Private Fuel Storage, L.L.C.

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April 28, 2000

EIS COMMITMENT RESOLUTION LETTER #10
DOCKET NO. 72-22 / TAC NO. L22462
PRIVATE FUEL STORAGE FACILITY
PRIVATE FUEL STORAGE L.L.C.

References:
1. PFS letter, Donnell to U.S. NRC, EIS Commitment Resolution Letter #7, dated February 25, 2000
2. PFS letter, Donnell to U.S. NRC, EIS Commitment Resolution Letter #8, dated March 9, 2000
3. PFS letter, Donnell to U.S. NRC, Submittal of Revised Cost-Benefit Analysis, dated April 14, 2000
4. April 26, 2000 telephone call between the NRC, Private Fuel Storage (PFS), and Stone and Webster (S&W)

During the above referenced telephone call (Reference 4) the NRC requested additional clarification regarding the Private Fuel Storage Facility (PFSF) cost benefit analysis. The NRC request is documented below along with the PFS response.

NRC Requests/Questions

In the PFS at-reactor storage cost benefit analysis, it appears that PFS has used a common value for PWR and BWR fuel loading costs for loading fuel into dry storage at reactor sites. For fuel shipped directly from spent fuel pools to either DOE or to the PFSF, PFS has used distinct values for PWR and BWR fuel loading costs. PFS should explain this apparent inconsistency and any impacts it has on the cost benefit analysis.

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PFS Response

Loading costs for the shipment of spent nuclear fuel for off-site transport were calculated as discussed in EIS Commitment Resolution Letter #7 (Reference 1), EIS Commitment Resolution Letter #8 (Reference 2), and *Utility At-Reactor Spent Fuel Storage Costs For the Private Fuel Storage Facility Cost Benefit Analysis, Revision 2,* (April 2000 ERI Report, Reference 3). A minor discrepancy was found between the costs used to calculate the fuel loading costs for shipment offsite and the unit costs used for calculating fuel loading costs for at-reactor dry storage.

In order to correct the discrepancy, the loading costs for shipment of spent fuel offsite were recalculated as summarized in this letter. The unit costs for shipment offsite used in this analysis are consistent with those used in the April 2000 ERI Report for loading spent fuel into dry storage either directly or using dry transfer systems (DTS). Loading cost assumptions for loading directly into canisters were assumed to be $43,232 per container or approximately $4,600 per MTU for BWR and PWR reactors that can handle 125 ton packages. Loading costs for loading spent fuel into 75 ton packages were assumed to be $37,184 per container or approximately $9,300 per MTU for BWR and PWR reactors. Loading costs for loading spent fuel into large containers via dry transfer were assumed to be approximately $250,432 per container or $26,641 per MTU for BWR and PWR reactors.

The revised loading costs have been calculated and are summarized in the attached Table 1 through 3, in constant 1999$, and using net present value (NPV) rates – 3.8% and 7.0%, respectively. Tables 1 through 3 also provide a summary of Net Benefits consistent with the summary costs provided in Reference 1 and Reference 2.

The end result is that there is a net benefit associated with Case 1 compared to Case 3. A net benefit of $3.215 billion (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of $985.0 million was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of $328.9 million was calculated as presented in Table 3.

Comparing Case 5 to Case 6, a net benefit of $578.5 million (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of $55.5 million was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of -$71.8 million was calculated as presented in Table 3.

Comparing Case 7 to Case 8, a net benefit of $5.542 billion (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of $1.819 billion was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of $767.8 million was calculated as presented in Table 3.

Comparing Case 9 to Case 10, a net benefit of $1.653 billion (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of $478.6 million was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of $109.6 million was calculated as presented in Table 3.

Comparing Case 11 to Case 12, a net benefit of $20.6 million (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of -$121.7 million was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of -$148.6 million was calculated as presented in Table 3.

Comparing Case 13 to Case 14, a net benefit of $3.397 billion (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of $1.160 billion was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of $486.8 million was calculated as presented in Table 3.

The nonproprietary spreadsheets used to calculate the loading costs for shipment offsite are contained on the set of 3.5 inch diskettes included as Attachment 1 to this letter.

Also included as Attachment 2 is an errata package that provides the necessary updates to Revision 2 of the Utility At-Reactor Spent Fuel Storage Costs For the Private Fuel Storage Facility Cost-Benefit Analysis, April 2000.

PFS considers these changes to be of a minor nature and inclusion of these changes does not affect the original conclusions of the cost-benefit analysis. The conclusions clearly show that under a range of various economic assumptions (discount rates), PFSF sizes, and repository opening dates that the PFSF provides a significant net benefit. The PFSF Environmental Report will be updated as required to include this information in the next amendment scheduled for issue in May 2000. If you have any questions regarding this response, please contact me at 303-741-7009.

Sincerely

J H Cooper

John L. Donnell for
Project Director
Private Fuel Storage L.L.C.

Enclosure

Copy to (with enclosure):
Mark Delligatti
Scott Flanders (including disks)
John Parkyn
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TABLE 1
AT-REACTOR SPENT FUEL STORAGE COST SUMMARY
(Millions of Constant 1999$)

	Comparisons of Costs for PFSF versus 2015 Repository Only Systems					
Cost Category	**Case 1 versus Case 3**		**Case 5 versus Case 6**		**Case 7 versus Case 8**	
PFSF Operation Date	Case 1 2002 PFSF 20,000 MTU	Case 3 No PFSF	Case 5 2002 PFSF 8,000 MTU	Case 6 No PFSF	Case 7 2002 PFSF 38,000 MTU	Case 8 No PFSF
Operating Reactor Storage	$ 373.0	$ 1,121.6	$ 87.4	$ 519.6	$ 1,144.2	$ 3,195.3
Shutdown Reactor Storage	$ 3,229.2	$ 7,635.8	$ 942.8	$ 2,124.4	$ 7,518.4	$ 13,587.8
Loading Costs for Shipment Offsite Includes DTS, as needed.	$ 351.0	$ 265.0	$ 118.0	$ 82.0	$ 687.0	$ 520.0
Total Utility At-Reactor Storage	$ 3,953.2	$ 9,022.4	$ 1,148.2	$ 2,726.0	$ 9,349.6	$ 17,303.1
PFSF At-Reactor Storage Benefit	$ 5,069.2		$ 1,577.8		$ 7,953.5	
PFS Facility Cost	$ 1,854.0		$ 999.3		$ 2,411.3	
Net Benefit	**$ 3,215.2**		**$ 578.5**		**$ 5,542.2**	

	Comparisons of Costs for PFSF versus 2010 Repository Only Systems					
Cost Category	**Case 9 versus Case 10**		**Case 11 versus Case 12**		**Case 13 versus Case 14**	
PFSF Operation Date	Case 9 2002 PFSF 16,000 MTU	Case 10 No PFSF	Case 11 2002 PFSF 6,600 MTU	Case 12 No PFSF	Case 13 2002 PFSF	Case 14 No PFSF 38,000 MTU]
Operating Reactor Storage	$ 364.4	$ 926.4	$ 87.4	$ 400.7	$ 1,132.0	$ 2,605.2
Shutdown Reactor Storage	$ 3,173.2	$ 6,186.8	$ 942.8	$ 1,678.4	$ 6,126.4	$ 10,586.8
Loading Costs for Shipment Offsite Includes DTS, as needed.	$ 352.0	$ 286.0	$ 118.0	$ 89.0	$ 688.0	$ 563.0
Total Utility At-Reactor Storage	$ 3,889.6	$ 7,399.2	$ 1,148.2	$ 2,168.1	$ 7,946.4	$ 13,755.0
PFSF At-Reactor Storage Benefit	$ 3,509.6		$ 1,019.9		$ 5,808.6	
PFS Facility Cost	$ 1,856.0		$ 999.3		$ 2,411.3	
Net Benefit	**$ 1,653.6**		**$ 20.6**		**$ 3,397.3**	

TABLE 2
AT-REACTOR SPENT FUEL STORAGE COST SUMMARY
(Millions of NPV 1999$ - 3.8% Real Interest Rate)

	Comparisons of Costs for PFSF versus 2015 Repository Only Systems					
Cost Category	**Case 1 versus Case 3**		**Case 5 versus Case 6**		**Case 7 versus Case 8**	
PFSF Operation Date	Case 1 2002 PFSF 20,000 MTU	Case 3 No PFSF	Case 5 2002 PFSF 8,000 MTU	Case 6 No PFSF	Case 7 2002 PFSF 38,000 MTU	Case 8 No PFSF
Operating Reactor Storage	$ 339.3	$ 851.8	$ 81.5	$ 360.7	$ 960.1	$ 2,280.0
Shutdown Reactor Storage	$ 2,001.1	$ 3,797.9	$ 503.3	$ 933.3	$ 3,354.6	$ 5,588.0
Loading Costs for Shipment Offsite Includes DTS, as needed.	$ 254.0	$ 110.0	$ 81.0	$ 32.0	$ 397.0	$ 198.0
Total Utility At-Reactor Storage	$ 2,594.4	$ 4,759.7	$ 665.8	$ 1,326.0	$ 4,711.7	$ 8,066.0
PFSF At-Reactor Storage Benefit	$ 2,165.3		$ 660.2		$ 3,354.3	
PFSF Facility Cost	$ 1,180.3		$ 604.7		$ 1,534.5	
Net Benefit	**$ 985.0**		**$ 55.5**		**$ 1,819.8**	

	Comparisons of Costs for PFSF versus 2010 Repository Only Systems					
Cost Category	**Case 9 versus Case 10**		**Case 11 versus Case 12**		**Case 13 versus Case 14**	
PFSF Operation Date	Case 9 2002 PFSF 16,000 MTU	Case 10 No PFSF	Case 11 2002 PFSF 6,600 MTU	Case 12 No PFSF	Case 13 2002 PFSF	Case 14 No PFSF 38,000 MTU]
Operating Reactor Storage	$ 332.3	$ 741.7	$ 81.5	$ 297.5	$ 952.9	$ 1,973.1
Shutdown Reactor Storage	$ 1,985.6	$ 3,358.6	$ 503.3	$ 811.5	$ 2,965.0	$ 4,807.9
Loading Costs for Shipment Offsite Includes DTS, as needed.	$ 256.0	$ 141.0	$ 81.0	$ 40.0	$ 421.0	$ 253.0
Total Utility At-Reactor Storage	$ 2,573.9	$ 4,241.3	$ 665.8	$ 1,149.0	$ 4,338.9	$ 7,034.0
PFSF At-Reactor Storage Benefit	$ 1,667.4		$ 483.2		$ 2,695.1	
PFSF Facility Cost	$ 1,188.8		$ 604.9		$ 1,534.4	
Net Benefit	**$ 478.6**		**$ (121.7)**		**$ 1,160.7**	

TABLE 3
AT-REACTOR SPENT FUEL STORAGE COST SUMMARY
(Millions of NPV 1999$ - 7.0% Real Interest Rate)

	Comparisons of Costs for PFSF versus 2015 Repository Only Systems					
Cost Category	**Case 1 versus Case 3**		**Case 5 versus Case 6**		**Case 7 versus Case 8**	
PFSF Operation Date	Case 1 2002 PFSF 20,000 MTU	Case 3 No PFSF	Case 5 2002 PFSF 8,000 MTU	Case 6 No PFSF	Case 7 2002 PFSF 38,000 MTU	Case 8 No PFSF
Operating Reactor Storage	$ 319.8	$ 705.6	$ 78.1	$ 279.6	$ 865.1	$ 1,814.6
Shutdown Reactor Storage	$ 1,505.9	$ 2,470.5	$ 346.6	$ 561.1	$ 2,063.9	$ 3,179.0
Loading Costs for Shipment Offsite Includes DTS, as needed.	$ 206.0	$ 56.0	$ 65.0	$ 15.0	$ 283.0	$ 95.0
Total Utility At-Reactor Storage	$ 2,031.7	$ 3,232.1	$ 489.7	$ 855.7	$ 3,212.0	$ 5,088.6
PFSF At-Reactor Storage Benefit	$ 1,200.4		$ 366.0		$ 1,876.6	
PFSF Facility Cost	$ 871.5		$ 437.8		$ 1,108.8	
Net Benefit	**$ 328.9**		**$ (71.8)**		**$ 767.8**	

	Comparisons of Costs for PFSF versus 2010 Repository Only Systems					
Cost Category	**Case 9 versus Case 10**		**Case 11 versus Case 12**		**Case 13 versus Case 14**	
PFSF Operation Date	Case 9 2002 PFSF 16,000 MTU	Case 10 No PFSF	Case 11 2002 PFSF 6,600 MTU	Case 12 No PFSF	Case 13 2002 PFSF	Case 14 No PFSF 38,000 MTU]
Operating Reactor Storage	$ 313.9	$ 635.8	$ 78.1	$ 241.3	$ 859.8	$ 1,632.0
Shutdown Reactor Storage	$ 1,500.8	$ 2,293.3	$ 346.6	$ 515.6	$ 1,914.9	$ 2,902.3
Loading Costs for Shipment Offsite Includes DTS, as needed.	$ 208.0	$ 84.0	$ 65.0	$ 22.0	$ 305.0	$ 141.0
Total Utility At-Reactor Storage	$ 2,022.7	$ 3,013.1	$ 489.7	$ 778.9	$ 3,079.7	$ 4,675.3
PFSF At-Reactor Storage Benefit	$ 990.4		$ 289.2		$ 1,595.6	
PFSF Facility Cost	$ 880.8		$ 437.8		$ 1,108.8	
Net Benefit	**$ 109.6**		**$ (148.6)**		**$ 486.8**	

ATTACHMENT 1

3.5 Inch Diskettes

Nonproprietary Spreadsheets Used To Calculate The Loading Costs For Shipment Offsite

(3 disks)

ATTACHMENT 2

Errata Package

Utility At-Reactor Spent Fuel Storage Costs For
The Private Fuel Storage Facility Cost-Benefit Analysis,.
Revision 2
April 2000

The following replacement pages for the main body of the report are included:
Pages 9, 27, 28, 29, 31, and 32 (total of 6 pages). Changes are denoted by side bar marking in the right margin.

As presented in *Letter #7* post-shutdown dry storage is more expensive than pool storage for the median reactor site – $209.9 million for dry storage compared to $144 million for pool storage. This is also true for a small site, $167.2 million for dry storage compared to $144 million for pool storage. The "Break Even" site size for which spent fuel pool storage would be approximately equal to the costs of dry storage was calculated to be approximately 230 MTU. These calculations are consistent with actions taken by recently shutdown reactors. Most currently shutdown reactors have a relatively small amount of spent fuel requiring storage and many have decided to transfer spent fuel to dry storage. In addition, because many of these sites shutdown prematurely, spent fuel will be stored at those sites for periods longer than the 18 years calculated for an average reactor operating for 40 years. Thus, while currently shutdown reactors may project that dry storage is the most cost-effective alternative for their spent fuel storage situations, this is not likely to be true for the typical reactor site that has multiple reactors, producing more than 900 MTU of spent fuel, and requiring a projected 18 years of post-shutdown spent fuel storage.

It should also be noted that the calculation does not reflect the time value of money which would result in even higher post-shutdown dry storage costs than pool storage costs since the upfront capital investment required for dry storage would not be discounted for as long a period as annual pool operating and maintenance costs.

2.3.3 Loading Costs for Shipment Offsite

The 1999 ERI Report included the loading costs for spent nuclear fuel placed into dry storage at reactor sites, but did not account for the loading costs for spent fuel for off-site shipment (whether to the PFSF or to DOE). Since the costs of loading spent fuel at reactor sites (fuel transfer, canister welding, dry transfer as needed) for off-site transport were not included in the PFSF cost analysis, these costs have been calculated and are summarized in this report.

The unit costs for loading spent fuel containers for shipment offsite used in this analysis are consistent with those used in the April 2000 ERI Report for loading spent fuel into dry storage either directly or using dry transfer systems (DTS). Loading cost assumptions for loading directly into canisters were assumed to be $43,232 per container or approximately $4,600 per MTU for BWR and PWR reactors that can handle 125 ton packages. Loading costs for loading spent fuel into 75 ton packages were assumed to be $37,184 per container or approximately $9,300 per MTU for BWR and PWR reactors. Loading costs for loading spent fuel into large containers via dry transfer were assumed to be approximately $250,432 per container or $26,641 per MTU for BWR and PWR reactors. These loading costs are consistent with the loading costs assumed for loading spent fuel into transportable dry storage containers for storage at reactor sites.

The addition of loading costs, discussed above, were discussed *Letter #7*, and *"EIS Commitment Resolution Letter #8, Docket 72-22/TAC No. L22462, Private Fuel Storage Facility, Private Fuel Storage LLC"*, dated March 9,2000, (Letter #8). These results have been incorporated into the results presented in Section 3.

Table 3.2 At-Reactor Spent Fuel Storage Cost Summary (Millions Constant 1999$)

	Comparisons of Costs for PFSF versus 2015 No Action Alternative Scenarios					
Cost Category	**Case 1 vs. Case 3**		**Case 5 vs. Case 6**		**Case 7 vs. Case 8**	
PFSF Operation Date	Case 1 2002 PFSF	Case 3 No PFSF	Case 5 2002 PFSF	Case 6 No PFSF	Case 7 2002 PFSF	Case 8 No PFSF
Operating Reactor Storage	$ 373.0	$ 1,121.6	$ 87.4	$ 519.6	$ 1,144.2	$ 3,195.3
Shutdown Reactor Storage	$ 3,229.2	$ 7,635.8	$ 942.8	$ 2,124,4	$ 7,518.4	$ 13,587.8
Loading Costs for Shipment Offsite	$ 351.0	$ 265.0	$ 118.0	82.0	$ 687.0	$ 520.0
Total Utility At-Reactor Storage Cost	$ 3,953.2	$ 9,022.4	$ 1,148.2	$ 2,726.0	$ 9,349.6	$ 17,303.1
PFSF At-Reactor Storage Benefit	$ 5,069.2		$ 1,577.8		$ 7,953.5	
	Comparisons of Costs for PFSF versus 2010 No Action Alternative Scenarios					
Cost Category	**Case 9 vs. Case 10**		**Case 11 vs. Case 12**		**Case 13 vs. Case 14**	
PFSF Operation Date	Case 9 2002 PFSF	Case 10 No PFSF	Case 11 2002 PFSF	Case 12 No PFSF	Case 13 2002 PFSF	Case 14 No PFSF
7Operating Reactor Storage	$ 364.4	$ 926.4	$ 87.4	$ 400.7	$ 1,132.0	$ 2,605.2
Shutdown Reactor Storage	$ 3,173.2	$ 6,186.8	$ 942.8	$ 1,678.4	$ 6,126.4	$ 10,586.8
Loading Costs for Shipment Offsite	$ 352.0	$ 286.0	$ 118.0	$ 89.0	$ 688.0	$ 563.0
Total Utility At-Reactor Storage Cost	$ 3,889.6	$ 7,399.2	$ 1,148.2	$ 2,168.1	$ 7,946.4	$ 13,755.0
PFSF At-Reactor Storage Benefit	$ 3,509.6		$ 1,019.9		$ 5,808.6	

Table 3.3 At-Reactor Spent Fuel Storage Cost Summary (Millions NPV 1999$ - 3.8% Real Interest Rate)

	Comparisons of Costs for PFSF versus 2015 No Action Alternative Scenarios					
Cost Category	**Case 1 vs. Case 3**		**Case 5 vs. Case 6**		**Case 7 vs. Case 8**	
PFSF Operation Date	Case 1 2002 PFSF	Case 3 No PFSF	Case 5 2002 PFSF	Case 6 No PFSF	Case 7 2002 PFSF	Case 8 No PFSF
Operating Reactor Storage	$ 339.3	$ 851.8	$ 81.5	$ 360.7	$ 960.1	$ 2,280.0
Shutdown Reactor Storage	$ 2,001.1	$ 3,797.9	$ 503.3	$ 933.3	$ 3,354.6	$ 5,588.0
Loading Costs For Shipment Offsite	$ 254.0	$ 110.0	$ 81.0	$ 32.0	$ 397.0	$ 198.0
Total Utility At-Reactor Storage Cost	$ 2,594.4	$ 4,759.7	$ 665.8	$ 1,326.0	$ 4,711.7	$ 8,066.0
PFSF At-Reactor Storage Benefit	$ 2,165.3		$ 660.2		$ 3,354.3	
	Comparisons of Costs for PFSF versus 2010 No Action Alternative Scenarios					
Cost Category	**Case 9 vs. Case 10**		**Case 11 vs. Case 12**		**Case 13 vs. Case 14**	
PFSF Operation Date	Case 9 2002 PFSF	Case 10 No PFSF	Case 11 2002 PFSF	Case 12 No PFSF	Case 13 2002 PFSF	Case 14 No PFSF
Operating Reactor Storage	$ 332.3	$ 741.7	$ 81.5	$ 297.5	$ 952.9	$ 1,973.1
Shutdown Reactor Storage	$ 1,985.6	$ 3,358.6	$ 503.3	$ 811.5	$ 2,965.0	$ 4,807.9
Loading Costs For Shipment Offsite	$ 256.0	$ 141.0	$ 81.0	$ 40.0	$ 421.0	$ 253.0
Total Utility At-Reactor Storage Cost	$ 2,573.9	$ 4,241.3	$ 665.8	$ 1,149.0	$ 4,338.9	$ 7,034.0
PFSF At-Reactor Storage Benefit	$ 1,667.4		$ 483.2		$ 2,695.1	

Table 3.4 At-Reactor Spent Fuel Storage Cost Summary (Millions NPV 1999$ - 7.0% Real Discount Rate)

	Comparisons of Costs for PFSF versus 2015 No Action Alternative Scenarios					
Cost Category	**Case 1 vs. Case 3**		**Case 5 vs. Case 6**		**Case 7 vs. Case 8**	
PFSF Operation Date	Case 1 2002 PFSF	Case 3 No PFSF	Case 5 2002 PFSF	Case 6 No PFSF	Case 7 2002 PFSF	Case 8 No PFSF
Operating Reactor Storage	$ 319.8	$ 705.6	$ 78.1	$ 279.6	$ 865.1	$ 1,814.6
Shutdown Reactor Storage	$ 1,505.9	$ 2,470.5	$ 346.6	$ 561.1	$2,063.9	$ 3,179.0
Loading Costs for Shipment Offsite	$ 206.0	$ 56.0	$ 65.0	$ 15.0	$ 283.0	$ 95.0
Total Utility At-Reactor Storage Cost	$ 2,031.7	$ 3,232.1	$ 489.7	$ 855.7	$ 3,212.0	$ 5,088.6
PFSF At-Reactor Storage Benefit	$ 1,200.4		$ 366.0		$ 1,876.6	
	Comparisons of Costs for PFSF versus 2010 No Action Alternative Scenarios					
Cost Category	**Case 9 vs. Case 10**		**Case 11 vs. Case 12**		**Case 13 vs. Case 14**	
PFSF Operation Date	Case 9 2002 PFSF	Case 10 No PFSF	Case 11 2002 PFSF	Case 12 No PFSF	Case 13 2002 PFSF	Case 14 No PFSF
Operating Reactor Storage	$ 313.9	$ 635.8	$ 78.1	$ 241.3	$ 859.8	$ 1,632.0
Shutdown Reactor Storage	$ 1,500.8	$ 2,293.3	$ 346.6	$ 515.6	$ 1,914.9	$ 2,902.3
Loading Costs for Shipment Offsite	$ 208.0	$ 84.0	$ 65.0	$ 22.0	$ 305.0	$ 141.0
Total Utility At-Reactor Storage Cost	$ 2,022.7	$ 3,013.1	$ 489.7	$ 778.9	$ 3,079.7	$ 4,675.3
PFSF At-Reactor Storage Benefit	$ 990.4		$ 289.2		$ 1,595.6	

based on PFS' customers providing schedules to PFS for pickup of spent fuel from their sites. These individual customer schedules could then be coordinated into an overall master schedule for shipments. Schedules could take into account utility outage schedules, PFSF capacity, utility requested shipments, etc. The use of multi-year schedules could ensure that sufficient flexibility is built into the system such that utilities achieve the benefits associated with shipment of spent fuel to the PFS.

3.4 Comparison of Results

The base case analyses presented (Case 1 through Case 8) assume that a geologic repository will not be operational until 2015. The rationale for the selection of a 2015 repository date is discussed in Section 2.4.3. A comparison of the results presented in Table 3.2 through 3.4 between the 2015 Repository scenarios (Case 1 – Case 8) and the 2010 Repository scenarios (Case 9 – 14) is provided below.

Case 1/Case 3 and Case 9/Case 10

In comparing Case 1/Case 3 to Case 9/Case 10 on Table 3.2, it is evident that the *Total Utility At-Reactor Storage Cost* at reactor sites for the 2002 PFSF Cases (Case 1 and Case 9) are approximately the same -- $3.953 billion (Constant 1999$) for Case 1 compared to $3.889 billion (Constant 1999$) for Case 9. The difference in the *PSFS At-Reactor Storage Benefit* therefore is attributed to the higher *Total Utility At-Reactor Storage Cost* associated with the 2015 No Action Alternative ($9.022 billion for Case 3) compared to the 2010 No Action Alternative ($7.399 billion for Case 10). This higher cost is due to the fact that under a 2015 No Action Alternative spent fuel acceptance begins 5 years later than in a 2010 No Action Alternative scenario, resulting in higher costs to store spent fuel at the 51 reactors evaluated.

As presented in Table 3.3 for a 3.8% NPV case, the *PFSF At-Reactor Storage Benefit* was calculated to be $2.165 billion (Case 1/Case 3) compared to $1.667 billion (Case 9/Case 10).

As presented in Table 3.4 for a 7.0% NPV case, the *PFSF At-Reactor Storage Benefit* was calculated to be $1.200 billion (Case 1/Case 3) compared to $0.990 billion (Case 9/Case 10).

Case 5/Case 6 and Case 11/Case 12

In comparing Case 5/Case 6 to Case 11/Case 12 on Table 3.2, it is evident that the *Total Utility At-Reactor Storage Cost* at reactor sites for the 2002 PFSF Cases (Case 5 and Case 11) are the same -- $1.148 billion (Constant 1999$) for both cases. The difference in the *PSFS At-Reactor Storage Benefit* therefore is attributed to the higher *Total Utility At-Reactor Storage Cost* associated with the 2015 No Action Alternative ($2.726 billion for Case 6) compared to the 2010 No Action Alternative ($2.168 billion for Case 12). This higher cost is due to the fact that under a 2015 No Action Alternative spent fuel acceptance

begins 5 years later than in a 2010 No Action Alternative scenario, resulting in higher costs to store spent fuel at the 19 reactors evaluated.

As presented in Table 3.3 for a 3.8% NPV case, the *PFSF At-Reactor Storage Benefit* was calculated to be $660.2 million (Case 5/Case 6) compared to $483.2 million (Case 11/Case 12).

As presented in Table 3.4 for a 7.0% NPV case, the *PFSF At-Reactor Storage Benefit* was calculated to be $366.0 million (Case 5/Case 6) compared to $289.2 million (Case 11/Case 12).

Case 7/Case 8 and Case 13/Case 14

In comparing Case 7/Case 8 to Case 13/Case 14 on Table 3.2, the *Total Utility At-Reactor Storage Cost* at reactor sites for the 2002 PFSF Cases (Case 7 and Case 13) are approximately of the same order of magnitude -- $9.349 billion (Constant 1999$) for Case 7 and $7.946 billion (Constant 1999$) for Case 13. Under Case 7 and Case 13, the analysis assumes that all reactors ship some spent fuel to the PFSF but that a large quantity of spent fuel is shipped directly to the DOE repository. In the 2015 scenario (Case 7), the shipments to DOE take place five years later than in the 2010 scenario (Case 13) resulting in higher post-shutdown spent fuel storage costs for Case 7. Note that the Operating Reactor Storage costs for the two cases are similar -- $1.144 billion for Case 7 compared to $1.132 billion for Case 13. Hence the early shipments to the PFSF provided a similar benefit to operating reactors in both Case 7 and Case 13, but the post-shutdown spent fuel storage cost is lower for the overall system in Case 13 (2010 Repository) due to the fact that shipments made directly to the repository occur earlier than in Case 7 (2015 Repository).

As presented in Table 3.3 for a 3.8% NPV case, the *PFSF At-Reactor Storage Benefit* was calculated to be $3.354 billion (Case 7/Case 8) compared to $2.695 billion (Case 13/Case 14).

As presented in Table 3.4 for a 7.0% NPV case, the *PFSF At-Reactor Storage Benefit* was calculated to be $1.876 billion (Case 7/Case 8) compared to $1.595 billion (Case 13/Case 14).

U.S. Nuclear Regulatory Commission
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April 28, 2000

EIS COMMITMENT RESOLUTION LETTER #10
DOCKET NO. 72-22 / TAC NO. L22462
PRIVATE FUEL STORAGE FACILITY
PRIVATE FUEL STORAGE L.L.C.

References:
1. PFS letter, Donnell to U.S. NRC, EIS Commitment Resolution Letter #7, dated February 25, 2000
2. PFS letter, Donnell to U.S. NRC, EIS Commitment Resolution Letter #8, dated March 9, 2000
3. PFS letter, Donnell to U.S. NRC, Submittal of Revised Cost-Benefit Analysis dated April 14, 2000
4. April 26, 2000 telephone call between the NRC, Private Fuel Storage (PFS), and Stone and Webster (S&W)

During the above referenced telephone call (Reference 4) the NRC requested additional clarification regarding the Private Fuel Storage Facility (PFSF) cost benefit analysis. The NRC request is documented below along with the PFS response.

NRC Requests/Questions

In the PFS cost benefit analysis it appears that PFS has used a common value for PWR and BWR fuel loading costs for fuel shipments to DOE. For fuel shipments to the PFSF, PFS has used distinct values for PWR and BWR fuel loading costs. PFS should explain this apparent inconsistency and any impacts it has on the cost benefit analysis.

PFS Response

Loading costs for the shipment of spent nuclear fuel for off-site transport were calculated as discussed in EIS Commitment Resolution Letter #7 (Reference 1), EIS Commitment Resolution Letter #8 (Reference 2), and *Utility At-Reactor Spent Fuel Storage Costs For the Private Fuel Storage Facility Cost Benefit Analysis, Revision 2,* (April 2000 ERI

Report, Reference 3). A minor discrepancy was found between the costs used to calculate the fuel loading costs for shipment offsite and the unit costs used for calculating fuel loading costs for at-reactor dry storage.

In order to correct the discrepancy, the loading costs for shipment of spent fuel offsite were recalculated as summarized in this letter. The unit costs for shipment offsite used in this analysis are consistent with those used in the April 2000 ERI Report for loading spent fuel into dry storage either directly or using dry transfer systems (DTS). Loading cost assumptions for loading directly into canisters were assumed to be $43,232 per container or approximately $4,600 per MTU for BWR and PWR reactors that can handle 125 ton packages. Loading costs for loading spent fuel into 75 ton packages were assumed to be $37,184 per container or approximately $9,300 per MTU for BWR and PWR reactors. Loading costs for loading spent fuel into large containers via dry transfer were assumed to be approximately $250,432 per container or $26,641 per MTU for BWR and PWR reactors.

The revised loading costs have been calculated and are summarized in the attached Table 1 through 3, in constant 1999$, and using net present value (NPV) rates – 3.8% and 7.0%, respectively. Tables 1 through 3 also provide a summary of Net Benefits consistent with the summary costs provided in Reference 1 and Reference 2.

The end result is that there is a net benefit associated with Case 1 compared to Case 3. A net benefit of $3.215 billion (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of $985.0 million was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of $328.9 million was calculated as presented in Table 3.

Comparing Case 5 to Case 6, a net benefit of $578.5 million (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of $55.5 million was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of -$71.8 million was calculated as presented in Table 3.

Comparing Case 7 to Case 8, a net benefit of $5.542 billion (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of $1.819 billion was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of $767.8 million was calculated as presented in Table 3.

Comparing Case 9 to Case 10, a net benefit of $1.653 billion (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of $478.6 million was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of $109.6 million was calculated as presented in Table 3.

Comparing Case 11 to Case 12, a net benefit of $20.6 million (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of -

$121.7 million was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of -$148.6 million was calculated as presented in Table 3.

Comparing Case 13 to Case 14, a net benefit of $3.397 billion (constant 1999$) was calculated as presented in Table 1. Assuming a NPV rate of 3.8%, a net benefit of $1.160 billion was calculated as presented in Table 2. Assuming a NPV rate of 7.0%, a net benefit of $486.8 million was calculated as presented in Table 3.

The nonproprietary spreadsheets used to calculate the loading costs for shipment offsite are contained on the set of 3.5 inch diskettes included as Attachment 1 to this letter.

Also included as Attachment 2 is an errata package that provides the necessary updates to Revision 2 of the Utility At-Reactor Spent Fuel Storage Costs For the Private Fuel Storage Facility Cost-Benefit Analysis, April 2000.

PFS considers these changes to be of a minor nature and inclusion of these changes does not affect the original conclusions of the cost-benefit analysis. The PFSF Environmental Report will be updated as required to include this information in the next amendment scheduled for issue in May 2000. If you have any questions regarding this response, please contact me at 303-741-7009.

Sincerely

John L. Donnell
Project Director
Private Fuel Storage L.L.C.

Enclosure

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