



Private Fuel Storage, L.L.C.

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EIS COMMITMENT RESOLUTION LETTER #7
DOCKET NO. 72-22 / TAC NO. L22462
PRIVATE FUEL STORAGE FACILITY
PRIVATE FUEL STORAGE L.L.C.

- References:
1. February 10, 2000 telephone call between the NRC and S&W
 2. February 16, 2000 telephone call between the NRC, PFS, and S&W
 3. February 17, 2000 telephone call between the NRC and S&W
 4. PFS Letter, Donnell to U.S. NRC, EIS Commitment Resolution Letter #5, dated February 15, 2000.
 5. PFS Letter, Donnell to U.S. NRC, EIS Commitment Resolution Letter #2, dated November 19, 1999.
 6. PFS Letter, Donnell to U.S. NRC, EIS Commitment Resolution Letter #3 - Proprietary, dated November 19, 1999.

During the above referenced telephone calls, between the NRC and Stone and Webster (S&W), the NRC requested clarification/additional information regarding several topics discussed in the PFS Environmental Report (ER). The NRC requests/questions are documented below along with the PFS response.

NRC Requests/Questions

1. PFS needs to provide the basis for the assumption that 5% by weight of water is sufficient to add to the soil for soil compaction and 7% by weight is sufficient to use for dust control purposes.

RESPONSE

WATER REQUIREMENTS FOR SOIL COMPACTION

Estimates of water requirements were developed assuming that an additional 5% moisture will be required for soil compaction. This is assumed to be a conservatively

NMSSO (Publ)

high estimate of the moisture that will actually be required during construction, based on the results of natural water content determinations made on samples obtained from the top 6 ft of the profile at the site.

The near-surface soils at the site consist of eolian silt overlying silty clay/clayey silt, as shown in SAR Figures 2.6-5. The optimum moisture content for compaction of such soils ranges from ~12% to 20% (Monahan, 1986, USBR, 1968). The lower end of this range is applicable for Modified Proctor compaction tests and the upper end is applicable for Standard Proctor tests. Natural water content tests performed on 16 different samples obtained within the top 6 ft of the site in the pad emplacement area indicate the in situ water content for these soils varies from a low of 8.9% to as high as 53%, with the average value of ~35%. In the Canister Transfer Building area, natural water contents of the near-surface soils (22 samples from depths < 6 ft deep) ranged from 18.7% to 85.5%, with an average value of 39.5%.

Geotechnical data have not been obtained to date for the Low rail line corridor, but based on geologic maps of the area, the near-surface soils along the southern portion of the corridor are expected to be lacustrine soils that are similar to the on-site soils. The near-surface soils along the northern end of the corridor, which skirts the eastern flank of the Cedar Mountains, are expected to be alluvial soils. These are likely to be more granular than the site soils; i.e., silty sands and clean sands and gravels. Optimum moisture content for compaction of such soils is expected to be in the range of 7.5% to 12%, but their in situ water contents may be lower than those applicable for the on-site soils.

Some drying of these soils is expected to occur during excavation and placement in this arid environment. However, due to the relatively high in situ water contents measured for the on-site soils, it is expected that little additional water will be required to be added to these soils to compact them to within ~2% of the optimum moisture content.

Therefore the assumption that 5% by weight of water is sufficient to add to the soil for soil compaction should be a conservative average to use for estimating water quantities.

Note: The percent moisture content discussed above is determined by dividing the weight of water by the weight of dry soil.

References: Monahan, E. J., Construction of and on Compacted Fills, J. Wiley & Sons, New York, NY, 1986.
USBR, Earth Manual, US Bureau of Reclamation, Denver, CO, 1968.

WATER REQUIREMENTS FOR DUST CONTROL

Water requirements for dust control were based on engineering judgement and experience on other construction projects requiring dust control. For comparison purposes water quantities previously calculated for construction at the PFSF site are

listed below in gallons per cubic yard of earthwork:

Dust Control 5,221,495 gal/230,609 CY = 22.6 gal/CY

Soil Compaction 2,387,733 gal/147,637 CY = 16.2 gal/CY

Total = 38.8 gal/CY

PFS has checked with construction personnel working on a railroad construction project in Texas to determine their experience with water consumption for dust control and soil compaction. This project reported an approximate consumption rate of 40 gal/CY for both dust control and soil compaction. Additionally we checked with a reservoir and pipeline project in Nevada. The Nevada project reported water consumption rates of approximately 11.7 gal/CY to 17.5 gal/CY for dust control. Water consumption rates for both of these projects compare favorably to the consumption rates calculated for the PFSF.

No update to the ER is required.

2. In the discussion provided in ER Chapter 4, Section 4.5, concerning water suitable for construction from private sources within 15 miles of Timpie and Low, Utah, it is not clear whether quantities of water of this magnitude have historically been provided for other projects in the region. PFS needs to provide further clarification regarding this issue.

RESPONSE – As stated in Reference 5, PFS provided one reputable contractor in Tooele County pertinent information on water needs for construction of the PFSF, the ITP, and the Low Corridor, and asked if existing water sources in Northern Skull Valley could supply these needs. This contractor, who has an extensive work history on large construction projects in the Utah West Desert similar to the PFS project, has stated that sufficient quantity and quality of water is available in the North end of the Stansbury Mountain range to supply the needs for construction of the PFSF, and the Low Corridor rail line or the Intermodal Transfer Point (ITP). While this contractor is not the only one in the area with relevant work experience, the specific statements illustrate that, based on historical experience, sufficient water exists in the area to meet projected demands.

PFS has no additional information regarding whether quantities of water of this magnitude have historically been provided for other projects in the region.

No update to the ER is required.

3. PFS should provide a discussion on the availability and source of construction materials (sand, gravel, crushed stone, structural and common fill) for the Wyoming site.

RESPONSE – PFS does not have detailed information on construction material availability for the Wyoming site. However, recent inquiries have been made to determine general information on availability and quantities of such materials. We assumed that construction material requirements (types and quantities) for the Wyoming site development are similar to those required for the Utah site, with the exceptions that no major rail line nor Intermodal Transfer Point construction is required at the Wyoming site.

At the present time, there are no active, commercial sources of sand, gravel, crushed stone, structural and common fill in the immediate vicinity of Shoshoni, WY. The closest sources of these materials are approximately 26 to 28 miles southwest of the site at the City of Riverton, where numerous suppliers were identified. Several were contacted, and they stated that they would have no difficulty providing the quantities and range of materials needed for this project. The haul distance was of no concern to any of the suppliers contacted.

Development of local sources closer to the site is also considered to be possible. Several inactive pits/quarries are known to exist along the banks of Lake Boysen and the Wind River, a few miles north and west of Shoshoni (Harris et al., 1985). The Highway Department presently operates a pit in Shoshoni, which indicates that additional potential for development of a sand and gravel source may exist in the vicinity of the site.

Reference: Harris, R.E., W.D. Hausel, and J.E. Meyer, 1985. *Metallic and industrial minerals map of Wyoming: Geological Survey of Wyoming Map Series 14, scale 1:500,000.*

The ER will be updated to include the above information.

4. It appears that the spreadsheet (submitted with Reference 6) used to calculate the costs of dry storage at reactor sites always uses the cost for BWR storage systems regardless of the type of reactor (BWR or PWR). Please evaluate this discrepancy and advise of the impact, if any, on the PFS cost benefit analysis.

RESPONSE – A minor error exists in the spreadsheets used to calculate the costs of dry storage at reactor sites to support the results of the November 1999 ERI Report (ERI-2025-9901), *“Utility At Reactor Spent Fuel Storage Costs for the Private Fuel Storage Facility Cost Benefit Analysis, Revision 1.”* The formula was to look to a specific column to determine if a particular reactor is a BWR or a PWR and then was to use a specific

cost for BWR or PWR storage systems. The formula was not "anchored" to the specific column and therefore always assumed that the costs were based on the BWR cost numbers, which were the higher of the two cost numbers presented.

Because the canister costs used by ERI in its analysis for both PWR and BWR systems were conservative compared to the current market costs that individual utilities would pay for canisters, the results of the ERI study remain valid using solely the BWR unit costs for the calculation of utility dry storage costs. This is demonstrated in the enclosed Table 1.

In the comparison of unit costs to current market costs provided in Table 1, ERI changed only the cost for dual purpose canisters to reflect current market costs. Other costs remain consistent with the PWR unit costs identified in Table 1. As demonstrated in Table 1, the Current Market Costs of \$95,230 per MTU are higher than both the PWR and BWR unit costs used in the November 1999 ERI Report. Thus, the use of the somewhat higher BWR unit costs, \$93,737 per MTU, for the PWR unit costs are conservative compared to current market costs and therefore the results of the November 1999 ERI Report remain valid.

It should be noted that the source for the canister costs identified under Current Market Costs is Attachment C, to the EIS Commitment Resolution Letter # 4, January 26, 2000. Attachment C, *James P. Malone Expert Witness Report*, identified cask/canister system costs of \$720,000. If one assumes that the concrete overpack cost remains at \$196,000 per unit, this results in canister costs of \$524,000 as identified in Table 1.

No update to the ER is required.

5. Please provide a calculation to demonstrate the assumption that pool storage would be less expensive than dry storage for post-shutdown spent fuel storage. Provide a calculation for a median site and show the size of a site in which the costs for dry storage or pool storage would be approximately equivalent.

RESPONSE - ERI has previously stated (Reference 4) that it would be reasonable to conclude that the combined capital and operating costs associated with removing spent fuel from pool storage to dry storage following reactor shutdown for decommissioning would be greater than or equal to the cost of continued pool storage. This is due to several factors including the large capital expenditures required to construct a dry storage facility and to purchase casks for the entire spent fuel inventory and the added costs associated with loading storage casks.

A calculation is provided in the enclosed Table 2 to demonstrate the above conclusion that dry storage is more expensive than pool storage for post-shutdown

spent fuel pool storage at a typical reactor site. NRC asked that the costs be provided for a median site size. Since most reactor sites are multi-unit sites, the median reactor site would contain approximately 965 MTU of spent fuel after 40 years of reactor operation. This is consistent with the November 1999 ERI Report's estimate of amounts of spent fuel generated at reactor sites. Two additional ISFSI site sizes are provided for comparison purposes. One is a small site storing 500 MTU of spent fuel and the other is a "Break Even" site storing approximately 230 MTU of spent fuel. The amount of spent fuel at the "Break Even" site was determined by calculating the dry storage facility capacity and associated capital costs that, when combined with ISFSI fixed and Operating and Maintenance costs, would be approximately equal to the costs of post-shutdown pool storage. The average number of years of post-shutdown spent fuel storage is consistent with the No Action Alternative – 2015 Repository scenarios from the November 1999 ERI Report. Spent fuel must be stored for an average of 18 years following reactor shutdown for decommissioning until all spent fuel has been removed from the reactor site by DOE.

As presented in Table 2, 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 these 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.

The ER will be updated as required to include the above information.

6. PFS should explain the difference between the cost of canisters and overpacks used in the PFS Business Plan and the ERI study of onsite costs, and the impact of the difference on the net benefit of using the PFS facility for interim storage.

RESPONSE - The original Environmental Report filed with the 1997 PFS License Application used a unit cost (ref: PFS Business Plan - in 1997 dollars) of \$248,000 for the canister and \$105,000 for the overpack, resulting in a package cost of \$353,000. All subsequent submittals to the NRC, beginning with the February, 1999 RAI, used an updated PFS cost model which included more recent and more accurate estimates for canister and overpack costs. The new PFS cost model uses unit costs (in 1998 dollars) of \$325,550 for the canisters and \$148,200 for the overpacks, for an overall package cost of \$473,750. The most recent costs are based on a memorandum from HOLTEC, Intl. with proposed pricing for a lot of 100 packages.

The ERI study of onsite costs used a unit cost of \$483,000 for the canisters and \$196,000 for the overpacks, resulting in an overall package cost of \$679,000. This results in a difference between the two models of $\$679,000 - \$473,750 = \$205,250$ per package, or a 30% difference between the PFS and ERI cost studies. The difference can be explained by the larger lots (100 or more) being purchased by PFS, while utilities typically order casks in lots of approximately five at a time. Because PFS is expected to order large quantities of packages, the cask vendors will have lower unit mobilization costs per order and will have many more systems in which to recover their substantial R&D and certification costs.

No update to the ER is required.

7. PFS needs to account for the loading costs of spent fuel at reactor sites for shipment of spent fuel to PFSF.

RESPONSE - The November 1999 ERI Report included the loading costs for spent nuclear fuel placed into dry storage at reactor sites. The November 1999 ERI Report 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 the enclosed Table 3, 4, and 5, in constant 1999\$, and using two net present value (NPV) rates - 3.8% and 7.0%, respectively. Tables 3 through 5 are consistent with the summary costs provided in response to EIS RAI No. 2, Question 5-1, for Case 1 and Case 3, with the addition of costs for "Loading for Shipment Off-Site, Includes DTS, as needed".

The unit costs for loading spent fuel containers used in this analysis are consistent with those used in the November 1999 ERI Report for shipment offsite either directly or using

dry transfer systems (DTS). Loading costs for loading directly into canisters were assumed to be \$43,232 per container or approximately \$4,600 per MTU for reactors (PWRs and BWRs) that can handle 125 ton packages; and \$37,184 per container or \$7,745 per MTU (PWRs) and \$39,984 per container or \$9,300 per MTU (BWRs) for reactors that can handle 75 ton packages. Loading costs for loading spent fuel into large containers via dry transfer were assumed to be approximately \$115,584 per container or \$12,040 per MTU for PWRs and \$250,432 per container or \$26,641 per MTU for BWRs.

It should be noted that the same amount of spent fuel would be loaded into containers for shipment offsite in both the Case 1, 2002 PFSF scenario and Case 3, No Action 2015 Repository scenario. In Case 3, approximately 5,126 MTU had been loaded into dual purpose canisters for at-reactor dry storage and the loading and transfer costs were accounted for in the November 1999 ERI Report. Thus, additional loading costs were calculated for 23,886 MTU. In Case 1, approximately 334 MTU had been loaded into dual purpose canisters for at-reactor storage. Thus, additional loading costs were calculated for 28,678 MTU. DTS costs not included in the November 1999 ERI report (for shutdown reactor sites or sites that did not require at-reactor dry storage) were included in the calculation summarized in Tables 3 through 5.

As presented in Table 3, loading costs for shipment of spent fuel off-site for Case 1, the 2002 PFSF scenario, are approximately \$295.4 million (constant 1999\$). This compares to loading costs of \$215.6 million (constant 1999\$) for Case 3, the No Action 2015 repository scenario. The loading costs are somewhat lower for Case 3 since more spent fuel was loaded into dual purpose canisters for at-reactor storage and the loading and transfer costs for this spent fuel were already accounted for in the November 1999 ERI Report.

Table 4 presents the loading costs for Case 1 and Case 3 assuming a 3.8% real interest rate. This results in loading costs for Case 1 of \$216.8 million (3.8% NPV) and for Case 3 of \$90.7 million (3.8% NPV). Since the loading costs for Case 3 occur later in time than those for Case 1, the effect of discounting is greater for Case 3.

Table 5 presents the loading costs for Case 1 and Case 3 assuming a 7.0% real interest rate. This results in loading costs for Case 1 of \$177.7 million (7.0% NPV) and for Case 3 of \$47.1 million (7.0% NPV). Since the loading costs for Case 3 occur later in time than those for Case 1, the effect of discounting is greater for Case 3.

The end result is that there is a net benefit associated with Case 1 compared to Case 3, including the additional costs associated with loading spent fuel into packages for shipment off site. A net benefit of \$2.833 billion (constant 1999\$) was calculated as presented in Table 3. Assuming a NPV rate of 3.8%, a net benefit of \$743.1 million was calculated as presented in Table 4. Assuming a NPV rate of 7.0%, a net benefit of \$151

million was calculated as presented in Table 5. The spreadsheets used to calculate the loading costs presented in Tables 3 through 5 are provided as attachments A and B.

The ER will be updated as required to include the above information.

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

Copy to (with enclosure):

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Table 1

Comparison of November 1999 ERI Report to Current Market Costs
(Constant 1999 \$)

Comparison of November 1999 ERI Report to Current Market Costs			
	November 1999 ERI Report		Current PWR Market Costs
	Unit Costs PWR	Unit Costs BWR	
Canister	396,480	483,840	524,000
Overpack	196,000	196,000	196,000
Loading	36,176	43,232	36,176
Consumable	33,600	33,600	33,600
Decommissioning	52,192	52,192	52,192
Incremental Pad	64,960	64,960	64,960
Unloading	7,280	7,280	7,280
Total	786,688	881,104	914,208
Unit Costs \$/MTU	81,952	93,737	95,230

Table 2

Comparison of Costs for Post Shutdown Dry Storage and Post Shutdown Pool Storage (Millions constant 1999 \$)

Comparison of Costs for Post Shutdown Dry Storage and Post Shutdown Pool Storage						
	Median Site (Multiple Reactors)		Small Site (Single Reactor)		Break Even Site Size	
MTU	965		500		230	
# Cask/Canister Systems	97		50		23	
Average Years Post Shutdown Storage	18		18		18	
	Post Shutdown Dry Storage Costs Nov-99 ERI Report	Post Shutdown Pool Storage Nov-99 ERI Report	Post Shutdown Dry Storage Costs Nov-99 ERI Report	Post Shutdown Pool Storage Nov-99 ERI Report	Post Shutdown Dry Storage Costs Nov-99 ERI Report	Post Shutdown Pool Storage Nov-99 ERI Report
Upfront Costs						
Fixed	9.2	0	9.2	0	9.2	0
Incremental Storage Pad	6.3	0	3.2	0	1.5	0
Total Upfront	15.5	0	12.4	0	10.7	0
Post Shutdown Cask Handling	2	0	2	0	2	0
Storage System/Loading						
Cask/Canister Systems	65.9	0	34.0	0	15.6	0
Loading & Consumables	7.5	0	3.8	0	1.8	0
Unloading	0.7	0	0.4	0	0.2	0
ISFSI Decommissioning	6.3	0	2.6	0	1.2	0
10 Years of Pool Storage	80		80		80	
8 Years of Dry Storage	32		32		32	
18 Years of Pool Storage		144		144		144
Total Post Shutdown Storage Costs	209.9	144.0	167.2	144.0	143.5	144.0

Table 3

**At-Reactor Spent Fuel Storage Cost Summary
(Millions Constant 1999\$)**

Comparisons of Costs for PFSF versus 2015 Repository Only Systems

Cost Category	Case 1 versus Case 3	
	Case 1 2002 PFSF	Case 3 No PFSF
PFSF Operation Date		
Operating Reactor Storage	\$ 381.4	\$ 1,121.6
Shutdown Reactor Storage	\$ 3,609.4	\$ 7,635.8
Loading for Shipment Off-Site Includes DTS, as needed	\$ 295.4	\$ 215.6
Total Utility At-Reactor Storage	\$ 4,286.2	\$ 8,973.0
PFSF At-Reactor Storage Benefit	\$ 4,686.8	
PFS Facility Cost	\$ 1,854.0	
Net Benefit	\$ 2,832.8	

Table 4

At-Reactor Spent Fuel Storage Cost Summary (Millions 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 1 2002 PFSF	Case 3 No PFSF
PFSF Operation Date		
Operating Reactor Storage	\$ 346.9	\$ 851.8
Shutdown Reactor Storage	\$ 2,253.3	\$ 3,797.9
Loading for Shipment Off-Site Includes DTS, as needed	\$ 216.8	\$ 90.7
Total Utility At-Reactor Storage	\$ 2,817.0	\$ 4,740.4
PFSF At-Reactor Storage Benefit	\$ 1,923.4	
PFSF Facility Cost	\$ 1,180.3	
Net Benefit	\$ 743.1	

Table 5

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

Comparisons of Costs for PFSF versus 2015 Repository Only Systems

Cost Category	Case 1 versus Case 3	
	Case 1 2002 PFSF	Case 3 No PFSF
Operating Reactor Storage	\$ 326.8	\$ 705.6
Shutdown Reactor Storage	\$ 1,696.2	\$ 2,470.5
Loading for Shipment Off-Site Includes DTS, as needed	\$ 177.7	\$ 47.1
Total Utility At-Reactor Storage	\$ 2,200.7	\$ 3,223.2
PFSF At-Reactor Storage Benefit	\$ 1,022.5	
PFSF Facility Cost	\$ 871.5	
Net Benefit	\$ 151.0	

ATTACHMENT A

LOADING COSTS FOR SHIPMENT TO PFS

CASE 1

TR TYP	PLANT NAME	UTIL	2002	2003	2004	2005	2006	2007	2008	2009	2010
CASE 1: PFSF 2002 2015, 20K,40 yr,Case 1											
T	BIG ROCK 1	BWR	215,792	93,244	223,784	122,549	151,854	218,456	143,861	71,931	71,931
	125 CALVERT CLF 2	PWR	16,100	316,480	438,380	606,280	612,260	0	465,980	305,900	147,200
	125 CALVERT CLF DS	PWR	41,860	244,720	46,460	7,360	0	0	0	0	0
	125 CLINTON 1	BWR	0	0	0	0	142,140	182,620	287,960	155,940	153,180
	125 COOK 2	PWR	131,100	549,240	747,500	548,780	466,440	467,820	483,460	310,500	163,760
	75 COOPER STN	BWR	0	0	0	0	313,410	744,930	318,060	0	265,980
T	CRYSTAL RVR 3	PWR	0	569,492	701,932	362,404	497,252	406,952	831,964	352,772	22,876
	125 DRESDEN 1	BWR	103,500	216,200	0	0	0	0	0	0	0
	125 DRESDEN 2	BWR	323,840	312,800	384,100	163,760	301,760	133,860	165,140	0	127,420
	125 DRESDEN 3	BWR	391,460	333,500	321,080	171,580	136,160	281,060	140,300	160,540	0
	125 DUANE ARNOLD	BWR	134,780	179,860	179,860	101,200	208,380	173,420	129,720	67,620	90,620
	125 FARLEY 1	PWR	0	97,060	310,960	293,480	279,680	292,100	245,180	117,760	71,760
	125 FARLEY 2	PWR	0	0	109,480	419,980	275,080	121,440	258,060	119,600	117,760
	125 FITZPATRICK	BWR	118,680	255,300	330,280	158,240	319,240	250,240	168,820	0	144,440
T	FORT CALHOUN	PWR	266,084	602,000	263,676	388,892	380,464	392,504	174,580	214,312	207,088
T	GINNA	PWR	927,080	552,636	223,944	422,604	438,256	284,144	415,380	168,560	164,948
T	HADDAM NECK	PWR	1,153,432	758,520	506,884	539,392	262,472	528,556	263,676	995,708	0
	125 HATCH 2	BWR	3,680	182,620	464,600	753,480	661,940	647,220	604,440	330,740	0
T	HUMBOLDT BAY	BWR	769,925	0	0	0	0	0	0	0	0
T	INDIAN PT 1	PWR	368,424	0	0	0	0	0	0	0	0
T	INDIAN PT 2	PWR	393,708	665,812	700,728	764,540	771,764	310,632	488,824	449,092	449,092
T	INDIAN PT 3	PWR	0	769,356	417,788	397,320	776,580	406,952	444,276	0	415,380
	125 KEWAUNEE	PWR	101,200	158,700	194,580	229,080	184,920	121,900	221,260	78,660	76,360
T	LACROSSE	BWR	362,318	90,579	125,213	226,449	207,800	0	0	0	0
	125 MAINE YANKEE	PWR	512,440	353,740	258,980	252,080	222,180	225,400	135,700	121,440	505,080
T	MONTICELLO	BWR	247,761	5,328	55,946	578,110	650,040	1,249,463	1,121,586	0	607,415
	125 MORRIS-COOP	PWR	1,744,780	517,960	509,680	252,080	77,280	0	0	0	0
	125 OYSTER CRK 1	BWR	605,820	269,560	167,440	148,120	141,680	117,300	272,320	0	137,080
	125 PALISADES	PWR	387,780	247,480	164,680	92,920	93,840	271,860	110,400	118,680	116,840
	125 PALISADES DS	PWR	0	0	85,560	0	0	0	0	0	0
T	PILGRIM 1	BWR	2,981,128	450,233	1,137,571	1,097,609	911,122	793,902	660,697	692,666	0
	125 POINT BEACH 2	PWR	488,060	386,400	258,520	277,840	301,760	328,900	286,580	105,800	156,400
	125 PRAIRIE ISL 2	PWR	210,680	362,020	438,380	345,920	306,820	391,920	248,860	155,480	75,900
	125 QUAD CITIES 2	BWR	636,640	492,200	556,140	678,500	420,440	486,220	355,580	0	261,740
	125 RANCHO SECO 1	PWR	42,780	258,060	234,140	138,460	0	377,200	0	0	0
	75 ROBINSON 2	PWR	24,784	30,980	30,206	43,372	159,547	164,194	336,908	157,224	154,900
	75 ROBINSON 2 DS	PWR	0	0	69,705	116,950	0	0	0	0	0
	125 SAN ONOFRE 1	PWR	7,360	3,220	0	0	69,920	3,220	267,260	0	0
	125 SAN ONOFRE 2	PWR	1,840	115,460	0	290,260	219,880	413,080	201,480	215,280	208,380
	125 SAN ONOFRE 3	PWR	0	30,360	0	212,520	401,120	477,940	201,480	215,280	0
	125 TROJAN	PWR	0	114,080	234,600	268,180	279,220	345,920	408,480	0	0
	125 TURKEY PT 4	PWR	451,720	455,860	490,360	362,020	240,120	253,920	450,800	108,100	216,660
	75 VOGTLE 2	PWR	0	0	0	0	241,644	757,461	1,305,033	290,438	558,415
T	VT YANKEE	BWR	2,232,516	1,667,727	1,555,834	1,100,273	1,329,386	1,126,914	735,292	588,766	578,110
T	YANKEE-ROWE 1	PWR	459,928	113,176	214,312	213,108	209,496	320,264	0	0	0
	125 ZION 2	PWR	189,980	787,520	523,020	609,500	607,660	321,080	498,180	578,220	574,540
			17,048,960	13,609,483	13,676,303	13,755,191	14,271,007	14,390,964	13,847,576	7,247,008	6,841,254
Total Costs											
	1999 Constant Dollars		17,048,960	13,609,483	13,676,303	13,755,191	14,271,007	14,390,964	13,847,576	7,247,008	6,841,254
	1999 NPV Dollars (3.8% Discount)		15,244,242	11,723,363	11,349,636	10,997,209	10,991,910	10,678,520	9,899,142	4,990,973	4,539,048
	1999 NPV Dollars (7.0% Discount)		13,917,030	10,382,609	9,751,015	9,165,664	8,887,266	8,375,672	7,532,164	3,684,011	3,250,230

TR TYP	PLANT NAME	UTIL	2011	2012	2013	2014	2015	2016	2017	2018	2019
CASE 1: PFSF 2002 2015, 20K,40 yr,Case 1											
T	BIG ROCK 1	BWR	135,869	295,715	0	0	0	0	0	0	0
	125 CALVERT CLF 2	PWR	149,500	287,500	278,300	133,860	265,420	0	131,560	0	253,000
	125 CALVERT CLF DS	PWR	0	0	0	0	0	0	0	0	0
	125 CLINTON 1	BWR	147,660	144,900	139,380	268,640	129,260	0	124,660	0	123,280
	125 COOK 2	PWR	430,100	164,220	417,680	422,280	267,260	0	262,660	0	257,600
	75 COOPER STN	BWR	261,330	252,030	242,730	238,080	463,140	0	231,570	0	0
T	CRYSTAL RVR 3	PWR	363,608	352,772	341,936	0	331,100	0	320,264	0	310,632
	125 DRESDEN 1	BWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 2	BWR	122,820	120,520	116,380	111,780	109,940	0	106,720	0	127,880
	125 DRESDEN 3	BWR	154,560	149,040	143,520	139,840	0	0	139,840	0	139,840
	125 DUANE ARNOLD	BWR	87,400	85,560	82,800	79,580	78,200	0	74,980	0	73,600
	125 FARLEY 1	PWR	154,100	108,560	105,340	103,500	102,580	0	102,580	0	102,580
	125 FARLEY 2	PWR	114,080	112,240	108,560	212,520	105,340	0	105,340	0	105,340
	125 FITZPATRICK	BWR	139,840	0	139,840	139,840	139,840	0	139,840	0	0
T	FORT CALHOUN	PWR	204,680	0	329,896	245,616	0	0	183,008	0	176,988
T	GINNA	PWR	160,132	157,724	305,816	148,092	145,684	0	140,868	0	275,716
T	HADDAM NECK	PWR	0	0	0	0	0	0	0	0	0
	125 HATCH 2	BWR	488,060	306,360	435,620	287,040	276,460	0	271,400	0	262,200
T	HUMBOLDT BAY	BWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 1	PWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 2	PWR	0	449,092	449,092	449,092	449,092	0	0	0	449,092
T	INDIAN PT 3	PWR	410,564	255,248	155,316	410,564	410,564	0	410,564	0	410,564
	125 KEWAUNEE	PWR	74,980	73,600	71,300	138,460	67,160	0	64,860	0	63,940
T	LACROSSE	BWR	0	0	0	0	0	0	0	0	0
	125 MAINE YANKEE	PWR	0	0	0	0	0	0	0	0	0
T	MONTICELLO	BWR	586,102	562,125	543,476	532,820	524,828	0	0	0	524,828
	125 MORRIS-COOP	PWR	0	0	0	0	0	0	0	0	0
	125 OYSTER CRK 1	BWR	132,020	442,980	0	0	0	0	0	0	0
	125 PALISADES	PWR	113,160	109,480	108,100	104,420	101,200	0	99,820	0	96,600
	125 PALISADES DS	PWR	0	0	0	0	0	0	0	0	0
T	PILGRIM 1	BWR	666,025	642,048	618,071	594,094	586,102	0	0	0	586,102
	125 POINT BEACH 2	PWR	151,340	149,040	192,740	139,840	182,160	0	133,400	0	131,100
	125 PRAIRIE ISL 2	PWR	150,420	147,660	147,660	147,660	147,660	0	147,660	0	147,660
	125 QUAD CITIES 2	BWR	253,920	244,720	113,160	235,520	336,260	0	176,180	0	175,260
	125 RANCHO SECO 1	PWR	0	0	0	0	0	0	0	0	0
	75 ROBINSON 2	PWR	150,253	145,606	143,283	138,636	136,312	0	132,440	0	130,116
	75 ROBINSON 2 DS	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 1	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 2	PWR	0	201,940	195,960	189,520	186,760	0	180,780	0	175,260
	125 SAN ONOFRE 3	PWR	208,380	201,940	195,960	189,520	183,540	0	178,020	0	0
	125 TROJAN	PWR	0	0	0	0	0	0	0	0	0
	125 TURKEY PT 4	PWR	212,980	206,540	201,480	196,880	271,860	0	108,100	0	183,080
	75 VOGTLE 2	PWR	544,474	527,435	515,817	667,619	570,032	0	490,259	0	490,259
T	VT YANKEE	BWR	556,797	546,141	524,828	506,179	495,523	0	476,874	0	468,882
T	YANKEE-ROWE 1	PWR	0	0	0	0	0	0	0	0	0
	125 ZION 2	PWR	0	0	0	0	0	0	0	0	0
Total Costs			7,325,154	7,442,735	7,364,041	7,171,492	7,063,276	0	4,934,246	0	6,241,398
1999 Constant Dollars			7,325,154	7,442,735	7,364,041	7,171,492	7,063,276	0	4,934,246	0	6,241,398
1999 NPV Dollars (3.8% Discount)			4,682,184	4,583,181	4,368,710	4,098,729	3,889,095	0	2,521,555	0	2,960,294
1999 NPV Dollars (7.0% Discount)			3,252,456	3,088,471	2,855,902	2,599,279	2,392,576	0	1,459,865	0	1,612,896

TR TYP	PLANT NAME	UTIL	2020	2021	2022	2023	2024	2025	2026	2027	2028
CASE 1: PFSF 2002 2015, 20K,40 yr,Case 1											
T	BIG ROCK 1	BWR	0	0	0	0	0	0	0	0	0
	125 CALVERT CLF 2	PWR	121,900	126,500	0	120,980	634,800	116,380	0	0	0
	125 CALVERT CLF DS	PWR	0	0	0	0	0	0	0	0	0
	125 CLINTON 1	BWR	0	123,280	70,840	52,440	123,280	123,280	0	0	0
	125 COOK 2	PWR	255,300	0	251,160	249,320	534,060	243,800	0	0	0
	75 COOPER STN	BWR	231,570	231,570	0	231,570	297,600	805,380	0	0	0
T	CRYSTAL RVR 3	PWR	0	310,632	0	310,632	0	310,632	0	0	0
	125 DRESDEN 1	BWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 2	BWR	539,120	0	0	0	0	0	0	0	0
	125 DRESDEN 3	BWR	0	667,000	37,260	0	0	0	0	0	0
	125 DUANE ARNOLD	BWR	73,600	73,600	0	73,600	0	301,300	0	0	0
	125 FARLEY 1	PWR	102,580	0	102,580	0	102,580	102,580	0	0	0
	125 FARLEY 2	PWR	0	105,340	0	105,340	105,340	105,340	0	0	0
	125 FITZPATRICK	BWR	139,840	0	139,840	0	139,840	317,860	0	0	0
T	FORT CALHOUN	PWR	170,968	0	166,152	0	756,112	0	0	0	0
T	GINNA	PWR	515,312	0	0	0	0	0	0	0	0
T	HADDAM NECK	PWR	0	0	0	0	0	0	0	0	0
	125 HATCH 2	BWR	258,060	0	258,060	98,440	159,620	592,480	0	0	0
T	HUMBOLDT BAY	BWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 1	PWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 2	PWR	449,092	0	0	449,092	1,073,968	0	0	0	0
T	INDIAN PT 3	PWR	0	0	410,564	0	410,564	916,244	0	0	0
	125 KEWAUNEE	PWR	63,020	0	20,240	0	276,000	0	0	0	0
T	LACROSSE	BWR	0	0	0	0	0	0	0	0	0
	125 MAINE YANKEE	PWR	0	0	0	0	0	0	0	0	0
T	MONTICELLO	BWR	524,828	0	2,192,554	0	0	0	0	0	0
	125 MORRIS-COOP	PWR	0	0	0	0	0	0	0	0	0
	125 OYSTER CRK 1	BWR	0	0	0	0	0	0	0	0	0
	125 PALISADES	PWR	28,520	64,860	278,760	0	0	0	0	0	0
	125 PALISADES DS	PWR	0	0	0	0	0	0	0	0	0
T	PILGRIM 1	BWR	586,102	0	0	2,690,741	0	0	0	0	0
	125 POINT BEACH 2	PWR	288,880	43,240	0	149,040	0	0	0	0	0
	125 PRAIRIE ISL 2	PWR	0	147,660	0	147,660	269,100	122,360	0	0	0
	125 QUAD CITIES 2	BWR	103,040	227,240	0	1,147,240	0	0	0	0	0
	125 RANCHO SECO 1	PWR	0	0	0	0	0	0	0	0	0
	75 ROBINSON 2	PWR	327,614	0	0	0	0	0	0	0	0
	75 ROBINSON 2 DS	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 1	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 2	PWR	0	169,740	0	164,220	0	159,160	0	0	0
	125 SAN ONOFRE 3	PWR	172,500	0	166,980	0	164,220	159,160	0	0	0
	125 TROJAN	PWR	0	0	0	0	0	0	0	0	0
	125 TURKEY PT 4	PWR	177,560	174,800	0	419,520	335,800	0	0	0	0
	75 VOGTLE 2	PWR	248,615	241,644	248,615	241,644	490,259	738,873	0	0	0
T	VT YANKEE	BWR	463,553	0	463,553	1,430,622	0	0	0	0	0
T	YANKEE-ROWE 1	PWR	0	0	0	0	0	0	0	0	0
	125 ZION 2	PWR	0	0	0	0	0	0	0	0	0
			5,841,573	2,707,106	4,807,158	8,082,101	5,873,143	5,114,829	0	0	0
Total Costs											
	1999 Constant Dollars		5,841,573	2,707,106	4,807,158	8,082,101	5,873,143	5,114,829	0	0	0
	1999 NPV Dollars (3.8% Discount)		2,669,226	1,191,691	2,038,681	3,302,081	2,311,728	1,939,545	0	0	0
	1999 NPV Dollars (7.0% Discount)		1,410,816	611,029	1,014,055	1,593,359	1,082,122	880,751	0	0	0

TR TYP	PLANT NAME	UTIL	2029	2030	2031	2032	2033	2034	2035	2036	2037
CASE 1: PFSF 2002 2015, 20K,40 yr,Case 1											
T	BIG ROCK 1	BWR	0	0	0	0	0	0	0	0	0
	125 CALVERT CLF 2	PWR	0	0	0	0	0	0	0	0	0
	125 CALVERT CLF DS	PWR	0	0	0	0	0	0	0	0	0
	125 CLINTON 1	BWR	0	369,380	0	0	369,380	0	123,280	0	483,000
	125 COOK 2	PWR	0	378,120	0	0	0	0	0	0	0
	75 COOPER STN	BWR	0	0	0	0	0	0	0	0	0
T	CRYSTAL RVR 3	PWR	0	1,307,544	0	0	0	0	0	0	0
	125 DRESDEN 1	BWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 2	BWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 3	BWR	0	0	0	0	0	0	0	0	0
	125 DUANE ARNOLD	BWR	0	0	0	0	0	0	0	0	0
	125 FARLEY 1	PWR	0	414,920	0	0	0	0	0	0	0
	125 FARLEY 2	PWR	0	316,480	0	0	418,140	0	0	0	0
	125 FITZPATRICK	BWR	0	0	0	0	0	0	0	0	0
T	FORT CALHOUN	PWR	0	0	0	0	0	0	0	0	0
T	GINNA	PWR	0	0	0	0	0	0	0	0	0
T	HADDAM NECK	PWR	0	0	0	0	0	0	0	0	0
	125 HATCH 2	BWR	0	337,640	0	0	0	0	0	0	0
T	HUMBOLDT BAY	BWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 1	PWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 2	PWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 3	PWR	0	565,880	0	0	0	0	0	0	0
	125 KEWAUNEE	PWR	0	0	0	0	0	0	0	0	0
T	LACROSSE	BWR	0	0	0	0	0	0	0	0	0
	125 MAINE YANKEE	PWR	0	0	0	0	0	0	0	0	0
T	MONTICELLO	BWR	0	0	0	0	0	0	0	0	0
	125 MORRIS-COOP	PWR	0	0	0	0	0	0	0	0	0
	125 OYSTER CRK 1	BWR	0	0	0	0	0	0	0	0	0
	125 PALISADES	PWR	0	0	0	0	0	0	0	0	0
	125 PALISADES DS	PWR	0	0	0	0	0	0	0	0	0
T	PILGRIM 1	BWR	0	0	0	0	0	0	0	0	0
	125 POINT BEACH 2	PWR	0	0	0	0	0	0	0	0	0
	125 PRAIRIE ISL 2	PWR	0	0	0	0	0	0	0	0	0
	125 QUAD CITIES 2	BWR	0	0	0	0	0	0	0	0	0
	125 RANCHO SECO 1	PWR	0	0	0	0	0	0	0	0	0
	75 ROBINSON 2	PWR	0	0	0	0	0	0	0	0	0
	75 ROBINSON 2 DS	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 1	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 2	PWR	0	477,020	0	0	404,340	0	0	0	0
	125 SAN ONOFRE 3	PWR	0	471,500	0	0	410,320	0	0	0	0
	125 TROJAN	PWR	0	0	0	0	0	0	0	0	0
	125 TURKEY PT 4	PWR	0	0	0	0	0	0	0	0	0
	75 VOGTLE 2	PWR	0	1,221,387	0	0	1,033,958	0	563,836	0	730,354
T	VT YANKEE	BWR	0	0	0	0	0	0	0	0	0
T	YANKEE-ROWE 1	PWR	0	0	0	0	0	0	0	0	0
	125 ZION 2	PWR	0	0	0	0	0	0	0	0	0
			0	5,859,871	0	0	2,636,138	0	687,116	0	1,213,354
Total Costs											
	1999 Constant Dollars		0	5,859,871	0	0	2,636,138	0	687,116	0	1,213,354
	1999 NPV Dollars (3.8% Discount)		0	1,844,039	0	0	741,751	0	179,443	0	294,095
	1999 NPV Dollars (7.0% Discount)		0	719,434	0	0	264,192	0	60,147	0	92,769

TR TYP	PLANT NAME	UTIL	2038	2039	2040	2041	2042	2043	2044	2045	2046
CASE 1: PFSF 2002 2015, 20K,40 yr,Case 1											
T	BIG ROCK 1	BWR	0	0	0	0	0	0	0	0	0
	125 CALVERT CLF 2	PWR	0	0	0	0	0	0	0	0	0
	125 CALVERT CLF DS	PWR	0	0	0	0	0	0	0	0	0
	125 CLINTON 1	BWR	0	0	0	0	0	0	0	0	0
	125 COOK 2	PWR	0	0	0	0	0	0	0	0	0
	75 COOPER STN	BWR	0	0	0	0	0	0	0	0	0
T	CRYSTAL RVR 3	PWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 1	BWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 2	BWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 3	BWR	0	0	0	0	0	0	0	0	0
	125 DUANE ARNOLD	BWR	0	0	0	0	0	0	0	0	0
	125 FARLEY 1	PWR	0	0	0	0	0	0	0	0	0
	125 FARLEY 2	PWR	0	0	0	0	0	0	0	0	0
	125 FITZPATRICK	BWR	0	0	0	0	0	0	0	0	0
T	FORT CALHOUN	PWR	0	0	0	0	0	0	0	0	0
T	GINNA	PWR	0	0	0	0	0	0	0	0	0
T	HADDAM NECK	PWR	0	0	0	0	0	0	0	0	0
	125 HATCH 2	BWR	0	0	0	0	0	0	0	0	0
T	HUMBOLDT BAY	BWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 1	PWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 2	PWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 3	PWR	0	0	0	0	0	0	0	0	0
	125 KEWAUNEE	PWR	0	0	0	0	0	0	0	0	0
T	LACROSSE	BWR	0	0	0	0	0	0	0	0	0
	125 MAINE YANKEE	PWR	0	0	0	0	0	0	0	0	0
T	MONTICELLO	BWR	0	0	0	0	0	0	0	0	0
	125 MORRIS-COOP	PWR	0	0	0	0	0	0	0	0	0
	125 OYSTER CRK 1	BWR	0	0	0	0	0	0	0	0	0
	125 PALISADES	PWR	0	0	0	0	0	0	0	0	0
	125 PALISADES DS	PWR	0	0	0	0	0	0	0	0	0
T	PILGRIM 1	BWR	0	0	0	0	0	0	0	0	0
	125 POINT BEACH 2	PWR	0	0	0	0	0	0	0	0	0
	125 PRAIRIE ISL 2	PWR	0	0	0	0	0	0	0	0	0
	125 QUAD CITIES 2	BWR	0	0	0	0	0	0	0	0	0
	125 RANCHO SECO 1	PWR	0	0	0	0	0	0	0	0	0
	75 ROBINSON 2	PWR	0	0	0	0	0	0	0	0	0
	75 ROBINSON 2 DS	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 1	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 2	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 3	PWR	0	0	0	0	0	0	0	0	0
	125 TROJAN	PWR	0	0	0	0	0	0	0	0	0
	125 TURKEY PT 4	PWR	0	0	0	0	0	0	0	0	0
	75 VOGTLE 2	PWR	771,402	642,061	0	0	0	0	0	0	0
T	VT YANKEE	BWR	0	0	0	0	0	0	0	0	0
T	YANKEE-ROWE 1	PWR	0	0	0	0	0	0	0	0	0
	125 ZION 2	PWR	0	0	0	0	0	0	0	0	0
			771,402	642,061	0	0	0	0	0	0	0
Total Costs											
	1999 Constant Dollars		771,402	642,061	0	0	0	0	0	0	0
	1999 NPV Dollars (3.8% Discount)		180,129	144,438	0	0	0	0	0	0	0
	1999 NPV Dollars (7.0% Discount)		55,121	42,877	0	0	0	0	0	0	0

ATTACHMENT B

LOADING COSTS FOR SHIPMENT TO DOE

CASE 3

TR TYP	PLANT NAME	UTIL	2011	2012	2013	2014	2015	2016	2017	2018	2019
CASE 3 PFSF 2015 Rep Only, 40 yr, Case 3											
T	BIG ROCK 1	BWR	0	0	0	8,084,620	66,603	79,923	165,174	74,595	74,595
	125 CALVERT CLF 2	PWR	0	0	0	0	0	16,100	167,440	245,180	342,240
	125 CALVERT CLF DS	PWR	0	0	0	0	0	41,860	154,100	119,140	17,940
	125 CLINTON 1	BWR	0	0	0	0	0	0	0	0	0
	125 COOK 2	PWR	0	0	0	0	0	131,100	133,860	415,380	617,780
	75 COOPER STN	BWR	0	0	0	0	0	0	0	0	0
T	CRYSTAL RVR 3	PWR	0	0	0	0	0	0	10,836	558,656	362,404
	125 DRESDEN 1	BWR	0	0	0	0	41,860	29,900	247,480	0	0
	125 DRESDEN 2	BWR	0	0	0	0	185,840	138,000	200,560	112,240	384,100
	125 DRESDEN 3	BWR	0	0	0	0	259,900	131,560	156,860	177,100	159,160
	125 DUANE ARNOLD	BWR	0	0	0	0	0	134,780	103,500	75,900	179,860
	125 FARLEY 1	PWR	0	0	0	0	0	0	0	97,060	310,960
	125 FARLEY 2	PWR	0	0	0	0	0	0	0	0	109,480
	125 FITZPATRICK	BWR	0	0	0	0	0	0	235,980	138,000	161,460
T	FORT CALHOUN	PWR	0	0	0	0	111,972	154,112	425,012	176,988	263,676
T	GINNA	PWR	0	0	0	0	558,656	174,580	575,512	169,764	151,704
T	HADDAM NECK	PWR	0	0	0	8,084,620	890,960	262,472	496,048	262,472	506,884
	125 HATCH 2	BWR	0	0	0	0	0	3,680	20,700	161,920	417,680
T	HUMBOLDT BAY	BWR	0	0	0	8,084,620	418,264	354,325	0	0	0
T	INDIAN PT 1	PWR	0	0	0	0	368,424	0	0	0	0
T	INDIAN PT 2	PWR	0	0	0	0	0	393,708	325,080	362,404	679,056
T	INDIAN PT 3	PWR	0	0	0	0	0	0	351,568	417,788	417,788
	125 KEWAUNEE	PWR	0	0	0	0	0	101,200	73,600	84,640	142,140
T	LACROSSE	BWR	0	0	0	8,084,620	258,418	0	103,900	90,579	125,213
	125 MAINE YANKEE	PWR	0	0	0	0	208,380	178,480	358,340	120,520	258,980
T	MONTICELLO	BWR	0	0	0	0	119,885	127,877	0	5,328	55,946
	125 MORRIS-COOP	PWR	0	0	0	0	1,332,160	412,620	118,220	399,740	411,240
	125 OYSTER CRK 1	BWR	0	0	0	0	441,600	50,140	257,140	126,960	167,440
	125 PALISADES	PWR	0	0	0	0	0	387,780	125,580	121,900	128,800
	125 PALISADES DS	PWR	0	0	0	0	0	0	0	0	0
T	PILGRIM 1	BWR	0	0	0	0	103,900	676,681	2,200,547	450,233	1,137,571
	125 POINT BEACH 2	PWR	0	0	0	0	272,780	215,280	229,540	156,860	210,680
	125 PRAIRIE ISL 2	PWR	0	0	0	0	0	152,720	270,480	223,100	293,020
	125 QUAD CITIES 2	BWR	0	0	0	0	104,880	368,000	494,960	355,580	361,560
	125 RANCHO SECO 1	PWR	0	0	0	0	0	0	161,920	138,460	234,140
	75 ROBINSON 2	PWR	0	0	0	0	17,814	6,971	24,784	23,235	13,167
	75 ROBINSON 2 DS	PWR	0	0	0	0	0	0	0	0	69,705
	125 SAN ONOFRE 1	PWR	0	0	0	0	7,360	0	0	3,220	0
	125 SAN ONOFRE 2	PWR	0	0	0	0	1,840	0	61,180	54,280	0
	125 SAN ONOFRE 3	PWR	0	0	0	0	0	0	0	30,360	0
	125 TROJAN	PWR	0	0	0	0	0	0	2,300	112,240	234,600
	125 TURKEY PT 4	PWR	0	0	0	0	187,220	194,580	313,720	211,600	387,320
	75 VOGTLE 2	PWR	0	0	0	0	0	0	0	0	0
T	VT YANKEE	BWR	0	0	0	0	1,939,465	0	1,068,304	1,345,371	588,766
T	YANKEE-ROWE 1	PWR	0	0	0	8,084,620	239,596	116,788	216,720	0	214,312
	125 ZION 2	PWR	0	0	0	0	0	189,980	401,120	414,000	378,120
			0	0	0	40,423,100	8,137,775	5,225,197	10,252,065	8,032,793	10,569,486
Total Costs											
	1999 Constant Dollars		0	0	0	40,423,100	8,137,775	5,225,197	10,252,065	8,032,793	10,569,486
	1999 NPV Dollars (3.8% Discount)		0	0	0	23,103,050	4,480,722	2,771,709	5,239,128	3,954,730	5,013,105
	1999 NPV Dollars (7.0% Discount)		0	0	0	14,651,192	2,756,546	1,654,164	3,033,216	2,221,134	2,731,356

TR TYP	PLANT NAME	UTIL	2020	2021	2022	2023	2024	2025	2026	2027	2028
CASE 3 PFSF 2015 Rep Only, 40 yr, Case 3											
T	BIG ROCK 1	BWR	130,541	151,854	69,267	146,526	69,267	77,259	66,603	71,931	71,931
	125 CALVERT CLF 2	PWR	483,000	408,480	167,900	159,160	0	312,800	153,180	305,900	147,200
	125 CALVERT CLF DS	PWR	7,360	0	0	0	0	0	0	0	0
	125 CLINTON 1	BWR	0	0	142,140	0	182,620	155,480	132,940	155,940	153,180
	125 COOK 2	PWR	506,920	336,260	133,400	326,600	310,500	169,740	313,720	310,500	305,900
	75 COOPER STN	BWR	0	102,300	211,110	464,070	280,860	318,060	0	265,980	0
T	CRYSTAL RVR 3	PWR	700,728	0	497,252	406,952	0	429,828	402,136	375,648	0
	125 DRESDEN 1	BWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 2	BWR	163,760	139,840	161,920	133,860	0	165,140	0	127,420	0
	125 DRESDEN 3	BWR	186,300	147,200	136,160	108,560	172,500	0	140,300	160,540	0
	125 DUANE ARNOLD	BWR	101,200	107,640	100,740	87,860	85,560	104,880	92,460	0	90,620
	125 FARLEY 1	PWR	293,480	125,120	155,020	157,780	134,320	115,000	130,180	117,760	114,080
	125 FARLEY 2	PWR	284,740	135,240	135,700	139,380	121,440	130,180	127,880	119,600	117,760
	125 FITZPATRICK	BWR	327,060	164,680	154,560	125,580	124,660	0	168,820	0	144,440
T	FORT CALHOUN	PWR	113,176	473,172	183,008	164,948	227,556	0	174,580	214,312	207,088
T	GINNA	PWR	346,752	291,368	139,664	314,244	124,012	280,532	136,052	168,560	164,948
T	HADDAM NECK	PWR	262,472	276,920	262,472	266,084	262,472	263,676	0	995,708	0
	125 HATCH 2	BWR	680,340	480,240	302,220	357,880	289,800	195,500	409,400	330,740	321,540
T	HUMBOLDT BAY	BWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 1	PWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 2	PWR	391,300	373,240	374,444	397,320	310,632	488,824	449,092	0	449,092
T	INDIAN PT 3	PWR	0	830,760	341,936	406,952	0	444,276	0	0	415,380
	125 KEWAUNEE	PWR	217,580	115,000	134,320	57,500	64,400	156,860	64,400	78,660	76,360
T	LACROSSE	BWR	143,861	287,723	0	0	0	0	0	0	0
	125 MAINE YANKEE	PWR	126,040	238,740	109,940	126,040	99,820	135,700	0	121,440	505,080
T	MONTICELLO	BWR	5,328	575,446	650,040	604,751	644,712	607,415	516,835	0	607,415
	125 MORRIS-COOP	PWR	350,980	77,280	0	0	0	0	0	0	0
	125 OYSTER CRK 1	BWR	0	148,120	141,680	0	117,300	136,160	136,160	0	137,080
	125 PALISADES	PWR	35,420	92,920	93,840	134,780	136,620	110,400	0	118,680	116,840
	125 PALISADES DS	PWR	85,560	0	0	0	0	0	0	0	0
T	PILGRIM 1	BWR	1,097,609	911,122	0	0	793,902	660,697	0	692,666	666,025
	125 POINT BEACH 2	PWR	166,060	281,980	179,400	174,340	154,560	144,440	142,140	159,160	153,640
	125 PRAIRIE ISL 2	PWR	223,100	333,040	136,620	167,900	255,760	87,400	161,460	155,480	75,900
	125 QUAD CITIES 2	BWR	502,780	299,460	296,700	244,720	241,040	239,660	115,920	261,740	0
	125 RANCHO SECO 1	PWR	138,460	0	0	377,200	0	0	0	0	0
	75 ROBINSON 2	PWR	10,069	70,480	123,146	0	164,194	161,096	175,037	157,224	154,900
	75 ROBINSON 2 DS	PWR	116,950	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 1	PWR	0	0	69,920	3,220	0	260	0	0	0
	125 SAN ONOFRE 2	PWR	125,580	164,680	219,880	210,220	203,320	180	0	215,280	208,380
	125 SAN ONOFRE 3	PWR	0	375,360	238,740	274,620	203,320	0	201,480	215,280	208,380
	125 TROJAN	PWR	109,940	333,960	103,500	233,220	112,700	408,480	0	0	0
	125 TURKEY PT 4	PWR	336,720	256,680	111,780	118,220	135,240	230,000	220,800	108,100	216,660
	75 VOGTLE 2	PWR	0	0	241,644	270,301	487,935	697,050	608,757	562,287	285,791
T	VT YANKEE	BWR	1,031,007	583,438	1,329,386	0	1,254,791	0	607,415	588,766	578,110
T	YANKEE-ROWE 1	PWR	101,136	211,904	110,768	110,768	209,496	0	0	0	0
	125 ZION 2	PWR	567,640	454,940	312,800	321,080	161,000	177,560	159,620	578,220	574,540
			10,470,948	10,356,586	8,273,016	7,592,635	8,136,309	8,072,833	6,007,367	7,733,521	7,268,259
Total Costs											
	1999 Constant Dollars		10,470,948	10,356,586	8,273,016	7,592,635	8,136,309	8,072,833	6,007,367	7,733,521	7,268,259
	1999 NPV Dollars (3.8% Discount)		4,784,555	4,559,055	3,508,526	3,102,102	3,202,533	3,061,221	2,194,601	2,721,770	2,464,377
	1999 NPV Dollars (7.0% Discount)		2,528,871	2,337,618	1,745,167	1,496,862	1,499,108	1,390,105	966,768	1,163,139	1,021,647

TR TYP	PLANT NAME	UTIL	2029	2030	2031	2032	2033	2034	2035	2036	2037
CASE 3 PFSF 2015 Rep Only, 40 yr, Case 3											
T	BIG ROCK 1	BWR	135,869	295,715	0	0	0	0	0	0	0
	125 CALVERT CLF 2	PWR	292,100	144,440	278,300	133,860	6,440	0	0	0	0
	125 CALVERT CLF DS	PWR	0	0	0	0	0	0	0	0	0
	125 CLINTON 1	BWR	147,660	144,900	139,380	268,640	129,260	124,660	123,280	123,280	123,280
	125 COOK 2	PWR	296,240	291,640	282,440	422,280	267,260	262,660	257,600	255,300	251,160
	75 COOPER STN	BWR	261,330	252,030	242,730	238,080	231,570	463,140	231,570	231,570	181,350
T	CRYSTAL RVR 3	PWR	363,608	352,772	341,936	0	331,100	320,264	310,632	310,632	0
	125 DRESDEN 1	BWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 2	BWR	122,820	120,520	116,380	111,780	109,940	106,720	253,000	0	0
	125 DRESDEN 3	BWR	154,560	149,040	143,520	139,840	0	139,840	139,840	60,260	0
	125 DUANE ARNOLD	BWR	87,400	85,560	82,800	79,580	78,200	74,980	73,600	73,600	20,700
	125 FARLEY 1	PWR	112,240	108,560	105,340	103,500	102,580	102,580	102,580	102,580	102,580
	125 FARLEY 2	PWR	114,080	112,240	108,560	171,580	145,820	105,340	105,340	105,340	105,340
	125 FITZPATRICK	BWR	139,840	0	139,840	139,840	139,840	40,020	0	0	0
T	FORT CALHOUN	PWR	204,680	197,456	191,436	0	185,416	183,008	176,988	170,968	166,152
T	GINNA	PWR	160,132	313,040	150,500	148,092	145,684	77,056	0	0	0
T	HADDAM NECK	PWR	0	0	0	0	0	0	0	0	0
	125 HATCH 2	BWR	312,800	303,600	292,560	187,680	0	0	0	0	0
T	HUMBOLDT BAY	BWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 1	PWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 2	PWR	449,092	0	449,092	449,092	449,092	0	449,092	370,832	0
T	INDIAN PT 3	PWR	410,564	410,564	0	410,564	410,564	410,564	410,564	0	410,564
	125 KEWAUNEE	PWR	74,980	73,600	71,300	70,380	108,100	0	0	0	0
T	LACROSSE	BWR	0	0	0	0	0	0	0	0	0
	125 MAINE YANKEE	PWR	0	0	0	0	0	0	0	0	0
T	MONTICELLO	BWR	586,102	562,125	543,476	532,820	524,828	0	524,828	524,828	2,006,067
	125 MORRIS-COOP	PWR	0	0	0	0	0	0	0	0	0
	125 OYSTER CRK 1	BWR	132,020	442,980	0	0	0	0	0	0	0
	125 PALISADES	PWR	113,160	109,480	108,100	104,420	101,200	76,360	0	0	0
	125 PALISADES DS	PWR	0	0	0	0	0	0	0	0	0
T	PILGRIM 1	BWR	0	642,048	618,071	594,094	586,102	0	586,102	586,102	825,871
	125 POINT BEACH 2	PWR	151,800	146,740	144,440	74,060	0	0	0	0	0
	125 PRAIRIE ISL 2	PWR	150,420	147,660	147,660	49,220	0	0	0	0	0
	125 QUAD CITIES 2	BWR	253,920	244,720	183,540	165,140	231,380	332,120	227,240	103,040	581,440
	125 RANCHO SECO 1	PWR	0	0	0	0	0	0	0	0	0
	75 ROBINSON 2	PWR	150,253	145,606	143,283	138,636	136,312	124,695	0	0	0
	75 ROBINSON 2 DS	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 1	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 2	PWR	201,940	0	195,960	189,520	186,760	180,780	175,260	169,740	0
	125 SAN ONOFRE 3	PWR	0	201,940	195,960	189,520	183,540	178,020	71,300	101,200	50,140
	125 TROJAN	PWR	0	0	0	0	0	0	0	0	0
	125 TURKEY PT 4	PWR	212,980	206,540	201,480	196,880	192,280	281,520	180,320	214,360	379,960
	75 VOGTLE 2	PWR	544,474	527,435	515,817	503,425	492,582	731,128	490,259	490,259	490,259
T	VT YANKEE	BWR	556,797	546,141	524,828	506,179	495,523	428,920	0	0	0
T	YANKEE-ROWE 1	PWR	0	0	0	0	0	0	0	0	0
	125 ZION 2	PWR	0	0	0	0	0	0	0	0	0
Total Costs			6,893,861	7,279,091	6,658,729	6,318,702	5,971,372	4,744,375	4,889,394	3,993,890	5,694,863
1999 Constant Dollars			6,893,861	7,279,091	6,658,729	6,318,702	5,971,372	4,744,375	4,889,394	3,993,890	5,694,863
1999 NPV Dollars (3.8% Discount)			2,251,863	2,290,652	2,018,720	1,845,505	1,680,212	1,286,091	1,276,881	1,004,833	1,380,333
1999 NPV Dollars (7.0% Discount)			905,627	893,676	764,030	677,584	598,447	444,372	427,995	326,736	435,411

TR TYP	PLANT NAME	UTIL	2038	2039	2040	2041	2042	2043	2044	2045	2046
CASE 3 PFSF 2015 Rep Only, 40 yr, Case 3											
T	BIG ROCK 1	BWR	0	0	0	0	0	0	0	0	0
	125 CALVERT CLF 2	PWR	0	0	0	0	0	0	0	0	0
	125 CALVERT CLF DS	PWR	0	0	0	0	0	0	0	0	0
	125 CLINTON 1	BWR	123,280	123,280	16,560	0	0	0	0	0	0
	125 COOK 2	PWR	249,320	162,380	0	0	0	0	0	0	0
	75 COOPER STN	BWR	0	0	0	0	0	0	0	0	0
T	CRYSTAL RVR 3	PWR	310,632	310,632	946,344	0	0	0	0	0	0
	125 DRESDEN 1	BWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 2	BWR	0	0	0	0	0	0	0	0	0
	125 DRESDEN 3	BWR	0	0	0	0	0	0	0	0	0
	125 DUANE ARNOLD	BWR	0	0	0	0	0	0	0	0	0
	125 FARLEY 1	PWR	102,580	102,580	10,120	0	0	0	0	0	0
	125 FARLEY 2	PWR	105,340	105,340	105,340	210,680	86,940	0	0	0	0
	125 FITZPATRICK	BWR	0	0	0	0	0	0	0	0	0
T	FORT CALHOUN	PWR	418,992	0	0	0	0	0	0	0	0
T	GINNA	PWR	0	0	0	0	0	0	0	0	0
T	HADDAM NECK	PWR	0	0	0	0	0	0	0	0	0
	125 HATCH 2	BWR	0	0	0	0	0	0	0	0	0
T	HUMBOLDT BAY	BWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 1	PWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 2	PWR	0	0	0	0	0	0	0	0	0
T	INDIAN PT 3	PWR	410,564	410,564	95,116	0	0	0	0	0	0
	125 KEWAUNEE	PWR	0	0	0	0	0	0	0	0	0
T	LACROSSE	BWR	0	0	0	0	0	0	0	0	0
	125 MAINE YANKEE	PWR	0	0	0	0	0	0	0	0	0
T	MONTICELLO	BWR	0	0	0	0	0	0	0	0	0
	125 MORRIS-COOP	PWR	0	0	0	0	0	0	0	0	0
	125 OYSTER CRK 1	BWR	0	0	0	0	0	0	0	0	0
	125 PALISADES	PWR	0	0	0	0	0	0	0	0	0
	125 PALISADES DS	PWR	0	0	0	0	0	0	0	0	0
T	PILGRIM 1	BWR	0	0	0	0	0	0	0	0	0
	125 POINT BEACH 2	PWR	0	0	0	0	0	0	0	0	0
	125 PRAIRIE ISL 2	PWR	0	0	0	0	0	0	0	0	0
	125 QUAD CITIES 2	BWR	0	0	0	0	0	0	0	0	0
	125 RANCHO SECO 1	PWR	0	0	0	0	0	0	0	0	0
	75 ROBINSON 2	PWR	0	0	0	0	0	0	0	0	0
	75 ROBINSON 2 DS	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 1	PWR	0	0	0	0	0	0	0	0	0
	125 SAN ONOFRE 2	PWR	164,220	9,660	0	0	0	0	0	0	0
	125 SAN ONOFRE 3	PWR	0	0	0	0	0	0	0	0	0
	125 TROJAN	PWR	0	0	0	0	0	0	0	0	0
	125 TURKEY PT 4	PWR	413,540	0	0	0	0	0	0	0	0
	75 VOGTLE 2	PWR	490,259	248,615	731,128	128,567	0	0	0	0	0
T	VT YANKEE	BWR	0	0	0	0	0	0	0	0	0
T	YANKEE-ROWE 1	PWR	0	0	0	0	0	0	0	0	0
	125 ZION 2	PWR	0	0	0	0	0	0	0	0	0
Total Costs			2,788,727	1,473,051	1,904,608	339,247	86,940	0	0	0	0
1999 Constant Dollars			2,788,727	1,473,051	1,904,608	339,247	86,940	0	0	0	0
1999 NPV Dollars (3.8% Discount)			651,192	331,378	412,776	70,832	17,488	0	0	0	0
1999 NPV Dollars (7.0% Discount)			199,268	98,371	118,870	19,788	4,739	0	0	0	0

