAR Calculation (125°F ambient) with neighboring casks at a distance five times further apart	152	340	776
Effect on SAR Calculation (125°F ambient) with no heat contribution from concrete pad	159	343	778
Licensing Basis Temperature Limit	350	775	1058

6. PFS has not demonstrated that the concrete structure of the TranStor cask is designed to withstand the temperatures at the proposed ISFSI.

The Staff's review of the TranStor cask is not yet complete. However, the Staff understands that the State of Utah agrees with PFS that the HI-STORM cask is more limiting than the TranStor cask. See State of Utah's Opposition to Applicant's Motion for Partial Summary Disposition of Utah Contention H, dated June 25, 1999, at 8, and PFS' Material Fact No. 4, filed May 19, 1999 ("A fully loaded HI STORM 100 cask will experience higher temperatures, all other conditions being equal, than a fully loaded TranStor cask. Therefore, the revised thermal calculation for the HI-STORM 100 cask is bounding.")

7. PFS has not demonstrated that the concrete structure of the HI-STORM cask is designed to withstand the temperatures at the proposed ISFSI.

The design of the HI-STORM 100 cask was demonstrated through bounding calculations to be able to withstand the temperatures at the proposed ISFSI. The cask was analyzed with ambient temperatures of 125°F, assuming the sun was shining at maximum strength throughout the event; it incorporated radiation heating from neighboring casks; and it incorporated radiation heating from the concrete pad. The staff finds the analyses to be acceptable. The design bounds the ambient conditions at the PFS site.

In conclusion, the Staff finds that Holtec's thermal analyses for the HI-STORM 100 system are acceptable, and that the assumptions used in the analyses are bounding and appropriate. The HI-STORM 100 system is designed to withstand the temperatures at the proposed PFS ISFSI.

**NRC Staff's Position Concerning Contention
Utah R (Emergency Planning - Fires)**

CONTENTION:

The Applicant has not provided reasonable assurance that the public health and safety will be adequately protected in the event of an emergency at the storage site or the transfer facility in that:

3. PFS has not adequately described the means and equipment for mitigation of accidents because it does not have adequate support capability to fight fires onsite.²

STAFF POSITION:

The Staff has reviewed the Applicant's description of its building construction, fire protection systems, water supply, credible fire scenarios, and fire fighting capability and equipment as set forth in the Applicant's Safety Analysis Report (SAR), Emergency Plan (EP), and responses to Staff Requests for Additional Information (RAIs). On the basis of its review, the Staff has determined that the Applicant's description of its means and equipment to fight fires onsite is adequate to protect the health and safety of workers and the public.

The Applicant's SAR describes the Canister Transfer Building (CTB) and cask construction and configuration. The facility and storage casks are heavy noncombustible concrete structures that can resist the affects of fire effectively. The transfer cask is a water jacketed steel cylinder which will help maintain a lower temperature until the water is boiled off. The canister transfer cells segregate the heavy haul vehicles and cask transporter during transfer operations. The facility is designed to control the spilling of fuel from transportation vehicles. Also, diesel fuel, which has a higher flashpoint in comparison to other fuels, will be used. The SAR states the CTB "is designed to limit the potential effects from a diesel fuel fires with curbs, raised thresholds, and sloped floors located to contain spilled diesel fuel away from SSCs." The SAR also states that "Building design measures assure that any diesel fuel spilled in the cask load/unload bay will remain in the bay and cannot enter a transfer cell," and "the design of the building and its surroundings will assure that diesel fuel spilled outside the building will not flow into the building." The Staff will evaluate the details of the CTB drainage during post-licensing activities.

The Applicant's SAR describes the fire protection systems provided for the CTB. Smoke detection provides early warning to the building occupants and alarms within the building and at a central monitoring panel in the Security and Health Physics Building. Smoke removal is provided by the

² Subparts 1 and 2 of this contention involved the proposed Rowley Junction Intermodal Transfer Point, which was addressed by the Licensing Board in LBP-99-34, 50 NRC 168 (1999). Those subparts of the contention have been dismissed from litigation. See LBP-99-36, 50 NRC 202 (1999), and LBP-99-39, 50 NRC 232, 233, 236 (1999).

building's ventilation exhaust fans. An automatic sprinkler system provides fire suppression and control by applying water on the fire and protection of the CTB and equipment by spraying water on areas near the fire. The SAR states, "the sprinkler system ensures that fires that could occur in the Canister Transfer Building will be extinguished within minutes." The Staff considers the CTB to be adequately protected with the fire protection systems provided.

With respect to the availability of water to fight fires onsite, the Staff is satisfied that sufficient water supplies will be available. PFS plans to build two fire protection water tanks to provide a primary and secondary water supply for the sprinkler systems and fire hydrants. In its response to RAIs, PFS indicated that each tank will contain a minimum of 200,000 gallons, which will provide twice the quantity required by the industry standard (NFPA 13). The standard also requires an eight hour refill time. Since PFS committed to provide twice the required supply, the Staff finds this adequate to assure enough water for fire safety.

The Applicant's SAR describes the bounding fire scenarios as a 50 gallon diesel fuel fire inside the transfer cell and a 300 gallon diesel fuel fire in the load/unload bay. The locomotive fuel spill was not included since PFS committed to prohibit the locomotive from entering the bay and controlling any exterior fuel spills from entering the facility. This restriction could be readily accomplished by administrative procedures, such as requiring a locomotive to push, rather than pull, a loaded rail car into the building. As discussed above, PFS has committed to control fuel spills through facility design measures and administrative procedures so fuel would not be present or could not enter the transfer cells during transfer operations. This protects a loaded transfer cask from direct flame impingement. The 50-gallon diesel fuel fire in the transfer cell would impact a filled storage or shipping cask with a fire that is estimated to last less than 5 minutes. The 300-gallon diesel fuel fire in the load/unload bay would only affect shipping casks, and is estimated to last a maximum of 15 minutes before the sprinkler system would automatically control or extinguish the fire. These scenarios are considered bounding, and the effects of the fires could be reduced with manual intervention from the fire brigade. However, damage is not expected to the canisters or spent fuel in either the shipping or storage casks from these fire scenarios.

The Applicant's EP (as supplemented by the RAI responses) indicates that a fire brigade will be provided and fire brigade members will receive training in methods of controlling fires under accident conditions in accordance with fire protection procedures including fire fighting, search and rescue, first aid, and handling and treating contaminated and injured personnel. Additional training will be provided on fire truck and ambulance operations. The operability of the Applicant's fire protection systems (including fire truck, fire pumps, and sprinkler systems), the adequacy of training to be received by its fire brigade, and the results of fire drills that are performed by PFS, will be evaluated by the Staff during its post-licensing operational inspections of the facility.

**NRC Staff's Position Concerning Contention
Utah S (Decommissioning Funding)**

CONTENTION:

The decommissioning plan does not contain sufficient information to provide reasonable assurance that the decontamination or decommissioning of the ISFSI at the end of its useful life will provide adequate protection to the health and safety of the public as required by 10 C.F.R. § 72.30(a), nor does the decommissioning funding plan contain sufficient information to provide reasonable assurance that the necessary funds will be available to decommission the facility, as required by 10 C.F.R. § 72.22(e).

NRC STAFF POSITION:

The PFS LA specifies in Appendix B a preliminary decommissioning plan describing the cost estimates and basic elements of the decontamination and decommissioning approach for the facility, pursuant to 10 C.F.R. § 72.30(a). PFS states that it will submit a final decommissioning plan with the specific methods and details for decommissioning the facility for NRC review and approval prior to the initiation of decommissioning activities, at which time NRC technical staff will conduct additional review of the detailed methods and elements proposed for facility decommissioning in relation to protection of the public health and safety. The staff does not expect PFS, at this point, to provide a detailed, in-depth, final decommissioning plan for a spent fuel storage facility that is expected to be decommissioned approximately forty years from now.

Regarding protection of the public health and safety, PFS describes planned safety features and approaches in its preliminary decommissioning plan. PFS states on page 1-1 of Appendix B of the LA that before the end of facility life, the sealed canisters containing spent fuel will be transferred from their storage casks into shipping casks and then transported off site. Since these canisters will be designed to meet DOE guidance for multipurpose canisters for spent fuel storage, transport, and disposal, the fuel assemblies will remain sealed in the canisters such that decontamination of the canisters will not be required. PFS states on page 1-7 of the LA that, while it intends to maintain the facility free of radiological contamination at all times, the decommissioning cost estimate conservatively assumes that certain areas and components will require decontamination. After shipment of the canisters off site, the facility will undergo final decommissioning by identification and removal of any residual materials above NRC limits. PFS then plans to release the site for unrestricted use followed by termination of the NRC license.

Decommissioning funding assurance requires a decommissioning cost estimate and a funding method and plan providing reasonable assurance that adequate funding will be available for decommissioning costs, pursuant to 10 C.F.R. §§ 72.22(e) and 72.30(b). PFS' estimates of specific decommissioning costs are provided in its preliminary decommissioning plan and in an RAI response that provides more details. The Staff concludes that PFS has provided its decommissioning cost estimate in sufficient detail to use as a basis for decommissioning funding assurance.

Financial assurance for decommissioning must be provided by one or more of the following approved methods, pursuant to 10 C.F.R. § 72.30(c):

1. Prepayment in the form of a trust, escrow account, government fund, certificate of deposit, or deposit of government securities.
2. A surety method, insurance, or other guarantee method. These methods guarantee that decommissioning costs will be paid. For example, a surety method may be in the form of a surety bond, letter of credit, or line of credit.
3. An external sinking fund in which deposits are made at least annually, coupled with a surety method or insurance, the value of which may decrease by the amount being accumulated in the sinking fund.

Under PFS' proposal, funding the facility decommissioning activities will consist of two components: storage cask decommissioning and decommissioning of the remainder of the facility. The estimated cost for decommissioning each storage cask is \$17,000, which will be prepaid into an externalized escrow account under the Service Agreement with each Customer prior to shipment of each fuel canister to the facility, pursuant to 10 C.F.R. § 72.30(c)(1). PFS will place the full amount estimated for decommissioning the casks in a segregated account for this purpose.

PFS estimates the cost of decommissioning the remainder of the facility and site to be \$1.631 million, which is to be funded through a letter of credit coupled with an external sinking fund, pursuant to 10 C.F.R. § 72.30(c)(3). Customers will be required under the Service Agreements to pay the cost of decontaminating any portion of the facility for which they may be responsible for contaminating. As the actual cost of decontamination and decommissioning is paid into the external sinking fund, PFS plans for the letter of credit to be reduced by an equivalent amount, pursuant to 10 C.F.R. § 72.30(c)(3). The per-canister fee and amounts of the escrow account, external sinking fund, and letter of credit are to be reviewed and adjusted annually to account for inflation and any changes in the scope of decommissioning, pursuant to 10 C.F.R. § 72.30(b).

Based on the information provided by PFS in its preliminary decommissioning plan and in other inputs to the NRC, and on the statement by PFS that it will provide a final decommissioning plan with greater detail for NRC review and approval prior to initiation of decommissioning, the Staff concludes that PFS has provided adequate information through the description of its current plan and its intention to present a more detailed final plan to protect the public health and safety with regard to facility decommissioning. Also, the Staff concludes that PFS has provided reasonable assurance that it will be able to fund this final phase of the project through meeting the requirements of the regulations cited herein.

**NRC Staff's Position Concerning Contention
Utah Security-C (Local Law Enforcement)**

CONTENTION:

The Applicant has not met the requirements of 10 C.F.R. Part 73, App. C, Contents of the Contingency Plan, Law Enforcement Assistance.³

NRC STAFF POSITION:

The Applicant's June 8, 1999 revision of its Safeguards Contingency Plan designates the Tooele County Sheriff's Office to serve as the LLEA. Attached to the Safeguards Contingency Plan is a Cooperative Law Enforcement Agreement between Tooele County, the Bureau of Indian Affairs and the Skull Valley Band of Goshute Indians (approved as to form on August 7, 1998), which authorizes and commits the Tooele County Sheriff's Office to provide law enforcement services on the Skull Valley Band reservation. The Applicant has provided documentation showing that the Cooperative Law Enforcement Agreement was ratified by resolution of the Tooele County Board of Commissioners on September 1, 1998.

The Applicant has demonstrated the LLEA's willingness and authority to respond to events at the PFS site, by providing a copy of the August 1998 Cooperative Law Enforcement Agreement and incorporating that agreement in the Applicant's Physical Protection Plan. In addition, the Applicant revised its Physical Protection Plan to include an armed on-site response force. Chapter 9 of the Safeguards Contingency Plan discusses the relationship between the Applicant and the LLEA regarding response and response liaison.

The Staff has concluded that the LLEA can provide adequate response when coupled with the increased delay provided by the additional onsite capabilities. The onsite capability should assure there will be no loss of control of the facility while awaiting the arrival of the designated offsite LLEA. The Staff's inspections will verify that the law enforcement agreement is maintained current. In sum, the Staff has determined that the Applicant's security plans, as revised, contain adequate provisions regarding the LLEA.

³ By Order of June 29, 1998, the Board admitted this contention on the issue of whether PFS had described the estimated response times for the principal LLEA relied upon for security assistance at the PFS facility, so as to establish compliance with (a) 10 C.F.R. Part 73, App. C, §3.d, and NUREG-1497, § 4.9.2; and (b) 10 C.F.R. § 73.51(d)(6), and NUREG-1619.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED
USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

'99 DEC 16 P2:32

In the Matter of

PRIVATE FUEL STORAGE L.L.C.

(Independent Spent
Fuel Storage Installation)

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Docket No. 72-22-IS/PSL

OFFICE OF THE SECRETARY
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555

CERTIFICATE OF SERVICE

I hereby certify that copies of the "NRC STAFF'S STATEMENT OF ITS POSITION CONCERNING GROUP I-II CONTENTIONS" in the above captioned proceeding have been served on the following through deposit in the Nuclear Regulatory Commission's internal mail system, or by deposit in the United States mail, first class, as indicated by an asterisk, with copies by electronic mail as indicated, this 15th day of December, 1999.

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