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One of the requirements placed upon nuclear power reactor licensees by the U.S. Nuclear Regulatory Commission (NRC) is for the licensees to periodically adjust the estimate of the cost of decommissioning their plants, in dollars of the current year, as part of the process to provide reasonable assurance that adequate funds for decommissioning will be available when needed. This report, which is scheduled to be revised periodically, contains the development of a formula for escalating decommissioning cost estimates that is acceptable to the NRC, and contains values for the escalation of radioactive waste burial costs, by site and by year. The licensees may use the formula, the coefficients, and the burial escalation from this report in their escalation analyses, or they may use an escalation rate at least equal to the escalation approach presented herein.

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Revision 5

Report on Waste Burial Charges

Escalation of Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities

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Division of Regulatory Applications
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington, DC 20555–0001

Abstract

One of the requirements placed upon nuclear power reactor licensees by the U.S. Nuclear Regulatory Commission (NRC) is for the licensees to periodically adjust the estimate of the cost of decommissioning their plants, in dollars of the current year, as part of the process to provide reasonable assurance that adequate funds for decommissioning will be available when needed. This report, which is scheduled to be revised periodically, contains the development of a formula for escalating decommissioning cost estimates that is acceptable to the NRC. The sources of information to be used in the escalation formula are identified, and the values developed for the escalation of radioactive waste burial costs, by site and by year, are given. The licensees may use the formula, the coefficients, and the burial escalation factors from this report in their escalation analyses, or they may use an escalation rate at least equal to the escalation approach presented herein.

This fifth revision of NUREG-1307 contains revised spreadsheet results for the disposal costs for the reference PWR and the reference BWR and the ratios of disposal costs at the Washington, Nevada, and South Carolina sites for the years 1986, 1988, 1991, 1993, and 1994, superseding the values given in the June 1994 issue of this report. Burial cost surcharges mandated by the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) have been incorporated into the revised ratio tables for those years. In addition, spreadsheet results for the disposal costs for the reference reactors and ratios of disposal costs at the two remaining burial sites in Washington and South Carolina for the year 1995 are provided. These latter results do not include any LLRWPAA surcharges, since those provisions of the Act expired at the end of 1992. An example calculation for escalated disposal cost is presented, demonstrating the use of the data contained in this report.

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Foreword

10 CFR 50.75 requires nuclear power reactor licensees to adjust annually the projected decommissioning costs of their nuclear facilities in order to ensure adequate funds are available for decommissioning. The regulation references NUREG-1307 as the appropriate source of information for obtaining waste burial disposal costs. Revision 5 of NUREG-1307 provides power reactor licensees the current waste burial costs at disposal sites. The licensees can factor these numbers into the escalation formula, as specified in §50.75(c)(2) of the regulation, for determining the projected decommissioning cost estimates for their nuclear facilities.

The results presented in this report for the years 1986 through 1991 also include the surcharges that were instituted as a result of the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA). The surcharges were included to factor in penalties when specific milestones were not achieved in meeting the LLRWPAA requirements. These provisions of the LLRWPAA expired at the end of 1992. Thus, these surcharges are *not* included in the results presented for 1993, 1994, and 1995.

Although this report is specifically prepared for the use of power reactor licensees, it can also be a valuable source of information for material licensees on current waste burial costs. Since July 1, 1994, access to the Barnwell, South Carolina, facility has been limited to Southeast Compact waste generators. Effective July 1, 1995, the scheduled closure date of December 31, 1995, was cancelled and access to the Barnwell facility was extended to waste generators from all states except the states of the Northwest and Rocky Mountain Compacts and North Carolina. It is important to note that there is an additional waste disposal facility that may be used in certain specific circumstances by licensees that is operated by Envirocare in Utah that is designed to accept high volume (bulk), low-activity, low-level radioactive waste. However, that facility does not offer the range of disposal capability needed by power reactor licensees that the other established disposal sites provide. For this reason, the Envirocare facility is not included as a reference site in this report.

Low-level radioactive waste disposal costs are an important element in the cost of decommissioning a nuclear facility; this report provides the latest information that was available at time of publication for licensees to use for annually adjusting their projected cost of decommissioning their nuclear facilities. However, rapidly changing waste disposal rate schedules, changing rules governing access to disposal facilities, and progress towards proposed regional disposal facilities continue to create uncertainties for many licensees in estimating future decommissioning costs.

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1 Introduction

One of the requirements placed upon nuclear power reactor licensees by the U.S. Nuclear Regulatory Commission (NRC) is for the licensees to periodically adjust the estimate of the cost of decommissioning their plants, in dollars of the current year, as part of the process to provide reasonable assurance that adequate funds for decommissioning will be available when needed. This report, which is scheduled to be revised periodically, contains the development of a formula for escalating decommissioning cost estimates that is acceptable to the NRC. The sources of information to be used in the escalation formula are identified, and the values developed for the escalation of radioactive waste burial costs, by site and by year, are given in this report. The licensees may use the formula, the coefficients, and the burial escalation factors from this report in their escalation analyses, or they may use an escalation rate at least equal to the escalation approach presented herein.

The formula and its coefficients, together with guidance to the appropriate sources of data, are summarized in Chapter 2. The development of the formula and its coefficients, with a sample calculation, are presented in Chapter 3. Price schedules for burial for the year of issue of this report are given in Appendix A, for currently operating burial sites. The calculations performed to determine the burial cost escalation factors, B_x, for each site and each year of evaluation are summarized in Appendix B.

This fifth revision of NUREG-1307 contains revised spreadsheet results for the disposal costs for the reference PWR and the reference BWR and the ratios of disposal costs at the Washington, Nevada, and South Carolina sites for the years 1986, 1988, 1991, 1993, and 1994, superseding the values given in the June 1994 issue of this report. Burial cost surcharges mandated by the Low-Level Radioactive Waste Policy Amendments Act of 1985 have been incorporated into the revised ratio tables for the years 1986, 1988, and 1991. In addition, spreadsheet results for the disposal costs for the reference reactors and ratios of disposal costs at the two remaining burial sites in Washington and South Carolina for the years 1993, 1994, and 1995 are provided. The provisions in the Act that mandated these surcharges expired at the end of 1992. Thus, the values of the ratios of disposal costs calculated for 1993, 1994, and 1995 do not include the LLRWPAA surcharges.

2 Summary

The elements of decommissioning cost are assigned to three categories: those that escalate proportional to labor costs, L_x; those that escalate proportional to energy costs, E_x; and those that escalate proportional to burial costs, B_x. Then, the escalation of the total decommissioning cost estimate can be expressed by

$$\text{Estimated Cost (Year X)} = [1986\ \$\ \text{Cost}]\,[A\,L_x + B\,E_x + C\,B_x]$$

where A, B, and C are the fractions of the total 1986 $ costs that are attributable to labor (0.65), energy (0.13), and burial (0.22), respectively, and sum to 1.0. The factors L_x, E_x, and B_x are defined by

L_x = labor cost escalation, January of 1986 to January of Year X,

E_x = energy cost escalation, January of 1986 to January of Year X, and

B_x = burial cost escalation, January of 1986 to January of Year X, i.e., burial cost in January of Year X / burial cost in January of 1986.

Evaluation of L_x and E_x for the years subsequent to 1986 is to be performed by the licensees, based on the national producer price indices, national consumer price indices and on local conditions for a given site (see Chapter 3).

Evaluation of B_x is accomplished by recalculating the costs of burial of the radioactive wastes from the reference PWR[1] and the reference BWR,[2] based on the price schedules issued by the available burial sites for the year of interest, with consideration given to surcharges which were imposed as a result of the LLRWPAA. The results of these recalculations are presented in Table 2.1, by site and by year. Because the LLRWPAA surcharges and penalties ceased effective 1/1/93, the values of B_x calculated for 1993, 1994, and 1995 reflect just the basic charges plus any fees or surcharges imposed by the states and compacts within which the disposal sites are located. As noted in the footnotes to Table 2.1, the LLW disposal site in Nevada ceased operation as of 12/31/92 and is therefore not included in the 1993, 1994, and 1995 calculations.

Table 2.1 Values of B_x as a function of burial site and year

Year	Washington	Nevada	South Carolina
	Values of B_x (PWR/BWR)[a] (No Surcharges, No Penalties)		
1995	2.015/1.878[b]	--- / ---[c]	12.824/10.420[d]
1994	2.521/2.373[b]	--- / ---[c]	11.873/9.794[e]
	--- / ---	--- / ---	6.619/5.714[f]
1993	2.002/1.943[b]	--- / ---[c]	11.408/9.434[e]
	--- / ---	--- / ---	6.155/5.354[f]
1991	1.326/1.184	1.334/1.296	2.494/2.361
1988[g]	1.223/1.093	1.193/1.175	2.007/1.831
1986	1.000/1.000	0.857/0.898	1.678/1.561
	Values of B_x (PWR/BWR) (With Surcharges, No Penalties)[h]		
1995[i]	--- / ---	--- / ---	--- / ---
1994[i]	--- / ---	--- / ---	--- / ---
1993[i]	--- / ---	--- / ---	--- / ---
1991	2.765/2.302	2.773/2.414	3.933/3.478
1988	1.942/1.652	1.913/1.734	2.727/2.390
1986	1.360/1.279	1.217/1.177	2.038/1.840
	Values of B_x (PWR/BWR) (With Surcharges Including Penalties)[j]		
1995[i]	--- / ---	--- / ---	--- / ---
1994[i]	--- / ---	--- / ---	--- / ---
1993[i]	--- / ---	--- / ---	--- / ---
1991	4.204/3.420	4.213/3.532	5.372/4.596
1988	2.662/2.211	2.633/2.293	3.446/2.949
1986	1.720/1.559	1.577/1.457	2.397/2.120

(a) The values presented in the above table are developed in Appendix B, with all values normalized to the 1986 Washington (PWR/BWR) values with no LLRWPAA surcharges or penalties.
(b) Effective 1/1/93, Washington site is not accepting waste from outside the Northwest and Rocky Mountain Compacts.
(c) Nevada site closed 12/31/92.
(d) Effective 7/1/95, access is allowed for all states except states of Northwest and Rocky Mountain Compacts and North Carolina.
(e) Includes $220/ft^3 out-of-region access fee.
(f) Includes $74/ft^3 in-region access fee.

(g) Using the 1988 price schedules for the three sites and dividing the calculated burial costs at each site by the Washington site burial costs calculated for the year 1986 results in 1988 values for B_g at each of the three sites [i.e., with all values normalized to the Washington (PWR/BWR) values], as delineated in Reference 3.
(h) Waste originating from a state, outside the compact where the LLW disposal facility is located, which has met LLRWPAA milestones.
(i) No LLRWPAA surcharges or penalties after 12/31/92.
(j) Waste originating from a state, outside the compact where the LLW disposal facility is located, which has *not* met LLRWPAA milestones.

3 Development of Cost Escalation Formula

In the years since the initial studies were completed for decommissioning a reference PWR[4] and a reference BWR[5] power station, a number of updates were prepared in which the estimated costs were adjusted for escalation in the various cost elements. Decommissioning costs are divided into three general areas that tend to escalate similarly: 1) labor, materials and services; 2) energy and waste transportation; and 3) radioactive waste disposal. A relatively simple equation can be used to estimate the cost of decommissioning at some future time, given a cost estimate in present-year dollars and the fractional escalation of these three categories of cost over the time period of interest. That equation is

$$\text{Estimated Cost (Year x)} = [1986\ \$\ \text{Cost}]\ [A\,L_x + B\,E_x + C\,B_x]$$

where

Estimated Cost (Year x) = the estimated decommissioning costs in Year x dollars,

[1986 $ Cost] = the estimated decommissioning costs in 1986 dollars,

A = the fraction of the [1986 $ Cost] attributable to labor, materials and services (0.65)

B = the fraction of the [1986 $ Cost] attributable to energy and transportation (0.13)

C = the fraction of the [1986 $ Cost] attributable to waste burial (0.22)

L_x = labor, materials and services cost escalation, January of 1986 to January of Year x

E_x = energy and waste transportation cost escalation, January of 1986 to January of Year x

B_x = radioactive waste burial and surcharge cost escalation, January of 1986 to nominally January of Year x, i.e., burial cost in nominally January of Year x / burial cost in January of 1986.

$$= (R_x + \Sigma S_x) / (R_{1986} + \Sigma S_{1986})$$

where:

R_x = radioactive waste burial costs (excluding surcharges) in Year x dollars

ΣS_x = summation of surcharges in Year x dollars

R_{1986} = radioactive waste burial costs (excluding surcharges) in 1986 dollars

ΣS_{1986} = summation of surcharges in 1986 dollars.

Values for L_x and E_x for years subsequent to 1986 are to be based on the national producer price indices, national consumer price indices, and local conditions for a given site, as outlined in Sections 3.1 and 3.2. Thus, the licensee can evaluate these parameters appropriately for his particular site. The values to be used in determining B_x are taken from actual cost schedules [basic disposal costs plus surcharges resulting from the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA)]. Surcharges mandated by the LLRWPAA are applied to wastes generated outside of the regional waste compact wherein the LLW burial facility is located. As of January 1992, those surcharges are $\$40/ft^3$ for wastes generated within a compact which *has* met the milestones given in the Act towards implementing a LLW disposal facility in their compact, and $\$120/ft^3$ ($\$40/ft^3$ surcharge plus $\$80/ft^3$ penalty) for wastes generated within a compact which *has not* met the milestones given in the Act towards implementing a LLW disposal facility in their compact. After 12/31/92, no LLRWPAA surcharges are to be assessed. Evaluation of B_x is provided to the licensees via this report, as described in Section 3.3.

The evaluations presented in this chapter are based on information presented in NUREG/CR-0130 (Addendum 4)[1] and NUREG/CR-0672 (Addendum 3),[2] in which the estimated costs for immediate dismantlement of the reference PWR and the reference BWR are escalated to January 1986 dollars.

The cost elements for the PWR and the BWR are rearranged into the three categories, labor-related, energy-related, and burial-related, in Tables 6.3 and 5.3 of Addenda 4 and 3, respectively, and are combined for presentation in Table 3.1.

Table 3.1 Evaluation of the coefficients A, B, and C in January 1986 dollars

	Reference PWR Values		Reference BWR Values	
Cost Category	1986 $ (millions)	Coefficient	1986 $ (millions)	Coefficient
Labor	17.98[a]		35.12[b]	
Equipment	1.64[a]		4.03[b]	
Supplies	3.12[a]		3.71[b]	
Contractor	12.9[a]		21.1[b]	
Insurance	1.9[a]		1.9[b]	
Containers	10.9[c]		8.14[d]	
Added Staff	7.5[a]		4.4[b]	
Added Supplies	1.2[a]		0.2[b]	
Spec. Contractor	0.78[a]		0.71[b]	
Pre-engineering	7.4[a]		7.4[b]	
Post-TMI-backfits	0.9[a]		0.1[b]	
Surveillance	0.31[a]		--	
Fees	0.14[a]		0.14[b]	
Subtotal	66.67	A = 0.64	86.95	A = 0.66
Energy	8.31[a]		8.84[b]	
Transportation	6.08[c]		7.54[d]	
Subtotal	14.39	B = 0.14	16.38	B = 0.12
Burial	22.48[c]	C = 0.22	29.98[d]	C = 0.22
Total	103.54		133.31	

Note: All costs include a 25% contingency

(a) Based on Table 3.1, NUREG/CR-0130, Addendum 4.

(b) Based on Table 3.1, NUREG/CR-0672, Addendum 3.

(c) Based on Table 6.2, NUREG/CR-0130, Addendum 4.

(d) Based on Table 5.2, NUREG/CR-0672, Addendum 3.

Considering the uncertainties and contingencies contained within these numbers, and considering that the values of the coefficients for the PWR and the BWR are so similar, the best estimates of their values are their averages:

$$\bar{A} = 0.65 \quad \bar{B} = 0.13 \quad \bar{C} = 0.22$$

for both the PWR and BWR estimates.

3.1 Labor Escalation Factors

The escalation factor for labor, L, can be obtained from "Monthly Labor Review," published by the U.S. Department of Labor, Bureau of Labor Statistics (BLS). Specifically, the appropriate regional data from the table (currently Table 24) entitled "Employment Cost Index, private nonfarm workers, by bargaining status, region, and area size," subtitled "Compensation," should be used. L should be escalated from a base value in Table 24 corresponding to the amounts in the decommissioning rule amendments that are in January 1986 dollars. The base values of L from the BLS data for January 1986 are 130.5, 127.7, 125.0, and 130.1, for the Northeast, South, Midwest, and West regions, respectively. The 1986 index values are based on an index value of 100 in June 1981 (Base June 1981 = 100). The corresponding set of values for December 1994 are 124.3, 122.5, 125.0, and 121.7. Current BLS index values are based on an index value of 100 in June 1989 (Base June 1989 = 100). The scaling factor between the two bases is 1.555. Thus, the index value for 1994 is multiplied by 1.555 to be expressed in (Base June 1981 = 100) values, and the resulting value for the West region of the U.S. is

$$L = (121.7)_{\text{Base 1989}} \text{ (the December 1994 value)} \times (1.555)_{\text{Base 1981/Base 1989}} \div (130.5)_{\text{Base 1981}} \text{ (the January 1986 value)} = 1.450.$$

This value of L = 1.450 could then be used in the equation for a plant in the West region of the U.S.

3.2 Energy Escalation Factors

The escalation factor for energy, E, can be obtained from the "Producer Price Indexes," published by the U.S. Department of Labor, Bureau of Labor Statistics (BLS). Specifically, data from the table (currently Table 6) entitled "Producer Price Indexes and Percent Changes for Commodity Groupings and Individual Items" (PPI) should be used. The energy term, E, in the equation is made up of two components, namely, industrial electric power, P, and light fuel oil, F. Hence, E should be obtained using the BLS data in the following equations: for the reference PWR, [0.58P + 0.42F]; and for the reference BWR, [0.23P + 0.77F]. These equations are derived from Table 6.3 of Reference 1 and Table 5.3 of Reference 2. P should be taken from data for industrial electric power (Commodity code 0543 in Table 6), and F should be taken from data for light fuel oils (Commodity code 0573 in Table 6). As discussed for L in Section 3.1 above, P and F should be escalated from a base value in the BLS table corresponding to the amounts in the decommissioning rule amendments that are in January 1986 dollars. The base values of P and F from the BLS data for January 1986 are 114.2 and 82.0, respectively. No regional BLS data for these PPI commodity codes are currently available. All PPI values are based on a value of 100 for the year 1982 (Base 1982 = 100). Thus, for example, the values of P and F for December 1994 (latest data available) are

P = 127.5 (the December 1994 value) ÷ 114.2 (the January 1986 value) = 1.116

F = 55.0 (the December 1994 value) ÷ 82.0 (the January 1986 value) = 0.671.

Thus, the value of E for this example for the reference PWR is

$$E = [0.58 \times 1.116 + 0.42 \times 0.671] = 0.929.$$

3.3 Waste Burial Escalation Factors

The escalation factor for waste burial, B_x, can be taken directly from data on the appropriate burial location as given in Table 2.1 of this report. For example, the value of B_x (PWR) in January 1991 for the South Carolina burial site is 2.494 + 1.0 = 2.494. This value of B_x could then be used in the equation for a PWR station.

3.4 Sample Calculation of Estimated Reactor Decommissioning Costs

This sample calculation will demonstrate the use of the decommissioning cost equation developed in Section 3 using the appropriate escalation terms of L_x for labor, material and services; E_x for energy and waste transportation; and B_x for radioactive waste disposal. For this example it is assumed the reactor, located in the Northwest Compact in the United States, to be decommissioned in 1995 is a PWR, typical of the reference PWR.[4] All reactor decommissioning waste will be disposed of at the Washington burial site. The equation for estimating escalated decommissioning costs from Section 3 is

$$\text{Estimated Cost (Year x)} = [1986\ \$\ \text{Cost}] \; [A L_x + B E_x + C B_x]$$

where

Estimated Cost (Year x) = the estimated decommissioning costs in Year x dollars,

[1986 $ Cost] = the estimated decommissioning costs in 1986 dollars,

From the Decommissioning Rule (10 CFR 50.75) for the reference PWR,

[1986 $ Cost] = $105 million

A = the fraction of the [1986 $ Cost] attributable to labor, materials and services = 0.65

B = the fraction of the [1986 $ Cost] attributable to energy and transportation = 0.13

C = the fraction of the [1986 $ Cost] attributable to waste burial = 0.22

L_x = labor, materials and services cost escalation, January of 1986 to January of Year x

From Section 3.1 for the West region,

L_x = 1.450

E_x = energy and waste transportation cost escalation, January of 1986 to January of Year x

From Section 3.2,

E_x = 0.929

B_x = radioactive waste burial and surcharge cost escalation, January of 1986 to nominally January of Year x, i.e., burial cost in nominally January of Year x / burial cost in January of 1986.

From Table 2.1 for PWR waste burial at the Washington site in 1995,

B_x = 2.015

Thus, for these values and assumptions, the estimated decommissioning cost in Year 1995 dollars is

Estimated Cost (Year 1995) = [105] x
[(0.65)(1.450) + (0.13)(0.929) + (0.22)(2.015)]
= $158.19 million.

4 References

1. *Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station - Technical Support for Decommissioning Matters Related to the Final Decommissioning Rule.* NUREG/CR-0130 Addendum 4, Pacific Northwest Laboratory for U.S. Nuclear Regulatory Commission, May 1988.

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3. *Report on Waste Burial Charges - Escalation of Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities.* NUREG-1307 Revision 4, U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, Washington, D.C., June 1994.

4. *Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station.* NUREG/CR-0130, Pacific Northwest Laboratory for U.S. Nuclear Regulatory Commission, June 1978.

5. *Technology, Safety and Costs of Decommissioning a Reference Boiling Water Reactor Power Station.* NUREG/CR-0672, Pacific Northwest Laboratory for U.S. Nuclear Regulatory Commission, June 1980.

Appendix A

Burial Site Price Schedules for the Current Year

Appendix A

Burial Site Price Schedules for the Current Year

Contained in this appendix are the price schedules for burial of low-level wastes at the Washington site, effective for the year of 1995, and at the South Carolina site, effective July 1, 1995. These schedules are used in the calculations contained in Appendix B to develop the waste burial escalation factor, B_x, for the year 1995.

Beginning in 1993, the Northwest Compact has imposed on eligible (Northwest or Rocky Mountain Compact) waste generators a new annual permit fee based on the volume of waste to be shipped to the Washington site for disposal. In 1995, the annual permit fee ranges from $375 to $37,500. Hospitals, universities, research centers and industries pay the lower fees, and nuclear power plants pay the highest fee of $37,500 per year. The permit fees for nuclear power plants are included in this analysis for 1993, 1994, and 1995. They are shown as a single entry at the bottom of the waste-based costs in Tables B.4 through B.6 for the Washington site for the years 1993, 1994, and 1995.

At the South Carolina site, during the period of January 1, 1993 through June 30, 1994, the Southeast Compact imposed the collection of access fees of $\$220/ft^3$ from all eligible out-of-region waste generators. Eligible generators were those in compact regions or unaffiliated states that were in compliance with the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA). Large waste generators (over 1,500 cubic feet during that period) were assessed a total access fee based on their waste volume projection for that period. One-sixth of the total access fee was paid in advance on a quarterly basis. Large waste generators from the Southeast Compact States paid an access fee of $\$74/ft^3$.

Access to the South Carolina site by waste generators outside the Southeast Compact ended June 30, 1994, with site closure scheduled for December 31, 1995. However, effective July 1, 1995, the scheduled closure was cancelled and access to the Barnwell facility was extended to all states except the states of the Northwest and Rocky Mountain Compacts and North Carolina.

US ECOLOGY, INC.
WASHINGTON NUCLEAR CENTER
RADIOACTIVE WASTE DISPOSAL

SCHEDULE A
TEMPORARY RATES FOR 1995
EFFECTIVE JANUARY 1 ,1995

Note: Rates in this schedule A are temporary, subject to refund, in accordance with the provisions of the Commission's Ninth Supplemental Order in Docket No. TG-920234.

BASE DISPOSAL RATE $37.29 per cu. ft.

SURCHARGES

A. Exposure Surcharges

1. Packages (except as noted in Section 2)

R/HR AT CONTAINER SURFACE	PRICE PER CUBIC FEET
0.00 - 0.20	No surcharge
0.21 - 1.00	$ 1.84
1.01 - 2.00	3.29
2.01 - 5.00	4.88
5.01 - 10.00	8.96
10.01 - 20.00	17.92
20.01 - 40.00	26.49
Greater than 40.00	$32.15 + ($0.561 X R/HR in excess of 40)

2. Disposal Liners Removed from Shield (Greater Than 12.0 Cu.Ft. Each)

R/HR AT CONTAINER SURFACE	SURCHARGE PER LINER	PRICE PER CU.FT.
0.00 - 0.20	No Charge	$37.29
0.21 - 1.00	$ 273.50	37.29
1.01 - 2.00	615.50	37.29
2.01 - 5.00	1,037.30	37.29
5.01 - 10.00	1,652.80	37.29
10.01 - 20.00	2,165.60	37.29
20.01 - 40.00	2,484.70	37.29
Greater than 40.00	2,719.30 + ($23.84 X R/HR in excess of 40)	37.29

B. Surcharge for Curies (per load)

Less than 50 curies	No Charge
50 - 100 curies	$1,139.80
101 - 300 curies	2,279.60
301 - 500 curies	2,849.60
501 - 1,000 curies	3,419.50
1,001 - 5,000 curies	3,989.40
5,001 - 10,000 curies	5,813.00
10,001 - 15,000 curies	8,206.70
Greater than 15,000 curies	9,300.90 + ($0.443 x curies in excess of 15,000)

C. Minimum Charge per Shipment. All shipments will be subject to a minimum charge of $1,000 per generator per shipment.

US ECOLOGY, INC.
WASHINGTON NUCLEAR CENTER
RADIOACTIVE WASTE DISPOSAL

NUCLEAR DECOMMISSIONING WASTE

The base disposal rate applicable to waste from the decommissioning of nuclear generating units shall be 75% of those set forth above, provided, however, that this pricing provision shall not apply to nuclear decommissioning waste in excess of 55,000 cubic feet delivered by any single customer during calendar years 1994 and 1995.

EXTRAORDINARY VOLUMES

Waste shipments qualifying as an "extraordinary volume" under RCW 81.108.020(3) are charged a rate equal to 51.5% of the base disposal rate, in accordance with RCW 81.108.070(1) and the Seventh Supplemental Order in Docket No. TG-920234.

SCHEDULE B
PERMANENT RATES 1995

OTHER CHARGES

Poly HICs in engineered concrete barrier	
72" x 8' barrier	$5,033.88 each
84" x 8' barrier	5,118.12 each

MINIMUM CHARGE PER SHIPMENT

All shipments will be subject to a minimum charge of $1,000 per generator per shipment.

TAX AND FEE RIDER

Rates and charges shall be increased by the amount of any fee, surcharge or tax assessed on a volume or gross revenue basis against or collected by US Ecology, as listed below:

Perpetual Care and Maintenance Fee	$1.75 per cubic foot
Business & Occupation Tax	3.515% of rates and charges
Site Surveillance Fee	$2.55 per cubic foot
Surcharge (RCW 43.200.233)	$6.50 per cubic foot
Commission Regulatory Fee	1.0% of rates and charges

RECOVERY OF ADDITIONAL COSTS
ASSOCIATED WITH HEAVY OBJECTS

The Company shall be expected to be capable of handling and disposing of objects or packages of 5,000 pounds or less without incurring any additional equipment rental costs. For Heavy Objects for which the Company must secure additional equipment from third parties, costs incurred by the Company and paid to third parties to secure such equipment shall be allocated to, and recovered from, those disposing of Heavy Objects.

BARNWELL LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT FACILITY RATE SCHEDULE

All radwaste material shall be packaged in accordance with Department of Transportation and Nuclear Regulatory Commission Regulations in Title 49 and Title 10 of the Code of Federal Regulations, Chem-Nuclear Systems, Inc.'s Nuclear Regulatory Commission and South Carolina Radioactive Material Licenses, Chem-Nuclear's Systems, Inc.'s Barnwell Site Disposal Criteria, and amendments thereto.

1. BASE DISPOSAL CHARGES (not including surcharges):

A.	Standard Waste	$ 80.00 /ft.^{3}
B.	Biological Waste	82.00 /ft.^{3}
C.	Special Nuclear Material (SNM)	80.00 /ft.^{3}

Note 1: The minimum charge per shipment, excluding surcharges and specific other charges, is $1,000.00.

Note 2: Base disposal charge includes:

Extended-care fund	$ 2.80 /ft.^{3}

2. SOUTH CAROLINA LOW-LEVEL RADIOACTIVE WASTE DISPOSAL TAX: $ 235.00 /ft.^{3}

3. SITE STABILIZATION AND CLOSURE FUND:

All waste disposed	$ 4.20 /ft.^{3}

4. TECHNOLOGY CHARGE: To Be Determined

5. SURCHARGES:

A. Weight surcharges (crane loads only)

Weight of Container	Surcharge Per Container
0 - 1,000 lbs.	No surcharge
1,001 - 5,000 lbs.	$ 875.00
5,001 - 10,000 lbs.	1,560.00
10,001 - 20,000 lbs.	2,190.00
20,001 - 30,000 lbs.	2,820.00
30,001 - 40,000 lbs.	4,150.00
40,001 - 50,000 lbs.	5,400.00
Greater Than 50,000 lbs.	By Special Request

B. Curie Surcharges for Shielded Shipment:

Curie Content Per Shipment	Surcharge Per Shipment
0 - 5	$ 5,350.00
> 5 - 15	6,020.00
> 15 - 25	8,100.00
> 25 - 50	12,220.00
> 50 - 75	14,900.00
> 75 - 100	20,200.00
> 100 - 150	24,220.00
> 150 - 250	32,440.00
> 250 - 500	40,670.00
> 500 - 1,000	48,600.00
> 1,000	By Special Request

C. Curie Surcharges for Nonshielded Shipments Containing Tritium and Carbon 14:

Curie Content Per Shipment	Surcharge Per Shipment
0 - 1000	No surcharge
> 1000	$ 1.00 per curie for all curies over 1,000

D. Liner Surcharge (as applicable):

1. Large liners with maximum dimension of 82" diameter and 79" height	$ 9,700.00
2. Overpacks with maximum dimension of 33" diameter and 79" height	$ 3,300.00
3. 55-gallon drums with maximum dimension of 25.5" diameter and 36" height	$ 1,250.00
4. Items which do not conform to one of the above categories	Upon Request

E. Irradiated Hardware Overpack Surcharge

Per Shipment	$ 11,000.00

F. Cask Handling Fee (minimum) $ 2,300.00 per cask

G.	Special Nuclear Material Surcharge	$ 10.00 per gram
H.	Barnwell Surcharge	2.4% applicable to all items on this schedule (except Item 2)

6. MISCELLANEOUS:

A. Transport vehicles with additional shielding features may be subject to an additional handling fee which will be provided upon request.

B. Decontamination services, if required: $150.00 per man hour, plus supplies at current Chem-Nuclear rate.

C. Customers may be charged for all special services as described in the Barnwell Site Disposal Criteria.

D. Terms of payment are NET 15 DAYS upon presentation of invoices. A per-month service charge of 1½% shall be levied on accounts not paid within 15 days.

E. Company purchase orders or a written letter of authorization in form and substance acceptable to Chem-Nuclear shall be received before receipt of radioactive waste material at the Barnwell Disposal Site and shall refer to Chem-Nuclear's Radioactive Material Licenses, the Barnwell Site Disposal Criteria, and subsequent changes thereto.

F. All shipments shall receive a Chem-Nuclear allocation number and conform to the Prior Notification Plan. Additional information may be obtained by calling 803-259-3577 or 803-259-3578.

G. This rate schedule is subject to change and does not constitute an offer of contract which is capable of being accepted by any party.

H. A charge of $17,100 is applicable to all shipments which require special site setup for waste disposal.

I. Class B/C waste received with chelating agents, which require separation in the trench, may be subject to a surcharge if Stable Class A waste is not available for use in achieving the required separation from other wastes.

ACCESS FEE INFORMATION SHEET

- **GENERATORS OUTSIDE THE SOUTHEAST COMPACT**

  ACCESS FEE IS $220/Ft^3

  - Large Generators (over 1,500 ft^3) have made a specific volume commitment and are pre-paying 1/6 of their total volume access fees on a quarterly basis.
  - Small Generators (under 1,500 ft^3) pay as they dispose
  - When a Small Generator exceeds 1,500 ft^3 or a Large Generator exceeds 110% of their contracted volume, the access fee is equal to 130% of the standard access fee (i.e., $286/ft^3 presently).
  - Generators may petition the S.E.C.C. to change their projected volume (or any other aspect of the Import Policy).

- **GENERATORS IN THE SOUTHEAST COMPACT**

  ACCESS FEE:

  - All generators in the S.E.C.C., outside South Carolina, have $34/ft^3 access fee included on their disposal invoice

  INCENTIVE PAYMENT FUND:

  - All generators in the S.E.C.C, outside South Carolina, that disposed of waste during the period January 1, 1989 through June 30, 1992, have been invoiced for "S.E. Assessment Fee - 5 million dollar Incentive Payment Fund" based on their pro-rata volume to the total volume during the period. Generators that would have had invoices under $100 total were exempted. If an exempted generator or new customer disposes during 1993, then they will be charged at the time of disposal $18.98/ft^3 (if they meet the $100 minimum, cumulative).

  PRE-CONSTRUCTION FUND

  - All Southeast generators will be invoiced on a quarterly basis for 12 quarters (through 1995) for "SE Access Fee - 3 million dollars per quarter for 36 million dollars over the three year period 1/1/93 through 12/31/95". Their pro-rata share of 3 million per quarter is based on the previous four quarters total disposal volume (rolling total in previous quarters) and their disposed of volume.

Appendix B

Calculation of Burial Cost Escalation Factors

Appendix B

Calculation of Burial Cost Escalation Factors

The calculations necessary to determine the costs for burial of the radioactive wastes postulated to result from decommissioning of the reference PWR and the reference BWR are performed using a detailed spreadsheet. The spreadsheet evaluates the burial costs for each of the items originally costed in the reference PWR[4] and BWR[5] decommissioning studies and in the updated costs presented in Addendums 4[1] and 3,[2] respectively, to those reports. Those costs are based on the burial price schedule for U.S. Ecology's Washington Nuclear Center, located on the Hanford Site near Richland, Washington.

To account for the differences in burial price schedules between the Washington facility and the facilities in Nevada and South Carolina, the base burial costs for each of those latter sites are also calculated, using the spreadsheet, and are normalized to the costs calculated for the Washington site. In addition, to account for the different mixture and volume of waste associated with the reference BWR, the escalation factors are also calculated for the reference BWR, which are also normalized to the value for the Washington site. Thus, as shown in Table 2.1 of the summary, in the base year (1986), for the Washington site, B_x = 1.0/1.0, where (PWR/BWR) is the order of presentation. For the Nevada site, B_x = 0.857/0.898, and for the South Carolina site, B_x = 1.678/1.561.

The spreadsheet calculations, which are too voluminous to present here, are summarized in Tables B.1 through B.15, for the years 1986,[3] 1988,[3] 1991,[3] 1993,[3] 1994,[3] and 1995, and for each of the three sites, except the Nevada site which closed December 31, 1992. Recalculation of the costs in 1995 dollars for burial is based on the same inventory of radioactive wastes as was postulated in the 1986 and 1978-80 analyses. Subsequently, starting in 1988, the inventories also include post-TMI-2 contributions from the reference PWR[1] and the reference BWR.[2] Beginning in 1994, the rate schedule for handling and disposing of heavy objects (greater than 5,000 pounds) at the Washington site was revised to recover additional crane rental costs from the waste generator. A shipment campaign of heavy objects for disposal was assumed which would minimize the crane surcharge and result in the one-time heavy object charge shown in Table B.5 and Table B.6. The weight surcharge for shipments greater than 50,000 pounds to the South Carolina site was increased by 30% over the 1994 rates since that information was not immediately available from the site operator. The total weight surcharge contributes less than 0.5% to the total waste disposal cost. Using the price schedules in effect on July 1, 1995 for the two remaining sites and dividing the calculated burial costs at each site by the Washington site burial costs calculated for the year 1986 results in 1995 values for B_x at each of the two remaining sites, as listed in Table 2.1 of the summary. Also included in Table 2.1 are values of B_x for waste generators required to pay surcharges (with/without penalties) mandated by the Low-Level Radioactive Waste Policy Amendments Act of 1985. Effective 1/1/93, no LLRWPAA surcharges or penalties are to be assessed.

As other low-level radioactive waste burial sites come into service in the various interstate compacts, values for B_x will be calculated using the price schedules for each of those sites and will be incorporated into subsequent issues of this report. Those materials whose activity concentrations exceed the limits for Class C LLW are identified by footnote as GTCC material. Because the analyses in this report postulate placing this material in a LLW disposal facility, the disposal costs for this material may be overestimated by factors ranging from about 1.6 to more than 12, depending upon the disposal site, compared with high-density packaging and geologic repository disposal.

Table B.1 Burial costs at the Washington Site
Reference PWR (1986 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	28,864	27,284	56,544	106,224	94,620	313,536
VESSEL HEAD & BOTTOM	0	28,720	0	0	99,600	128,320
UPPER CORE SUPPORT ASSM	0	2,872	0	5,154	9,960	17,986
UPPER SUPPORT COLUMN	0	2,872	0	5,154	9,960	17,986
UPPER CORE BARREL	0	1,436	2,981	6,351	4,980	15,748
UPPER CORE GRID PLATE	0	3,590	11,098	15,878	12,450	43,016
GUIDE TUBES	0	4,308	0	5,345	14,940	24,593
LOWER CORE BARREL[a]	0	22,976	155,998	101,617	79,680	360,270
THERMAL SHIELDS[a]	0	4,308	31,173	19,053	14,940	69,474
CORE SHROUD[a]	0	2,872	667,474	12,702	9,960	693,008
LOWER GRID PLATE[a]	0	3,590	107,777	15,878	12,450	139,694
LOWER SUPPORT COLUMN	0	718	3,086	3,176	2,490	9,470
LOWER CORE FORGING	0	7,898	15,772	34,931	27,390	85,991
MISC INTERNALS	0	5,744	11,503	25,404	19,920	62,571
BIO SHIELD CONCRETE	0	0	0	0	621,504	621,504
REACTOR CAVITY LINER	0	0	0	0	12,749	12,749
REACTOR COOLANT PUMPS	65,532	0	0	0	104,580	170,112
PRESSURIZER	13,054	0	0	0	89,640	102,694
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	9,960	9,960
PRESSURIZER RELIEF TANK	1,109	0	0	0	29,880	30,989
SAFETY INJECTION ACCUM TANKS	24,154	0	0	0	99,600	123,754
STEAM GENERATORS	249,417	0	0	0	531,914	781,331
REACTOR COOLANT PIPING	16,560	0	0	0	82,170	98,730
REMAINING CONTAM. MATLS	0	0	0	0	1,309,939	1,309,939
CONTAMINATED MATRL OTHR BLD	0	0	0	0	11,879,840	11,879,840
FILTER CARTRIDGES	0	4,308	9,322	26,663	7,844	48,137
SPENT RESINS	0	14,360	35,889	55,907	49,800	155,956
COMBUSTIBLE WASTES	0	43,080	0	0	252,113	295,193
EVAPORATOR BOTTOMS	0	67,492	0	64,931	234,060	366,483
SUBTOTAL PWR COSTS	398,691	248,428	1,108,617	504,366	15,728,932	17,989,034
TOTAL PWR COSTS						17,989,034

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.1 Burial costs at the Washington Site
Reference BWR (1986 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	20,104	21,361	119,000	8,790	169,255
FUEL SUPPORT & PIECES	0	10,052	0	39,135	4,407	53,594
CONTROL RODS/INCORES	0	5,744	47,074	320,000	13,197	386,015
CONTROL RODS GUIDES	0	8,616	0	19,738	3,511	31,865
JET PUMPS	0	28,720	31,709	670,000	12,326	742,755
TOP FUEL GUIDES	0	51,696	106,191	1,206,000	21,115	1,385,003
CORE SUPPORT PLATE	0	22,258	0	50,990	9,686	82,934
CORE SHROUD[a]	0	100,520	1,392,364	1,785,000	41,334	3,319,218
REACTOR VESSEL WALL	16,968	15,796	0	36,186	7,047	75,998
SAC SHIELD	48,560	0	0	0	79,132	127,692
REACT. WATER REC	35,871	0	0	0	77,389	113,261
SAC SHIELD	137,981	0	0	0	272,605	410,587
OTHER PRIMARY CONTAINMENT	0	0	0	0	3,109,263	3,109,263
CONTAINM. ATMOSPHERIC	889	0	0	0	42,206	43,094
HIGH PRESSURE CORE SPRAY	4,489	0	0	0	14,940	19,429
LOW PRESSURE CORE SPRAY	1,394	0	0	0	8,790	10,184
REACTOR BLDG CLOSED COOLING	2,683	0	0	0	28,137	30,820
REACTOR CORE ISO COOLING	694	0	0	0	11,429	12,123
RESIDUAL HEAT REMOVAL	12,760	0	0	0	54,531	67,291
POOL LINES & RACKS	51,514	0	0	0	335,030	386,544
CONTAMINATED CONCRETE	9,509	0	0	0	381,642	391,151
OTHER REACTOR BUILDING	0	0	0	0	1,247,739	1,247,739
TURBINE	127,072	0	0	0	1,236,335	1,363,406
NUCLEAR STEAM CONDENSATE	18,432	0	0	0	319,193	337,625
LOW PRESSURE FEEDWATER HEATERS	139,860	0	0	0	648,047	787,907
MAIN STEAM	4,683	0	0	0	62,449	67,132
MOISTURE SEPARATOR REHEATERS	85,652	0	0	0	628,725	714,377
REACTOR FEEDWATER PUMPS	8,943	0	0	0	170,590	179,533
HIGH PRESSURE FEEDWATER HEATERS	27,554	0	0	0	106,398	133,952
OTHER TG BLDG	0	0	0	0	4,270,848	4,270,848
RAD WASTE BLDG	0	0	0	0	2,114,782	2,114,782
REACTOR BLDG	0	45,952	0	0	272,859	318,811
TG BLDG	0	30,156	0	0	184,198	214,354
RAD WASTE & CONTROL	0	27,284	0	0	158,975	186,259
CONCENTRATOR BOTTOMS	0	161,550	0	153,896	560,250	875,696
OTHER	0	43,798	0	4,911	151,890	200,599
SUBTOTAL BWR COSTS	735,508	572,246	1,598,700	4,404,856	16,669,784	23,981,094
TOTAL BWR COSTS						23,981,094

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.2 Burial costs at the Washington Site
Reference PWR (1988 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	29,671	45,600	62,710	119,320	112,480	369,781
VESSEL HEAD & BOTTOM	0	22,000	0	0	118,400	140,400
UPPER CORE SUPPORT ASSM	0	2,200	0	4,770	11,840	18,810
UPPER SUPPORT COLUMN	0	2,200	0	4,770	11,840	18,810
UPPER CORE BARREL	0	2,400	3,306	7,560	5,920	19,186
UPPER CORE GRID PLATE	0	6,000	12,295	18,900	14,800	51,995
GUIDE TUBES	0	3,300	0	4,482	17,760	25,542
LOWER CORE BARREL[a]	0	38,400	172,599	120,960	94,720	426,679
THERMAL SHIELDS[a]	0	7,200	34,488	22,680	17,760	82,128
CORE SHROUD[a]	0	4,800	738,079	15,120	11,840	769,839
LOWER GRID PLATE[a]	0	6,000	119,178	18,900	14,800	158,878
LOWER SUPPORT COLUMN	0	1,200	3,417	3,780	2,960	11,357
LOWER CORE FORGING	0	13,200	17,495	41,580	32,560	104,835
MISC INTERNALS	0	9,600	12,759	30,240	23,680	76,279
BIO SHIELD CONCRETE	0	0	0	0	738,816	738,816
REACTOR CAVITY LINER	0	0	0	0	15,155	15,155
REACTOR COOLANT PUMPS	154,800	0	0	0	124,320	279,120
PRESSURIZER	13,224	0	0	0	106,560	119,784
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	11,840	11,840
PRESSURIZER RELIEF TANK	1,151	0	0	0	35,520	36,671
SAFETY INJECTION ACCUM TANKS	24,324	0	0	0	118,400	142,724
STEAM GENERATORS	547,200	0	0	0	632,315	1,179,515
REACTOR COOLANT PIPING	16,708	0	0	0	97,680	114,388
REMAINING CONTAM. MATLS	0	0	0	0	1,557,197	1,557,197
CONTAMINATED MATRL OTHR BLD	0	0	0	0	14,122,219	14,122,219
FILTER CARTRIDGES	0	3,300	10,338	18,522	9,324	41,484
SPENT RESINS	0	24,000	39,780	49,800	59,200	172,780
COMBUSTIBLE WASTES	0	33,000	0	0	299,700	332,700
EVAPORATOR BOTTOMS	0	51,700	0	63,488	278,240	393,428
POST-TMI-2 ADDITIONS	0	0	0	0	460,665	460,665
SUBTOTAL PWR COSTS	787,079	276,100	1,226,444	544,872	19,158,511	21,993,005
TOTAL PWR COSTS						21,993,005

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.2 Burial costs at the Washington Site
Reference BWR (1988 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	33,600	23,689	180,880	10,449	248,618
FUEL SUPPORT & PIECES	0	16,800	0	43,960	5,239	65,999
CONTROL RODS/INCORES	0	9,600	52,074	132,720	15,688	210,082
CONTROL RODS GUIDES	0	6,600	0	18,792	4,174	29,566
JET PUMPS	0	48,000	35,160	405,600	14,652	503,412
TOP FUEL GUIDES	0	86,400	117,776	730,080	25,101	959,357
CORE SUPPORT PLATE	0	17,050	0	48,546	11,514	77,110
CORE SHROUD[a]	0	168,000	1,539,720	1,419,600	49,136	3,176,456
REACTOR VESSEL WALL	17,435	12,100	0	34,452	8,377	72,364
SAC SHIELD	48,857	0	0	0	94,069	142,926
REACT. WATER REC	79,300	0	0	0	91,997	171,297
SAC SHIELD	138,788	0	0	0	324,061	462,849
OTHER PRIMARY CONTAINMENT	0	0	0	0	3,696,152	3,696,152
CONTAINM. ATMOSPHERIC	931	0	0	0	50,172	51,103
HIGH PRESSURE CORE SPRAY	4,531	0	0	0	17,760	22,291
LOW PRESSURE CORE SPRAY	1,416	0	0	0	10,449	11,864
REACTOR BLDG CLOSED COOLING	2,747	0	0	0	33,448	36,195
REACTOR CORE ISO COOLING	716	0	0	0	13,586	14,302
RESIDUAL HEAT REMOVAL	12,909	0	0	0	64,824	77,733
POOL LINES & RACKS	51,833	0	0	0	398,268	450,101
CONTAMINATED CONCRETE	9,848	0	0	0	453,679	463,528
OTHER REACTOR BUILDING	0	0	0	0	1,483,256	1,483,256
TURBINE	128,303	0	0	0	1,469,699	1,598,002
NUCLEAR STEAM CONDENSATE	18,687	0	0	0	379,442	398,129
LOW PRESSURE FEEDWATER HEATERS	140,751	0	0	0	770,370	911,121
MAIN STEAM	4,747	0	0	0	74,237	78,983
MOISTURE SEPARATOR REHEATERS	86,204	0	0	0	747,400	833,604
REACTOR FEEDWATER PUMPS	9,155	0	0	0	202,790	211,945
HIGH PRESSURE FEEDWATER HEATERS	27,724	0	0	0	126,481	154,205
OTHER TG BLDG	0	0	0	0	5,076,992	5,076,992
RAD WASTE BLDG	0	0	0	0	2,513,958	2,513,958
REACTOR BLDG	0	35,200	0	0	322,000	357,200
TG BLDG	0	23,100	0	0	217,372	240,472
RAD WASTE & CONTROL	0	20,900	0	0	187,607	208,507
CONCENTRATOR BOTTOMS	0	123,750	0	150,378	666,000	940,128
OTHER	0	33,550	0	3,677	180,560	217,787
POST-TMI-2 ADDITIONS	0	0	0	0	37,651	37,651
SUBTOTAL BWR COSTS	784,881	634,650	1,768,419	3,168,685	19,848,608	26,205,242
TOTAL BWR COSTS						26,205,242

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.3 Burial costs at the Washington Site
Reference PWR (1991 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	30,411	49,780	67,982	129,200	122,018	399,392
VESSEL HEAD & BOTTOM	0	24,000	0	0	128,440	152,440
UPPER CORE SUPPORT ASSM	0	2,400	0	5,176	12,844	20,420
UPPER SUPPORT COLUMN	0	2,400	0	5,176	12,844	20,420
UPPER CORE BARREL	0	2,620	3,584	8,200	6,422	20,826
UPPER CORE GRID PLATE	0	6,550	13,374	20,500	16,055	56,479
GUIDE TUBES	0	3,600	0	4,866	19,266	27,732
LOWER CORE BARREL[a]	0	41,920	188,448	131,200	102,752	464,320
THERMAL SHIELDS[a]	0	7,860	37,662	24,600	19,266	89,388
CORE SHROUD[a]	0	5,240	807,248	16,400	12,844	841,732
LOWER GRID PLATE[a]	0	6,550	130,344	20,500	16,055	173,449
LOWER SUPPORT COLUMN	0	1,310	3,724	4,100	3,211	12,345
LOWER CORE FORGING	0	14,410	18,958	45,100	35,321	113,789
MISC INTERNALS	0	10,480	13,826	32,800	25,688	82,794
BIO SHIELD CONCRETE	0	0	0	0	801,466	801,466
REACTOR CAVITY LINER	0	0	0	0	16,440	16,440
REACTOR COOLANT PUMPS	168,000	0	0	0	134,862	302,862
PRESSURIZER	13,380	0	0	0	115,596	128,976
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	12,844	12,844
PRESSURIZER RELIEF TANK	1,190	0	0	0	38,532	39,722
SAFETY INJECTION ACCUM TANKS	24,480	0	0	0	128,440	152,920
STEAM GENERATORS	582,400	0	0	0	685,934	1,268,334
REACTOR COOLANT PIPING	16,845	0	0	0	105,963	122,808
REMAINING CONTAM. MATLS	0	0	0	0	1,689,243	1,689,243
CONTAMINATED MATRL OTHR BLD	0	0	0	0	15,319,745	15,319,745
FILTER CARTRIDGES	0	3,600	11,212	20,076	10,115	45,002
SPENT RESINS	0	26,200	43,200	54,000	64,220	187,620
COMBUSTIBLE WASTES	0	36,000	0	0	325,114	361,114
EVAPORATOR BOTTOMS	0	56,400	0	68,850	301,834	427,084
POST-TMI-2 ADDITIONS	0	0	0	0	499,728	499,728
SUBTOTAL PWR COSTS	836,706	301,320	1,339,562	590,744	20,783,101	23,851,433
TOTAL PWR COSTS						23,851,433

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.3 Burial costs at the Washington Site Reference BWR (1991 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	36,680	25,687	196,000	11,335	269,702
FUEL SUPPORT & PIECES	0	18,340	0	47,600	5,683	71,623
CONTROL RODS/INCORES	0	10,480	56,886	144,000	17,018	228,384
CONTROL RODS GUIDES	0	7,200	0	20,400	4,528	32,128
JET PUMPS	0	52,400	38,140	440,000	15,894	546,434
TOP FUEL GUIDES	0	94,320	127,666	792,000	27,229	1,041,215
CORE SUPPORT PLATE	0	18,600	0	52,700	12,491	83,791
CORE SHROUD[M]	0	183,400	1,683,780	1,540,000	53,303	3,460,483
REACTOR VESSEL WALL	17,864	13,200	0	37,400	9,087	77,551
SAC SHIELD	49,130	0	0	0	102,046	151,176
REACT. WATER REC	84,800	0	0	0	99,798	184,598
SAC SHIELD	139,528	0	0	0	351,540	491,069
OTHER PRIMARY CONTAINMENT	0	0	0	0	4,009,576	4,009,576
CONTAINM. ATMOSPHERIC	970	0	0	0	54,426	55,396
HIGH PRESSURE CORE SPRAY	4,570	0	0	0	19,266	23,836
LOW PRESSURE CORE SPRAY	1,435	0	0	0	11,335	12,770
REACTOR BLDG CLOSED COOLING	2,805	0	0	0	36,284	39,089
REACTOR CORE ISO COOLING	735	0	0	0	14,738	15,473
RESIDUAL HEAT REMOVAL	13,045	0	0	0	70,321	83,366
POOL LINES & RACKS	52,125	0	0	0	432,040	484,165
CONTAMINATED CONCRETE	10,160	0	0	0	492,150	502,310
OTHER REACTOR BUILDING	0	0	0	0	1,609,032	1,609,032
TURBINE	129,433	0	0	0	1,594,326	1,723,759
NUCLEAR STEAM CONDENSATE	18,920	0	0	0	411,618	430,538
LOW PRESSURE FEEDWATER HEATERS	141,569	0	0	0	835,695	977,264
MAIN STEAM	4,805	0	0	0	80,532	85,337
MOISTURE SEPARATOR REHEATERS	86,710	0	0	0	810,778	897,488
REACTOR FEEDWATER PUMPS	9,350	0	0	0	219,986	229,336
HIGH PRESSURE FEEDWATER HEATERS	27,880	0	0	0	137,206	165,086
OTHER TG BLDG	0	0	0	0	5,507,507	5,507,507
RAD WASTE BLDG	0	0	0	0	2,727,134	2,727,134
REACTOR BLDG	0	38,400	0	0	349,314	387,714
TG BLDG	0	25,200	0	0	235,811	261,011
RAD WASTE & CONTROL	0	22,800	0	0	203,520	226,320
CONCENTRATOR BOTTOMS	0	135,000	0	163,080	722,475	1,020,555
OTHER	0	36,600	0	3,990	195,871	236,461
POST-TMI-2 ADDITIONS	0	0	0	0	40,844	40,844
SUBTOTAL BWR COSTS	795,836	692,620	1,932,159	3,437,170	21,531,737	28,389,521
TOTAL BWR COSTS						28,389,521

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.4 Burial costs at the Washington Site Reference PWR (1993 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE CHARGE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	95,000	49,780	104,306	134,436	136,496	520,019
VESSEL HEAD & BOTTOM	0	40,000	0	0	143,680	183,680
UPPER CORE SUPPORT ASSM	0	4,000	0	6,368	14,368	24,736
UPPER SUPPORT COLUMN	0	4,000	0	6,368	14,368	24,736
UPPER CORE BARREL	0	2,620	5,490	7,994	7,184	23,288
UPPER CORE GRID PLATE	0	6,550	19,214	19,985	17,960	63,709
GUIDE TUBES	0	6,000	0	5,995	21,552	33,547
LOWER CORE BARREL[a]	0	41,920	331,857	127,904	114,944	616,625
THERMAL SHIELDS[a]	0	7,860	70,795	23,982	21,552	124,189
CORE SHROUD[a]	0	5,240	1,462,414	15,988	14,368	1,498,010
LOWER GRID PLATE[a]	0	6,550	236,051	19,985	17,960	280,546
LOWER SUPPORT COLUMN	0	1,310	5,600	3,997	3,592	14,499
LOWER CORE FORGING	0	14,410	24,154	43,967	39,512	122,043
MISC INTERNALS	0	10,480	17,566	31,976	28,736	88,758
BIO SHIELD CONCRETE	0	0	0	0	896,563	896,563
REACTOR CAVITY LINER	0	0	0	0	18,391	18,391
REACTOR COOLANT PUMPS	120,000	0	0	0	150,864	270,864
PRESSURIZER	40,000	0	0	0	129,312	169,312
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	14,368	14,368
PRESSURIZER RELIEF TANK	2,000	0	0	0	43,104	45,104
SAFETY INJECTION ACCUM TANKS	80,000	0	0	0	143,680	223,680
STEAM GENERATORS	320,000	0	70,266	0	767,323	1,157,589
REACTOR COOLANT PIPING	70,000	0	0	0	118,536	188,536
REMAINING CONTAM. MATLS	0	0	0	0	1,889,679	1,889,679
CONTAMINATED MATRL OTHR BLD	0	0	0	0	17,137,504	17,137,504
FILTER CARTRIDGES	0	6,000	19,763	24,902	11,315	61,980
SPENT RESINS	0	26,200	76,856	61,572	71,840	236,468
COMBUSTIBLE WASTES	0	60,000	0	0	363,690	423,690
EVAPORATOR BOTTOMS	0	94,000	84,542	74,536	337,648	590,725
POST-TMI-2 ADDITIONS	0	0	0	0	559,023	559,023
SUBTOTAL PWR COSTS	727,000	386,920	2,528,873	609,955	23,249,112	27,501,860
ANNUAL PERMIT FEES (3 YRS)						105,000
TAXES & FEES (% OF CHARGES)						1,787,621
TAXES & FEES ($/CU.FT.)						6,627,809
TOTAL PWR COSTS						36,022,291

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.4 Burial costs at the Washington Site
Reference BWR (1993 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE CHARGE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	36,680	46,115	343,353	12,680	438,827
FUEL SUPPORT & PIECES	0	18,340	0	49,529	6,358	74,227
CONTROL RODS/INCORES	4,000	10,480	101,068	932,008	19,038	1,066,593
CONTROL RODS GUIDES	0	12,000	0	25,032	5,065	42,097
JET PUMPS	0	52,400	65,878	839,496	17,780	975,554
TOP FUEL GUIDES	0	94,320	197,633	1,511,093	30,460	1,833,506
CORE SUPPORT PLATE	0	31,000	0	64,666	13,973	109,639
CORE SHROUD[a]	0	183,400	3,043,488	2,198,924	59,627	5,485,439
REACTOR VESSEL WALL	55,000	22,000	24,154	45,892	10,165	157,211
SAC SHIELD	140,000	0	0	0	114,154	254,154
REACT. WATER REC	50,000	0	0	0	111,639	161,639
SAC SHIELD	380,000	0	0	0	393,252	773,252
OTHER PRIMARY CONTAINMENT	0	0	0	0	4,485,330	4,485,330
CONTAINM. ATMOSPHERIC	2,000	0	0	0	60,884	62,884
HIGH PRESSURE CORE SPRAY	20,000	0	0	0	21,552	41,552
LOW PRESSURE CORE SPRAY	5,000	0	0	0	12,680	17,680
REACTOR BLDG CLOSED COOLING	7,500	0	0	0	40,590	48,090
REACTOR CORE ISO COOLING	1,000	0	0	0	16,487	17,487
RESIDUAL HEAT REMOVAL	70,000	0	0	0	78,665	148,665
POOL LINER & RACKS	150,000	0	0	0	483,304	633,304
CONTAMINATED CONCRETE	16,000	0	0	0	550,546	566,546
OTHER REACTOR BUILDING	0	0	0	0	1,799,951	1,799,951
TURBINE	580,000	0	0	0	1,783,500	2,363,500
NUCLEAR STEAM CONDENSATE	60,000	0	0	0	460,458	520,458
LOW PRESSURE FEEDWATER HEATERS	420,000	0	0	0	934,854	1,354,854
MAIN STEAM	15,000	0	0	0	90,087	105,087
MOISTURE SEPARATOR REHEATERS	260,000	0	0	0	906,980	1,166,980
REACTOR FEEDWATER PUMPS	25,000	0	0	0	246,088	271,088
HIGH PRESSURE FEEDWATER HEATERS	80,000	0	0	0	153,486	233,486
OTHER TG BLDG	0	0	0	0	6,160,998	6,160,998
RAD WASTE BLDG	0	0	0	0	3,050,722	3,050,722
REACTOR BLDG	0	64,000	0	0	390,617	454,617
TG BLDG	0	42,000	0	0	263,693	305,693
RAD WASTE & CONTROL	0	38,000	0	0	227,585	265,585
CONCENTRATOR BOTTOMS	0	225,000	199,826	176,606	808,200	1,409,632
OTHER	0	61,000	0	5,007	219,112	285,119
POST-TMI-2 ADDITIONS	0	0	0	0	45,690	45,690
SUBTOTAL BWR COSTS	2,340,500	890,620	3,678,160	6,191,605	24,086,252	37,187,137
ANNUAL PERMIT FEES (3.5 YRS)						122,500
TAXES & FEES (% OF CHARGES)						2,417,164
TAXES & FEES ($/CU.FT.)						6,862,653
TOTAL BWR COSTS						46,589,455

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.5 Burial costs at the Washington Site
Reference PWR (1994 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE CHARGE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	0	49,780	146,585	188,932	191,824	577,121
VESSEL HEAD & BOTTOM	0	40,000	0	0	201,920	241,920
UPPER CORE SUPPORT ASSM	0	4,000	0	8,950	20,192	33,142
UPPER SUPPORT COLUMN	0	4,000	0	8,950	20,192	33,142
UPPER CORE BARREL	0	2,620	7,715	11,235	10,096	31,666
UPPER CORE GRID PLATE	0	6,550	27,003	28,087	25,240	86,879
GUIDE TUBES	0	6,000	0	8,425	30,288	44,713
LOWER CORE BARREL[a]	0	41,920	466,406	179,754	161,536	849,616
THERMAL SHIELDS[a]	0	7,860	99,504	33,704	30,288	171,356
CORE SHROUD[a]	0	5,240	2,055,886	22,469	20,192	2,103,787
LOWER GRID PLATE[a]	0	6,550	331,843	28,087	25,240	391,720
LOWER SUPPORT COLUMN	0	1,310	7,869	5,617	5,048	19,845
LOWER CORE FORGING	0	14,410	33,945	61,790	55,528	165,673
MISC INTERNALS	0	10,480	24,687	44,938	40,384	120,490
BIO SHIELD CONCRETE	0	0	0	0	1,259,981	1,259,981
REACTOR CAVITY LINER	0	0	0	0	25,846	25,846
REACTOR COOLANT PUMPS	0	0	0	0	212,016	212,016
PRESSURIZER	0	0	0	0	181,728	181,728
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	20,192	20,192
PRESSURIZER RELIEF TANK	0	0	0	0	60,576	60,576
SAFETY INJECTION ACCUM TANKS	0	0	0	0	201,920	201,920
STEAM GENERATORS	0	0	98,749	0	1,078,354	1,177,103
REACTOR COOLANT PIPING	0	0	0	0	166,584	166,584
REMAINING CONTAM. MATLS	0	0	0	0	2,655,652	2,655,652
CONTAMINATED MATRL OTHR BLD	0	0	0	0	24,084,109	24,084,109
FILTER CARTRIDGES	0	6,000	27,774	34,994	15,901	84,670
SPENT RESINS	0	26,200	108,010	86,530	100,960	321,700
COMBUSTIBLE WASTES	0	60,000	0	0	511,110	571,110
EVAPORATOR BOTTOMS	0	94,000	118,811	104,747	474,512	792,070
POST-TMI-2 ADDITIONS	0	0	0	0	785,620	785,620
HEAVY OBJECT CHARGE	102,800	0	0	0	0	102,800
SUBTOTAL PWR COSTS	102,800	386,920	3,554,787	857,208	32,673,029	37,574,744
ANNUAL PERMIT FEES (3 YRS)						105,000
TAXES & FEES (% OF CHARGES)						1,690,863
TAXES & FEES ($/CU.FT.)						5,987,035
TOTAL PWR COSTS						45,357,642

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.5 Burial costs at the Washington Site
Reference BWR (1994 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE CHARGE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	36,680	64,806	482,566	17,819	601,871
FUEL SUPPORT & PIECES	0	18,340	0	69,607	8,935	96,882
CONTROL RODS/INCORES	0	10,480	142,057	1,309,922	26,754	1,489,213
CONTROL RODS GUIDES	0	12,000	0	35,179	7,118	54,297
JET PUMPS	0	52,400	92,580	1,179,884	24,988	1,349,852
TOP FUEL GUIDES	0	94,320	277,740	2,123,791	42,807	2,538,658
CORE SUPPORT PLATE	0	31,000	0	90,880	19,637	141,516
CORE SHROUD[a]	0	183,400	4,278,498	3,090,500	83,797	7,636,195
REACTOR VESSEL WALL	0	22,000	33,964	64,495	14,286	134,725
SAC SHIELD	0	0	0	0	160,425	160,425
REACT. WATER REC	0	0	0	0	156,892	156,892
SAC SHIELD	0	0	0	0	552,655	552,655
OTHER PRIMARY CONTAINMENT	0	0	0	0	6,303,438	6,303,438
CONTAINM. ATMOSPHERIC	0	0	0	0	85,564	85,564
HIGH PRESSURE CORE SPRAY	0	0	0	0	30,288	30,288
LOW PRESSURE CORE SPRAY	0	0	0	0	17,819	17,819
REACTOR BLDG CLOSED COOLING	0	0	0	0	57,042	57,042
REACTOR CORE ISO COOLING	0	0	0	0	23,170	23,170
RESIDUAL HEAT REMOVAL	0	0	0	0	110,551	110,551
POOL LINER & RACKS	0	0	0	0	679,208	679,208
CONTAMINATED CONCRETE	0	0	0	0	773,707	773,707
OTHER REACTOR BUILDING	0	0	0	0	2,529,553	2,529,553
TURBINE	0	0	0	0	2,506,433	2,506,433
NUCLEAR STEAM CONDENSATE	0	0	0	0	647,103	647,103
LOW PRESSURE FEEDWATER HEATERS	0	0	0	0	1,313,792	1,313,792
MAIN STEAM	0	0	0	0	126,604	126,604
MOISTURE SEPARATOR REHEATERS	0	0	0	0	1,274,620	1,274,620
REACTOR FEEDWATER PUMPS	0	0	0	0	345,838	345,838
HIGH PRESSURE FEEDWATER HEATERS	0	0	0	0	215,701	215,701
OTHER TG BLDG	0	0	0	0	8,658,330	8,658,330
RAD WASTE BLDG	0	0	0	0	4,287,317	4,287,317
REACTOR BLDG	0	64,000	0	0	381,227	445,227
TG BLDG	0	42,000	0	0	257,375	299,375
RAD WASTE & CONTROL	0	38,000	0	0	222,154	260,154
CONCENTRATOR BOTTOMS	0	225,000	280,826	248,190	1,135,800	1,889,816
OTHER	0	61,000	0	7,036	307,928	375,964
POST-TMI-2 ADDITIONS	0	0	0	0	64,211	64,211
HEAVY OBJECT CHARGE	177,200	0	0	0	0	177,200
SUBTOTAL BWR COSTS	177,200	890,620	5,170,450	8,702,050	33,470,887	48,411,207
ANNUAL PERMIT FEES (3.5 YRS)						122,500
TAXES & FEES (% OF CHARGES)						2,178,504
TAXES & FEES ($/CU.FT.)						6,199,174
TOTAL BWR COSTS						56,911,386

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.6 Burial costs at the Washington Site
Reference PWR (1995 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	0	49,780	108,285	139,570	141,702	439,337
VESSEL HEAD & BOTTOM	0	40,000	0	0	149,160	189,160
UPPER CORE SUPPORT ASSM	0	4,000	0	6,611	14,916	25,527
UPPER SUPPORT COLUMN	0	4,000	0	6,611	14,916	25,527
UPPER CORE BARREL	0	2,620	5,699	8,299	7,45[illegible]	24,077
UPPER CORE GRID PLATE	0	6,550	19,947	2G,749	18,645	[illegible]5,891
GUIDE TUBES	0	6,000	0	6,224	22,374	34,598
LOWER CORE BARREL[a]	0	41,920	344,594	132,790	119,328	638,632
THERMAL SHIELDS[a]	0	7,860	73,525	24,898	22,374	128,658
CORE SHROUD[a]	0	5,240	1,519,808	16,599	14,916	1,556,562
LOWER GRID PLATE[a]	0	6,550	245,312	20,749	18,645	291,256
LOWER SUPPORT COLUMN	0	1,310	5,813	4,150	3,729	15,002
LOWER CORE FORGING	0	14,410	25,076	45,647	41,019	126,151
MISC INTERNALS	0	10,480	18,237	33,198	29,832	91,746
BIO SHIELD CONCRETE	0	0	0	0	930,758	930,758
REACTOR CAVITY LINER	0	0	0	0	19,092	19,092
REACTOR COOLANT PUMPS	0	0	0	0	156,618	156,618
PRESSURIZER	0	0	0	0	134,244	134,244
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	[illegible]	14,916	14,916
PRESSURIZER RELIEF TANK	0	0	0	0	44,748	44,748
SAFETY INJECTION ACCUM TANKS	0	0	0	0	149,160	149,160
STEAM GENERATORS	0	0	72,947	0	796,589	869,536
REACTOR COOLANT PIPING	0	0	0	0	123,057	123,057
REMAINING CONTAM. MATLS	0	0	0	0	1,961,752	1,961,752
CONTAMINATED MATRL OTHR BLD	0	0	0	0	17,791,134	17,791,134
FILTER CARTRIDGES	0	6,000	20,517	25,851	11,746	64,114
SPENT RESINS	0	26,200	79,788	63,922	74,580	244,490
COMBUSTIBLE WASTES	0	60,000	0	0	377,561	437,561
EVAPORATOR BOTTOMS	0	94,000	87,767	77,377	350,526	609,670
POST-TMI-2 ADDITIONS	0	0	0	0	580,344	580,344
HEAVY OBJECT CHARGE	102,800	0	0	0	0	102,800
SUBTOTAL PWR COSTS	102,800	386,920	2,627,315	633,244	24,135,841	27,886,119
TAXES & FEES (% OF CHARGES)						1,259,058
TAXES & FEES ($/CU.FT.)						6,990,268
ANNUAL PERMIT FEES (3 YRS)						112,500
TOTAL PWR COSTS						36,247,945

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.6 Burial costs at the Washington Site
Reference BWR (1995 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	36,680	47,873	356,499	13,163	454,215
FUEL SUPPORT & PIECES	0	18,340	0	51,421	6,600	76,361
CONTROL RODS/INCORES	0	10,480	104,974	967,726	19,764	1,102,944
CONTROL RODS GUIDES	0	12,000	0	25 987	5,258	43,245
JET PUMPS	0	52,400	68,390	871,652	18,459	1,010,901
TOP FUEL GUIDES	0	94,320	205,171	1,568,974	31,622	1,900,087
CORE SUPPORT PLATE	0	31,000	0	67,134	14,506	112,639
CORE SHROUD[a]	0	183,400	3,162,726	2,283,134	61,901	5,691,161
REACTOR VESSEL WALL	0	22,000	25,076	47,643	10,553	105,272
SAC SHIELD	0	0	0	0	118,508	118,508
REACT. WATER REC	0	0	0	0	115,897	115,897
SAC SHIELD	0	0	0	0	408,251	408,251
OTHER PRIMARY CONTAINMENT	0	0	0	0	4,656,402	4,656,402
CONTAINM. ATMOSPHERIC	0	0	0	0	63,207	63,207
HIGH PRESSURE CORE SPRAY	0	0	0	0	22,374	22,374
LOW PRESSURE CORE SPRAY	0	0	0	0	13,163	13,163
REACTOR BLDG CLOSED COOLING	0	0	0	0	42,138	42,138
REACTOR CORE ISO COOLING	0	0	0	0	17,116	17,116
RESIDUAL HEAT REMOVAL	0	0	0	0	81,665	81,665
POOL LINER & RACKS	0	0	0	0	501,737	501,737
CONTAMINATED CONCRETE	0	0	0	0	571,544	571,544
OTHER REACTOR BUILDING	0	0	0	0	1,868,602	1,868,602
TURBINE	0	0	0	0	1,851,523	1,851,523
NUCLEAR STEAM CONDENSATE	0	0	0	0	478,021	478,021
LOW PRESSURE FEEDWATER HEATERS	0	0	0	0	970,510	970,510
MAIN STEAM	0	0	0	0	93,523	93,523
MOISTURE SEPARATOR REHEATERS	0	0	0	0	941,573	941,573
REACTOR FEEDWATER PUMPS	0	0	0	0	255,474	255,474
HIGH PRESSURE FEEDWATER HEATERS	0	0	0	0	159,340	159,340
OTHER TG BLDG	0	0	0	0	6,395,981	6,395,981
RAD WASTE BLDG	0	0	0	0	3,167,077	3,167,077
REACTOR BLDG	0	64,000	0	0	281,593	345,593
TG BLDG	0	42,000	0	0	190,110	232,110
RAD WASTE & CONTROL	0	38,000	0	0	164,094	202,094
CONCENTRATOR BOTTOMS	0	225,000	207,449	183,338	839,025	1,454,812
OTHER	0	61,000	0	5,197	227,469	293,666
POST-TMI-2 ADDITIONS	0	0	0	0	47,433	47,433
HEAVY OBJECT CHARGE	177,200	0	0	0	0	177,200
SUBTOTAL BWR COSTS	177,200	890,620	3,821,659	6,428,704	24,725,174	36,043,357
TAXES & FEES (% OF CHARGES)						1,627,358
TAXES & FEES ($/CU.FT.)						7,237,955
ANNUAL PERMIT FEES (3.5 YRS)						131,250
TOTAL BWR COSTS						45,039,919

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.7 Burial costs at the Nevada Site
Reference PWR (1986 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	29,613	30,172	61,613	127,370	78,318	327,087
VESSEL HEAD & BOTTOM	0	31,760	0	0	82,440	114,200
UPPER CORE SUPPORT ASSM	0	3,176	0	5,441	8,244	16,861
UPPER SUPPORT COLUMN	0	3,176	0	5,441	8,244	16,861
UPPER CORE BARREL	0	1,588	3,248	6,704	4,122	15,662
UPPER CORE GRID PLATE	0	3,970	11,958	16,759	10,305	42,992
GUIDE TUBES	0	4,764	0	5,646	12,366	22,776
LOWER CORE BARREL[a]	0	25,408	165,971	107,259	65,952	364,590
THERMAL SHIELDS[a]	0	4,764	33,144	20,111	12,366	70,385
CORE SHROUD[a]	0	3,176	705,965	13,407	8,244	730,793
LOWER GRID PLATE[a]	0	3,970	114,000	16,759	10,305	145,034
LOWER SUPPORT COLUMN	0	794	3,294	3,352	2,061	9,511
LOWER CORE FORGING	0	8,734	17,208	36,870	22,671	85,484
MISC INTERNALS	0	6,352	12,549	26,815	16,488	62,204
BIO SHIELD CONCRETE	0	0	0	0	514,426	514,426
REACTOR CAVITY LINER	0	0	0	0	10,552	10,552
REACTOR COOLANT PUMPS	65,768	0	0	0	86,562	152,330
PRESSURIZER	13,212	0	0	0	74,196	87,408
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	8,244	8,244
PRESSURIZER RELIEF TANK	1,148	0	0	0	24,732	25,880
SAFETY INJECTION ACCUM TANKS	24,312	0	0	0	82,440	106,752
STEAM GENERATORS	250,048	0	0	0	440,271	690,319
REACTOR COOLANT PIPING	16,698	0	0	0	68,013	84,711
REMAINING CONTAM. MATLS	0	0	0	0	1,084,251	1,084,251
CONTAMINATED MATRL OTHR BLD	0	0	0	0	9,833,072	9,833,072
FILTER CARTRIDGES	0	4,764	10,144	28,079	6,492	49,478
SPENT RESINS	0	15,880	38,880	59,032	41,220	155,012
COMBUSTIBLE WASTES	0	47,640	0	0	208,676	256,316
EVAPORATOR BOTTOMS	0	74,636	0	68,486	193,734	336,856
SUBTOTAL PWR COSTS	400,800	274,724	1,177,984	547,530	13,019,007	15,420,045
TOTAL PWR COSTS						15,420,045

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.7 Burial costs at the Nevada Site
Reference BWR (1986 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	22,232	23,257	291,200	7,275	343,964
FUEL SUPPORT & PIECES	0	11,116	0	46,926	3,648	61,690
CONTROL RODS/INCORES	0	6,352	49,992	342,400	10,923	409,667
CONTROL RODS GUIDES	0	9,528	0	20,829	2,906	33,263
JET PUMPS	0	31,760	34,480	680,000	10,202	756,442
TOP FUEL GUIDES	0	57,168	115,747	1,224,000	17,477	1,414,392
CORE SUPPORT PLATE	0	24,614	0	53,809	8,017	86,440
CORE SHROUD[a]	0	111,160	1,473,360	1,792,000	34,213	3,410,733
REACTOR VESSEL WALL	17,402	17,468	0	38,187	5,833	78,889
SAC SHIELD	48,836	0	0	0	65,499	114,335
REACT. WATER REC	35,970	0	0	0	64,056	100,026
SAC SHIELD	138,730	0	0	0	225,638	364,369
OTHER PRIMARY CONTAINMENT	0	0	0	0	2,573,571	2,573,571
CONTAINM. ATMOSPHERIC	928	0	0	0	34,934	35,862
HIGH PRESSURE CORE SPRAY	4,528	0	0	0	12,366	16,894
LOW PRESSURE CORE SPRAY	1,414	0	0	0	7,275	8,689
REACTOR BLDG CLOSED COOLING	2,742	0	0	0	23,289	26,031
REACTOR CORE ISO COOLING	714	0	0	0	9,460	10,174
RESIDUAL HEAT REMOVAL	12,898	0	0	0	45,136	58,034
POOL LINES & RACKS	51,810	0	0	0	277,308	329,118
CONTAMINATED CONCRETE	9,824	0	0	0	315,889	325,713
OTHER REACTOR BUILDING	0	0	0	0	1,032,767	1,032,767
TURBINE	128,215	0	0	0	1,023,328	1,151,543
NUCLEAR STEAM CONDENSATE	18,668	0	0	0	264,200	282,868
LOW PRESSURE FEEDWATER HEATERS	140,687	0	0	0	536,396	677,083
MAIN STEAM	4,742	0	0	0	51,690	56,432
MOISTURE SEPARATOR REHEATERS	86,164	0	0	0	520,403	606,567
REACTOR FEEDWATER PUMPS	9,140	0	0	0	141,199	150,339
HIGH PRESSURE FEEDWATER HEATERS	27,712	0	0	0	88,067	115,779
OTHER TG BLDG	0	0	0	0	3,535,027	3,535,027
RAD WASTE BLDG	0	0	0	0	1,750,428	1,750,428
REACTOR BLDG	0	50,816	0	0	226,481	277,297
TG BLDG	0	33,348	0	0	152,890	186,238
RAD WASTE & CONTROL	0	30,172	0	0	131,954	162,126
CONCENTRATOR BOTTOMS	0	178,650	0	162,320	463,725	804,695
OTHER	0	48,434	0	5,163	125,721	179,318
SUBTOTAL BWR COSTS	741,126	632,818	1,696,836	4,656,832	13,799,189	21,526,801
TOTAL BWR COSTS						21,526,801

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.8 Burial costs at the Nevada Site Reference PWR (1988 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	29,613	45,600	61,993	136,800	107,768	381,775
VESSEL HEAD & BOTTOM	0	22,000	0	0	113,440	135,440
UPPER CORE SUPPORT ASSM	0	4,800	0	2,750	11,344	18,894
UPPER SUPPORT COLUMN	0	4,800	0	2,750	11,344	18,894
UPPER CORE BARREL	0	2,400	3,268	8,700	5,672	20,040
UPPER CORE GRID PLATE	0	6,000	12,008	21,750	14,180	53,938
GUIDE TUBES	0	7,200	0	1,696	17,016	25,912
LOWER CORE BARREL[a]	0	38,400	166,291	139,200	90,752	434,643
THERMAL SHIELDS[a]	0	7,200	33,204	26,100	17,016	83,520
CORE SHROUD[a]	0	4,800	706,575	17,400	11,344	740,119
LOWER GRID PLATE[a]	0	6,000	114,100	21,750	14,180	156,030
LOWER SUPPORT COLUMN	0	1,200	3,314	4,350	2,836	11,700
LOWER CORE FORGING	0	13,200	17,318	47,850	31,196	109,564
MISC INTERNALS	0	9,600	12,629	34,800	22,688	79 ' 17
BIO SHIELD CONCRETE	0	0	0	0	707,866	70[illegible],866
REACTOR CAVITY LINER	0	0	0	0	14,520	14,520
REACTOR COOLANT PUMPS	163,200	0	0	0	119,112	282,312
PRESSURIZER	13,212	0	0	0	102,096	115,308
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	11,344	11,344
PRESSURIZER RELIEF TANK	1,148	0	0	0	34,032	35,180
SAFETY INJECTION ACCUM TANKS	108,800	0	0	0	113,440	222,240
STEAM GENERATORS	569,600	0	0	0	605,826	1,175,426
REACTOR COOLANT PIPING	95,200	0	0	0	93,588	188,788
REMAINING CONTAM. MATLS	0	0	0	0	1,491,963	1,491,963
CONTAMINATED MATRL OTHR BLD	0	0	0	0	13,530,613	13,530,613
FILTER CARTRIDGES	0	7,200	10,204	8,467	8,933	34,804
SPENT RESINS	0	24,000	39,080	57,400	56,720	177,200
COMBUSTIBLE WASTES	0	33,000	0	0	287,145	320,145
EVAPORATOR BOTTOMS	0	112,800	0	68,765	266,584	448,149
POST-TMI-2 ADDITIONS	0	0	0	0	441,367	441,367
SUBTOTAL PWR COSTS	980,775	350,200	1,179,984	600,529	18,355,925	21,467,411
TOTAL PWR COSTS						21,467,411

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.8 Burial costs at the Nevada Site
Reference BWR (1988 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	33,600	23,397	207,760	10,011	274,768
FUEL SUPPORT & PIECES	0	16,800	0	50,400	5,020	72,220
CONTROL RODS/INCORES	0	9,600	50,072	152,640	15,031	227,343
CONTROL RODS GUIDES	0	14,400	0	16,729	3,999	35,128
JET PUMPS	0	48,000	34,680	466,400	14,038	563,118
TOP FUEL GUIDES	0	86,400	116,467	839,520	24,049	1,066,436
CORE SUPPORT PLATE	0	37,200	0	43,217	11,032	91,449
CORE SHROUD[a]	0	168,000	1,474,760	1,632,400	47,078	3,322,238
REACTOR VESSEL WALL	17,402	26,400	0	30,670	8,026	82,498
SAC SHIELD	190,400	0	0	0	90,128	280,528
REACT. WATER REC	82,800	0	0	0	88,143	170,943
SAC SHIELD	516,800	0	0	0	310,485	827,285
OTHER PRIMARY CONTAINMENT	0	0	0	0	3,541,313	3,541,313
CONTAINM. ATMOSPHERIC	928	0	0	0	48,070	48,998
HIGH PRESSURE CORE SPRAY	27,200	0	0	0	17,016	44,216
LOW PRESSURE CORE SPRAY	1,414	0	0	0	10,011	11,425
REACTOR BLDG CLOSED COOLING	2,742	0	0	0	32,047	34,789
REACTOR CORE ISO COOLING	714	0	0	0	13,017	13,731
RESIDUAL HEAT REMOVAL	95,200	0	0	0	62,108	157,308
POOL LINES & RACKS	204,000	0	0	0	381,584	585,584
CONTAMINATED CONCRETE	9,824	0	0	0	434,674	444,498
OTHER REACTOR BUILDING	0	0	0	0	1,421,120	1,421,120
TURBINE	788,800	0	0	0	1,408,131	2,196,931
NUCLEAR STEAM CONDENSATE	18,668	0	0	0	363,547	382,215
LOW PRESSURE FEEDWATER HEATERS	571,200	0	0	0	738,097	1,309,297
MAIN STEAM	4,742	0	0	0	71,127	75,869
MOISTURE SEPARATOR REHEATERS	353,600	0	0	0	716,090	1,069,690
REACTOR FEEDWATER PUMPS	9,140	0	0	0	194,294	203,434
HIGH PRESSURE FEEDWATER HEATERS	108,800	0	0	0	121,182	229,982
OTHER TG BLDG	0	0	0	0	4,864,307	4,864,307
RAD WASTE BLDG	0	0	0	0	2,408,643	2,408,643
REACTOR BLDG	0	35,200	0	0	306,194	341,394
TG BLDG	0	23,100	0	0	206,702	229,802
RAD WASTE & CONTROL	0	20,900	0	0	178,398	199,298
CONCENTRATOR BOTTOMS	0	270,000	0	162,740	638,100	1,070,840
OTHER	0	73,200	0	2,375	172,996	248,571
POST-TMI-2 ADDITIONS	0	0	0	0	36,074	36,074
SUBTOTAL BWR COSTS	3,004,375	862,800	1,699,376	3,604,852	19,011,883	28,183,285
TOTAL BWR COSTS						28,183,285

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.9 Burial costs at the Nevada Site
Reference PWR (1991 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	29,613	45,600	61,993	136,800	122,018	396,025
VESSEL HEAD & BOTTOM	0	22,000	0	0	128,440	150,440
UPPER CORE SUPPORT ASSM	0	4,800	0	2,750	12,844	20,394
UPPER SUPPORT COLUMN	0	4,800	0	2,750	12,844	20,394
UPPER CORE BARREL	0	2,400	3,268	8,700	6,422	20,790
UPPER CORE GRID PLATE	0	6,000	12,008	21,750	16,055	55,813
GUIDE TUBES	0	7,200	0	1,696	19,266	28,162
LOWER CORE BARREL[a]	0	38,400	166,291	139,200	102,752	446,643
THERMAL SHIELDS[a]	0	7,200	33,204	26,100	19,266	85,770
CORE SHROUD[a]	0	4,800	706,575	17,400	12,844	741,619
LOWER GRID PLATE[a]	0	6,000	114,100	21,750	16,055	157,905
LOWER SUPPORT COLUMN	0	1,200	3,314	4,350	3,211	12,075
LOWER CORE FORGING	0	13,200	17,318	47,850	35,321	113,689
MISC INTERNALS	0	9,600	12,629	34,800	25,688	82,717
BIO SHIELD CONCRETE	0	0	0	0	801,466	801,466
REACTOR CAVITY LINER	0	0	0	0	16,440	16,440
REACTOR COOLANT PUMPS	184,800	0	0	0	134,862	319,662
PRESSURIZER	13,212	0	0	0	115,596	128,808
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	12,844	12,844
PRESSURIZER RELIEF TANK	1,148	0	0	0	38,532	39,680
SAFETY INJECTION ACCUM TANKS	123,200	0	0	0	128,440	251,640
STEAM GENERATORS	627,200	0	0	0	685,934	1,313,134
REACTOR COOLANT PIPING	107,800	0	0	0	105,963	213,763
REMAINING CONTAM. MATLS	0	0	0	0	1,689,243	1,689,243
CONTAMINATED MATRL OTHR BLD	0	0	0	0	15,319,745	15,319,745
FILTER CARTRIDGES	0	7,200	10,204	8,467	10,115	35,985
SPENT RESINS	0	24,000	39,080	57,400	64,220	184,700
COMBUSTIBLE WASTES	0	33,000	0	0	325,114	358,114
EVAPORATOR BOTTOMS	0	112,800	0	68,765	301,834	483,399
POST-TMI-2 ADDITIONS	0	0	0	0	499,728	499,728
SUBTOTAL PWR COSTS	1,086,973	350,200	1,179,984	600,529	20,783,101	24,000,788
TOTAL PWR COSTS						24,000,788

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.9 Burial costs at the Nevada Site
Reference BWR (1991 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	33,600	23,397	207,760	11,335	276,092
FUEL SUPPORT & PIECES	0	16,800	0	50,400	5,683	72,883
CONTROL RODS/INCORES	0	9,600	50,072	152,640	17,018	229,330
CONTROL RODS GUIDES	0	14,400	0	16,729	4,528	35,657
JET PUMPS	0	48,000	34,680	466,400	15,894	564,974
TOP FUEL GUIDES	0	86,400	116,467	839,520	27,229	1,069,616
CORE SUPPORT PLATE	0	37,200	0	43,217	12,491	92,908
CORE SHROUD[a]	0	168,000	1,474,760	1,632,400	53,303	3,328,463
REACTOR VESSEL WALL	17,402	26,400	0	30,670	9,087	83,559
SAC SHIELD	215,600	0	0	0	102,046	317,646
REACT. WATER REC	91,800	0	0	0	99,798	191,598
SAC SHIELD	585,200	0	0	0	351,540	936,740
OTHER PRIMARY CONTAINMENT	0	0	0	0	4,009,576	4,009,576
CONTAINM. ATMOSPHERIC	928	0	0	0	54,426	55,354
HIGH PRESSURE CORE SPRAY	30,800	0	0	0	19,266	50,066
LOW PRESSURE CORE SPRAY	1,414	0	0	0	11,335	12,749
REACTOR BLDG CLOSED COOLING	2,742	0	0	0	36,284	39,026
REACTOR CORE ISO COOLING	714	0	0	0	14,738	15,452
RESIDUAL HEAT REMOVAL	107,800	0	0	0	70,321	178,121
POOL LINES & RACKS	231,000	0	0	0	432,040	663,040
CONTAMINATED CONCRETE	9,824	0	0	0	492,150	501,974
OTHER REACTOR BUILDING	0	0	0	0	1,609,032	1,609,032
TURBINE	893,200	0	0	0	1,594,326	2,487,526
NUCLEAR STEAM CONDENSATE	18,668	0	0	0	411,618	430,286
LOW PRESSURE FEEDWATER HEATERS	646,800	0	0	0	835,695	1,482,495
MAIN STEAM	4,742	0	0	0	80,532	85,274
MOISTURE SEPARATOR REHEATERS	400,400	0	0	0	810,778	1,211,178
REACTOR FEEDWATER PUMPS	9,140	0	0	0	219,986	229,126
HIGH PRESSURE FEEDWATER HEATERS	123,200	0	0	0	137,206	260,406
OTHER TG BLDG	0	0	0	0	5,507,507	5,507,507
RAD WASTE BLDG	0	0	0	0	2,727,134	2,727,134
REACTOR BLDG	0	35,200	0	0	346,357	381,557
TG BLDG	0	23,100	0	0	233,815	256,915
RAD WASTE & CONTROL	0	20,900	0	0	201,798	222,698
CONCENTRATOR BOTTOMS	0	270,000	0	162,740	722,475	1,155,215
OTHER	0	73,200	0	2,375	195,871	271,446
POST-TMI-2 ADDITIONS	0	0	0	0	40,844	40,844
SUBTOTAL BWR COSTS	3,391,375	862,800	1,699,376	3,604,852	21,525,062	31,083,464
TOTAL BWR COSTS						31,083,464

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.10 Burial costs at the South Carolina Site Reference PWR (1986 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	34,580	26,600	714,400	0	106,400	881,980
VESSEL HEAD & BOTTOM	0	28,000	0	0	112,000	140,000
UPPER CORE SUPPORT ASSM	0	2,800	0	0	11,200	14,000
UPPER SUPPORT COLUMN	0	2,800	0	0	11,200	14,000
UPPER CORE BARREL	0	1,400	37,600	0	5,600	44,600
UPPER CORE GRID PLATE	0	3,500	150,000	0	14,000	167,500
GUIDE TUBES	0	4,200	56,100	0	16,800	77,100
LOWER CORE BARREL[a]	0	22,400	1,824,000	0	89,600	1,936,000
THERMAL SHIELDS[a]	0	4,200	360,000	0	16,800	381,000
CORE SHROUD[a]	0	2,800	6,100,000	0	11,200	6,114,000
LOWER GRID PLATE[a]	0	3,500	1,000,000	0	14,000	1,017,500
LOWER SUPPORT COLUMN	0	700	36,500	0	2,800	40,000
LOWER CORE FORGING	0	7,700	165,000	0	30,800	203,500
MISC INTERNALS	0	5,600	120,000	0	22,400	148,000
BIO SHIELD CONCRETE	0	0	0	0	698,880	698,880
REACTOR CAVITY LINER	0	0	0	0	14,336	14,336
REACTOR COOLANT PUMPS	36,848	0	0	0	117,600	154,448
PRESSURIZER	9,680	0	0	0	100,800	110,480
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	11,200	11,200
PRESSURIZER RELIEF TANK	1,820	0	0	0	33,600	35,420
SAFETY INJECTION ACCUM TANKS	14,520	0	0	0	112,000	126,520
STEAM GENERATORS	134,848	0	0	0	598,136	732,984
REACTOR COOLANT PIPING	12,705	0	0	0	92,400	105,105
REMAINING CONTAM. MATLS	0	0	0	0	1,473,024	1,473,024
CONTAMINATED MATRL OTHR BLD	0	0	0	0	13,358,856	13,358,856
FILTER CARTRIDGES	0	4,200	135,000	0	8,820	148,020
SPENT RESINS	0	14,000	600,000	0	56,000	670,000
COMBUSTIBLE WASTES	0	42,000	0	0	283,500	325,500
EVAPORATOR BOTTOMS	0	65,800	0	0	263,200	329,000
SUBTOTAL PWR COSTS	245,001	242,200	11,298,600	0	17,687,152	29,472,953
BARNWELL COUNTY BUSINESS TAX (2.4%)						707,351
TOTAL PWR COSTS						30,180,304

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.10 Burial costs at the South Carolina Site
Reference BWR (1986 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	19,600	529,200	0	9,884	558,684
FUEL SUPPORT & PIECES	0	9,800	315,000	0	4,956	329,756
CONTROL RODS/INCORES	2,440	5,600	529,600	0	14,840	552,480
CONTROL RODS GUIDES	0	8,400	0	0	3,948	12,348
JET PUMPS	0	28,000	450,000	0	13,860	491,860
TOP FUEL GUIDES	0	50,400	1,353,600	0	23,772	1,427,772
CORE SUPPORT PLATE	0	21,700	116,250	0	10,920	148,870
CORE SHROUD[a]	0	98,000	13,230,000	0	46,480	13,374,480
REACTOR VESSEL WALL	20,020	15,400	205,700	0	7,196	248,316
SAC SHIELD	33,880	0	0	0	100,688	134,568
REACT. WATER REC	19,551	0	0	0	87,080	106,631
SAC SHIELD	91,960	0	0	0	306,600	398,560
OTHER PRIMARY CONTAINMENT	0	0	0	0	3,496,304	3,496,304
CONTAINM. ATMOSPHERIC	1,820	0	0	0	47,432	49,252
HIGH PRESSURE CORE SPRAY	3,630	0	0	0	16,800	20,430
LOW PRESSURE CORE SPRAY	1,210	0	0	0	9,940	11,150
REACTOR BLDG CLOSED COOLING	2,730	0	0	0	31,696	34,426
REACTOR CORE COOLING	910	0	0	0	12,880	13,790
RESIDUAL HEAT REMOVAL	8,470	0	0	0	61,376	69,846
POOL LINES & RACKS	36,300	0	0	0	376,684	412,984
CONTAMINATED CONCRETE	14,560	0	0	0	429,100	443,660
OTHER REACTOR BUILDING	0	0	0	0	1,403,276	1,403,276
TURBINE	70,180	0	0	0	1,390,060	1,460,240
NUCLEAR STEAM CONDENSATE	14,520	0	0	0	358,932	373,452
LOW PRESSURE FEEDWATER HEATERS	101,640	0	0	0	728,728	830,368
MAIN STEAM	3,630	0	0	0	70,252	73,882
MOISTURE SEPARATOR REHEATERS	62,920	0	0	0	706,860	769,780
REACTOR FEEDWATER PUMPS	9,100	0	0	0	192,836	201,936
HIGH PRESSURE FEEDWATER HEATERS	19,360	0	0	0	119,616	138,976
OTHER TG BLDG	0	0	0	0	4,812,192	4,812,192
RAD WASTE BLDG	0	0	0	0	2,378,096	2,378,096
REACTOR BLDG	0	44,800	0	0	299,880	344,680
TG BLDG	0	29,400	0	0	202,440	231,840
RAD WASTE & CONTROL	0	26,600	0	0	174,720	201,320
CONCENTRATOR BOTTOMS	0	157,500	0	0	630,000	787,500
OTHER	0	42,700	0	0	170,800	213,500
SUBTOTAL BWR COSTS	518,831	557,900	16,729,350	0	18,751,124	36,557,205
BARNWELL COUNTY BUSINESS TAX (2.4%)						877,373
TOTAL BWR COSTS						37,434,578

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.11 Burial costs at the South Carolina Site Reference PWR (1988 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	38,380	38,000	714,400	0	134,216	924,996
VESSEL HEAD & BOTTOM	0	40,000	100,000	0	141,280	281,280
UPPER CORE SUPPORT ASSM	0	4,000	10,000	0	14,128	28,128
UPPER SUPPORT COLUMN	0	4,000	10,000	0	14,128	28,128
UPPER CORE BARREL	0	2,000	37,600	0	7,064	46,664
UPPER CORE GRID PLATE	0	5,000	150,000	0	17,660	172,660
GUIDE TUBES	0	6,000	56,100	0	21,192	83,292
LOWER CORE BARREL[a]	0	32,000	1,824,000	0	113,024	1,969,024
THERMAL SHIELDS[a]	0	6,000	360,000	0	21,192	387,192
CORE SHROUD[a]	0	4,000	6,100,000	0	14,128	6,118,128
LOWER GRID PLATE[a]	0	5,000	1,000,000	0	17,660	1,022,660
LOWER SUPPORT COLUMN	0	1,000	36,500	0	3,532	41,032
LOWER CORE FORGING	0	11,000	165,000	0	38,852	214,852
MISC INTERNALS	0	8,000	120,000	0	28,256	156,256
BIO SHIELD CONCRETE	0	0	0	0	881,587	881,587
REACTOR CAVITY LINER	0	0	0	0	18,084	18,084
REACTOR COOLANT PUMPS	36,848	0	0	0	148,344	185,192
PRESSURIZER	0,480	0	0	0	127,152	137,632
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	14,128	14,128
PRESSURIZER RELIEF TANK	2,020	0	0	0	42,384	44,404
SAFETY INJECTION ACCUM TANKS	15,320	0	0	0	141,280	156,600
STEAM GENERATORS	134,848	0	0	0	754,506	889,354
REACTOR COOLANT PIPING	13,405	0	0	0	116,556	129,961
REMAINING CONTAM. MATLS	0	0	0	0	1,858,115	1,858,115
CONTAMINATED MATRL OTHR BLD	0	0	0	0	16,851,243	16,851,243
FILTER CARTRIDGES	0	6,000	135,000	0	11,126	152,126
SPENT RESINS	0	20,000	600,000	0	70,640	690,640
COMBUSTIBLE WASTES	0	60,000	150,000	0	357,615	567,615
EVAPORATOR BOTTOMS	0	94,000	235,000	0	332,008	661,008
POST-TMI-2 ADDITIONS	0	0	0	0	549,685	549,685
SUBTOTAL PWR COSTS	251,301	346,000	11,803,600	0	22,860,764	35,261,665
BARNWELL COUNTY BUSINESS TAX (2.4%)						846,280
TOTAL PWR COSTS						36,107,945

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.i1 Burial costs at the South Carolina Site
Reference BWR (1988 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	28,000	529,200	0	12,468	569,668
FUEL SUPPORT & PIECES	0	14,000	315,000	0	6,252	335,252
CONTROL RODS/INCORES	3,240	8,000	529,600	0	18,720	559,560
CONTROL RODS GUIDES	0	12,000	30,000	0	4,980	46,980
JET PUMPS	0	40,000	450,000	0	17,483	507,483
TOP FUEL GUIDES	0	72,000	1,353,600	0	29,987	1,455,587
CORE SUPPORT PLATE	0	31,000	116,250	0	13,775	161,025
CORE SHROUD[a]	0	140,000	13,230,000	0	58,631	13,428,631
REACTOR VESSEL WALL	22,220	22,000	205,700	0	9,077	258,997
SAC SHIELD	35,280	0	0	0	127,011	162,291
REACT. WATER REC	19,551	0	0	0	109,845	129,396
SAC SHIELD	95,760	0	0	0	386,754	482,514
OTHER PRIMARY CONTAINMENT	0	0	0	0	4,410,338	4,410,338
CONTAINM. ATMOSPHERIC	2,020	0	0	0	59,832	61,852
HIGH PRESSURE CORE SPRAY	3,830	0	0	0	21,192	25,022
LOW PRESSURE CORE SPRAY	1,310	0	0	0	12,539	13,849
REACTOR BLDG CLOSED COOLING	3,030	0	0	0	39,982	43,012
REACTOR CORE COOLING	1,010	0	0	0	16,247	17,257
RESIDUAL HEAT REMOVAL	9,170	0	0	0	77,421	86,591
POOL LINES & RACKS	37,800	0	0	0	475,160	512,960
CONTAMINATED CONCRETE	16,160	0	0	0	541,279	557,439
OTHER REACTOR BUILDING	0	0	0	0	1,770,132	1,770,132
TURBINE	75,980	0	0	0	1,753,461	1,829,441
NUCLEAR STEAM CONDENSATE	15,720	0	0	0	452,767	468,487
LOW PRESSURE FEEDWATER HEATERS	105,860	0	0	0	919,238	1,025,078
MAIN STEAM	3,930	0	0	0	88,618	92,548
MOISTURE SEPARATOR REHEATERS	65,520	0	0	0	891,653	957,173
REACTOR FEEDWATER PUMPS	10,100	0	0	0	243,249	253,349
HIGH PRESSURE FEEDWATER HEATERS	20,160	0	0	0	150,887	171,047
OTHER TG BLDG	0	0	0	0	6,070,236	6,070,236
RAD WASTE BLDG	0	0	0	0	2,999,798	2,999,798
REACTOR BLDG	0	64,000	160,000	0	378,277	602,277
TG BLDG	0	42,000	105,000	0	255,364	402,364
RAD WASTE & CONTROL	0	38,000	95,000	0	220,397	353,397
CONCENTRATOR BOTTOMS	0	225,000	562,500	0	794,700	1,582,200
OTHER	0	61,000	152,500	0	215,452	428,952
POST-TMI-2 ADDITIONS	0	0	0	0	44,927	44,927
SUBTOTAL BWR COSTS	547,631	797,000	17,834,350	0	23,698,131	42,877,112
BARNWELL COUNTY BUSINESS TAX (2.4%)						1,029,051
TOTAL BWR COSTS						43,906,162

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.12 Burial costs at the South Carolina Site Reference PWR (1991 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	55,670	59,280	1,033,600	0	155,914	1,304,464
VESSEL HEAD & BOTTOM	0	62,400	144,600	0	164,120	371,120
UPPER CORE SUPPORT ASSM	0	6,240	14,460	0	16,412	37,112
UPPER SUPPORT COLUMN	0	6,240	14,460	0	16,412	37,112
UPPER CORE BARREL	0	3,120	54,400	0	8,206	65,726
UPPER CORE GRID PLATE	0	7,800	217,000	0	20,515	245,315
GUIDE TUBES	0	9,360	81,000	0	24,618	114,978
LOWER CORE BARREL[a]	0	49,920	2,409,600	0	131,296	2,590,816
THERMAL SHIELDS[a]	0	9,360	451,800	0	24,618	485,778
CORE SHROUD[a]	0	6,240	8,296,000	0	16,412	8,318,652
LOWER GRID PLATE[a]	0	7,800	1,360,000	0	20,515	1,388,315
LOWER SUPPORT COLUMN	0	1,560	55,000	0	4,103	60,663
LOWER CORE FORGING	0	17,160	238,700	0	45,133	300,993
MISC INTERNALS	0	12,480	173,600	0	32,824	218,904
BIO SHIELD CONCRETE	0	0	0	0	1,024,109	1,024,109
REACTOR CAVITY LINER	0	0	0	0	21,007	21,007
REACTOR COOLANT PUMPS	93,600	0	0	0	172,326	265,926
PRESSURIZER	15,080	0	0	0	147,708	162,788
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	16,412	16,412
PRESSURIZER RELIEF TANK	2,930	0	0	0	49,236	52,166
SAFETY INJECTION ACCUM TANKS	22,160	0	0	0	164,120	186,280
STEAM GENERATORS	336,000	0	0	0	876,483	1,212,483
REACTOR COOLANT PIPING	19,390	0	0	0	135,399	154,789
REMAINING CONTAM. MATLS	0	0	0	0	2,158,506	2,158,506
CONTAMINATED MATRL OTHR BLD	0	0	0	0	19,575,495	19,575,495
FILTER CARTRIDGES	0	9,360	195,000	0	12,924	217,284
SPENT RESINS	0	31,200	868,000	0	82,060	981,260
COMBUSTIBLE WASTES	0	93,600	216,900	0	415,429	725,929
EVAPORATOR BOTTOMS	0	146,640	339,810	0	385,682	872,132
POST-TMI-2 ADDITIONS	0	0	0	0	638,550	638,550
SUBTOTAL PWR COSTS	544,830	539,760	16,163,930	0	26,556,544	43,805,064
BARNWELL COUNTY BUSINESS TAX (2.4%)						1,051,322
TOTAL PWR COSTS						44,856,386

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.12 Burial costs at the South Carolina Site Reference BWR (1991 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	43,680	770,000	0	14,484	828,164
FUEL SUPPORT & PIECES	0	21,840	455,000	0	7,262	484,102
CONTROL RODS/INCORES	4,680	12,480	766,400	0	21,746	805,306
CONTROL RODS GUIDES	0	18,720	43,380	0	5,785	67,885
JET PUMPS	0	62,400	650,000	0	20,310	732,710
TOP FUEL GUIDES	0	112,320	1,958,400	0	34,834	2,105,554
CORE SUPPORT PLATE	0	48,360	168,020	0	16,002	232,382
CORE SHROUD[a]	0	218,400	19,040,000	0	68,110	19,326,510
REACTOR VESSEL WALL	32,230	34,320	297,000	0	10,545	374,095
SAC SHIELD	50,960	0	0	0	147,544	198,504
REACT. WATER REC	45,500	0	0	0	127,603	173,103
SAC SHIELD	138,320	0	0	0	449,279	587,599
OTHER PRIMARY CONTAINMENT	0	0	0	0	5,123,334	5,123,334
CONTAINM. ATMOSPHERIC	2,930	0	0	0	69,505	72,435
HIGH PRESSURE CORE SPRAY	5,540	0	0	0	24,618	30,158
LOW PRESSURE CORE SPRAY	1,885	0	0	0	14,566	16,451
REACTOR BLDG CLOSED COOLING	4,395	0	0	0	46,446	50,841
REACTOR CORE COOLING	1,465	0	0	0	18,874	20,339
RESIDUAL HEAT REMOVAL	13,195	0	0	0	89,938	103,133
POOL LINES & RACKS	54,600	0	0	0	551,977	606,577
CONTAMINATED CONCRETE	23,440	0	0	0	628,785	652,225
OTHER REACTOR BUILDING	0	0	0	0	2,056,301	2,056,301
TURBINE	109,330	0	0	0	2,036,934	2,146,264
NUCLEAR STEAM CONDENSATE	22,620	0	0	0	525,964	548,584
LOW PRESSURE FEEDWATER HEATERS	152,880	0	0	0	1,067,847	1,220,727
MAIN STEAM	5,655	0	0	0	102,944	108,599
MOISTURE SEPARATOR REHEATERS	94,640	0	0	0	1,035,802	1,130,442
REACTOR FEEDWATER PUMPS	14,650	0	0	0	282,574	297,224
HIGH PRESSURE FEEDWATER HEATERS	29,120	0	0	0	175,280	204,400
OTHER TG BLDG	0	0	0	0	7,051,580	7,051,580
RAD WASTE BLDG	0	0	0	0	3,484,760	3,484,760
REACTOR BLDG	0	99,840	231,360	0	439,431	770,631
TG BLDG	0	65,520	151,830	0	296,647	513,997
RAD WASTE & CONTROL	0	59,280	137,370	0	256,027	452,677
CONCENTRATOR BOTTOMS	0	351,000	813,375	0	923,175	2,087,550
OTHER	0	95,160	220,515	0	250,283	565,958
POST-TMI-2 ADDITIONS	0	0	0	0	52,190	52,190
SUBTOTAL BWR COSTS	808,035	1,243,320	25,702,650	0	27,529,284	55,283,289
BARNWELL COUNTY BUSINESS TAX (2.4%)						1,326,799
TOTAL BWR COSTS						56,610,088

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.13 Burial costs at the South Carolina Site Reference PWR (1993 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	62,030	68,210	1,188,640	0	224,200	1,545,080
VESSEL HEAD & BOTTOM	0	71,800	166,000	0	236,000	473,800
UPPER CORE SUPPORT ASSM	0	7,180	16,600	0	23,600	47,380
UPPER SUPPORT COLUMN	0	7,180	24,940	0	23,600	55,720
UPPER CORE BARREL	0	3,590	62,560	0	11,800	77,950
UPPER CORE GRID PLATE	0	8,975	287,500	0	29,500	325,975
GUIDE TUBES	0	10,770	37,410	0	35,400	83,580
LOWER CORE BARREL[a]	0	57,440	3,129,600	0	188,800	3,375,840
THERMAL SHIELDS[a]	0	10,770	724,800	0	35,400	770,970
CORE SHROUD[a]	0	7,180	10,574,271	0	23,600	10,605,051
LOWER GRID PLATE[a]	0	8,975	1,725,000	0	29,500	1,763,475
LOWER SUPPORT COLUMN	0	1,795	71,900	0	5,900	79,595
LOWER CORE FORGING	0	19,745	274,505	0	64,900	359,150
MISC INTERNALS	0	14,360	199,640	0	47,200	261,200
BIO SHIELD CONCRETE	0	0	0	0	1,472,640	1,472,640
REACTOR CAVITY LINER	0	0	0	0	30,208	30,208
REACTOR COOLANT PUMPS	107,400	0	0	0	247,800	355,200
PRESSURIZER	17,360	0	0	0	212,400	229,760
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	23,600	23,600
PRESSURIZER RELIEF TANK	3,370	0	0	0	70,800	74,170
SAFETY INJECTION ACCUM TANKS	25,480	0	0	0	236,000	261,480
STEAM GENERATORs	387,200	0	0	0	1,260,358	1,647,558
REACTOR COOLANT PIPING	22,295	0	0	0	194,700	216,995
REMAINING CONTAM. MATLS	0	0	0	0	3,103,872	3,103,872
CONTAMINATED MATRL OTHR BLD	0	0	0	0	28,149,018	28,149,018
FILTER CARTRIDGES	0	10,770	224,250	0	18,585	253,605
SPENT RESINS	0	35,900	1,150,000	0	118,000	1,303,900
COMBUSTIBLE WASTES	0	107,700	249,000	0	597,375	954,075
EVAPORATOR BOTTOMS	0	168,730	1,815,395	0	554,600	2,538,725
POST-TMI-2 ADDITIONS	0	0	0	0	918,217	918,217
SUBTOTAL PWR COSTS	627,135	621,070	21,922,011	0	38,187,573	61,357,789
BARNWELL COUNTY BUSINESS TAX						1,472,587
SOUTHEAST COMPACT ACCESS FEE (IN-REGION)						47,896,278
SOUTHEAST COMPACT ACCESS FEE (OUT-OF-REGION)						142,394,340
TOTAL PWR COSTS (IN-REGION)						110,726,654
TOTAL PWR COSTS (OUT-OF-REGION)						205,224,716

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.13 Burial costs at the South Carolina Site
Reference BWR (1993 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	50,260	523,250	0	20,827	594,337
FUEL SUPPORT & PIECES	0	25,130	523,250	0	10,443	558,823
CONTROL RODS/INCORES	9,600	14,360	966,400	0	31,270	1,021,630
CONTROL RODS GUIDES	0	21,540	56,520	0	8,319	86,379
JET PUMPS	0	71,800	747,500	0	29,205	848,505
TOP FUEL GUIDES	0	129,240	2,252,160	0	50,032	2,431,432
CORE SUPPORT PLATE	0	55,645	193,285	0	22,951	271,881
CORE SHROUD[a]	0	251,300	24,150,000	0	97,940	24,499,240
REACTOR VESSEL WALL	37,070	39,490	341,550	0	16,697	434,807
SAC SHIELD	58,590	0	0	0	187,502	246,092
REACT. WATER REC	52,500	0	0	0	183,372	235,872
SAC SHIELD	159,030	0	0	0	645,932	804,962
OTHER PRIMARY CONTAINMENT	0	0	0	0	7,367,330	7,367,330
CONTAINM. ATMOSPHERIC	3,370	0	0	0	100,005	103,375
HIGH PRESSURE CORE SPRAY	6,370	0	0	0	35,400	41,770
LO. PRESSURE CORE SPRAY	2,170	0	0	0	20,827	22,997
REACTOR BLDG CLOSED COOLING	5,055	0	0	0	66,670	71,725
REACTOR CORE ISO COOLING	1,685	0	0	0	27,081	28,766
RESIDUAL HEAT REMOVAL	15,190	0	0	0	129,210	144,400
POOL LINER & RACKS	62,775	0	0	0	793,845	856,620
CONTAMINATED CONCRETE	26,960	0	0	0	904,293	931,253
OTHER REACTOR BUILDING	0	0	0	0	2,956,490	2,9[illegible]6,490
TURBINE	125,860	0	0	0	2,929,468	3,[illegible]55,328
NUCLEAR STEAM CONDENSATE	26,040	0	0	0	756,321	782,361
LOW PRESSURE FEEDWATER HEATERS	175,770	0	0	0	1,535,534	1,711,304
MAIN STEAM	6,510	0	0	0	147,972	154,482
MOISTURE SEPARATOR REHEATERS	108,810	0	0	0	1,489,750	1,598,560
REACTOR FEEDWATER PUMPS	16,850	0	0	0	404,209	421,059
HIGH PRESSURE FEEDWATER HEATERS	33,480	0	0	0	252,107	285,587
OTHER TG BLDG	0	0	0	0	10,119,680	10,119,680
RAD WASTE BLDG	0	0	0	0	5,010,929	5,010,929
REACTOR BLDG	0	114,880	265,600	0	631,890	1,012,370
TG BLDG	0	75,390	174,300	0	426,570	676,260
RAD WASTE & CONTROL	0	68,210	157,700	0	368,160	594,070
CONCENTRATOR BOTTOMS	0	403,875	4,311,890	0	1,327,500	6,043,265
OTHER	0	109,495	376,515	0	359,900	845,910
POST-TMI-2 ADDITIONS	0	0	0	0	75,048	75,048
SUBTOTAL BWR COSTS	933,685	1,430,615	35,039,920	0	39,540,679	76,944,899
BARNWELL COUNTY BUSINESS TAX						1,846,678
SOUTHEAST COMPACT ACCESS FEE (IN-REGION)						49,593,394
SOUTHEAST COMPACT ACCESS FEE (OUT-OF-REGION)						147,439,820
TOTAL BWR COSTS (IN-REGION)						128,384,971
TOTAL BWR COSTS (OUT-OF-REGION)						226,231,397

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.14 Burial costs at the South Carolina Site Reference PWR (1994 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	64,030	68,210	1,188,640	0	272,080	1,592,960
VESSEL HEAD & BOTTOM	0	71,800	166,000	0	286,400	524,200
UPPER CORE SUPPORT ASSM	0	7,180	16,600	0	28,640	52,420
UPPER SUPPORT COLUMN	0	7,180	24,940	0	28,640	60,760
UPPER CORE BARREL	0	3,590	62,560	0	14,320	80,470
UPPER CORE GRID PLATE	0	8,975	287,500	0	35,800	332,275
GUIDE TUBES	0	10,770	37,410	0	42,960	91,140
LOWER CORE BARREL[a]	0	57,440	3,129,600	0	229,120	3,416,160
THERMAL SHIELDS[a]	0	10,770	724,800	0	42,960	778,530
CORE SHROUD[a]	0	7,180	10,574,271	0	28,640	10,610,091
LOWER GRID PLATE[a]	0	8,975	1,725,000	0	35,800	1,769,775
LOWER SUPPORT COLUMN	0	1,795	71,900	0	7,160	80,855
LOWER CORE FORGING	0	19,745	274,505	0	78,760	373,010
MISC INTERNALS	0	14,360	199,640	0	57,280	271,280
BIO SHIELD CONCRETE	0	0	0	0	1,787,136	1,787,136
REACTOR CAVITY LINER	0	0	0	0	36,659	36,659
REACTOR COOLANT PUMPS	107,400	0	0	0	300,720	408,120
PRESSURIZER	17,360	0	0	0	257,760	275,120
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	28,640	28,640
PRESSURIZER RELIEF TANK	3,370	0	0	0	85,920	89,290
SAFETY INJECTION ACCUM TANKS	25,480	0	0	0	286,400	311,880
STEAM GENERATORS	387,200	0	0	0	1,529,519	1,916,719
REACTOR COOLANT PIPING	22,295	0	0	0	236,280	258,575
REMAINING CONTAM. MATLS	0	0	0	0	3,766,733	3,766,733
CONTAMINATED MATRL OTHR BLD	0	0	0	0	34,160,503	34,160,503
FILTER CARTRIDGES	0	10,770	224,250	0	22,554	257,574
SPENT RESINS	0	35,900	1,150,000	0	143,200	1,329,100
COMBUSTIBLE WASTES	0	107,700	249,000	0	724,950	1,081,650
EVAPORATOR BOTTOMS	0	168,730	1,815,395	0	673,040	2,657,165
POST-TMI-2 ADDITIONS	0	0	0	0	1,114,311	1,114,311
SUBTOTAL PWR COSTS	627,135	621,070	21,922,011	0	46,342,885	69,513,101
BARNWELL COUNTY BUSINESS TAX						1,668,314
SOUTHEAST COMPACT ACCESS FEE (IN-REGION)						47,896,278
SOUTHEAST COMPACT ACCESS FEE (OUT-OF-REGION)						142,394,340
TOTAL PWR COSTS (IN-REGION)						119,077,693
TOTAL PWR COSTS (OUT-OF-REGION)						213,575,755

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.14 Burial costs at the South Carolina Site
Reference BWR (1994 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	50,260	523,250	0	25,275	598,785
FUEL SUPPORT & PIECES	0	25,130	523,250	0	12,673	561,053
CONTROL RODS/INCORES	9,600	14,360	966,400	0	37,948	1,028,308
CONTROL RODS GUIDES	0	21,540	56,520	0	10,096	88,156
JET PUMPS	0	71,800	747,500	0	35,442	854,742
TOP FUEL GUIDES	0	129,240	2,252,160	0	60,717	2,442,117
CORE SUPPORT PLATE	0	55,645	193,285	0	27,852	276,782
CORE SHROUD[a]	0	251,300	24,150,000	0	118,856	24,520,156
REACTOR VESSEL WALL	37,070	39,490	341,550	0	20,263	438,373
SAC SHIELD	58,590	0	0	0	227,545	286,135
REACT. WATER REC	52,500	0	0	0	222,533	275,033
SAC SHIELD	159,030	0	0	0	783,877	942,907
OTHER PRIMARY CONTAINMENT	0	0	0	0	8,940,692	8,940,692
CONTAINM. ATMOSPHERIC	3,370	0	0	0	121,362	124,732
HIGH PRESSURE CORE SPRAY	6,370	0	0	0	42,960	49,330
LOW PRESSURE CORE SPRAY	2,170	0	0	0	25,275	27,445
REACTOR BLDG CLOSED COOLING	5,055	0	0	0	80,908	85,963
REACTOR CORE ISO COOLING	1,685	0	0	0	32,864	34,549
RESIDUAL HEAT REMOVAL	15,190	0	0	0	156,804	171,994
POOL LINER & RACKS	62,775	0	0	0	963,378	1,026,153
CONTAMINATED CONCRETE	26,960	0	0	0	1,097,413	1,124,373
OTHER REACTOR BUILDING	0	0	0	0	3,587,876	3,587,876
TURBINE	125,860	0	0	0	3,555,083	3,680,943
NUCLEAR STEAM CONDENSATE	26,040	0	0	0	917,840	943,880
LOW PRESSURE FEEDWATER HEATERS	175,770	0	0	0	1,863,462	2,039,232
MAIN STEAM	6,510	0	0	0	179,573	186,083
MOISTURE SEPARATOR REHEATERS	108,810	0	0	0	1,807,900	1,916,710
REACTOR FEEDWATER PUMPS	16,850	0	0	0	490,532	507,382
HIGH PRESSURE FEEDWATER HEATERS	33,480	0	0	0	305,947	339,427
OTHER TG BLDG	0	0	0	0	12,280,832	12,280,832
RAD WASTE BLDG	0	0	0	0	6,081,060	6,081,060
REACTOR BLDG	0	114,880	265,600	0	766,836	1,147,316
TG BLDG	0	75,390	174,300	0	517,668	767,358
RAD WASTE & CONTROL	0	68,210	157,700	0	446,784	672,694
CONCENTRATOR BOTTOMS	0	403,875	4,311,890	0	1,611,000	6,326,765
OTHER	0	109,495	376,515	0	436,760	922,770
POST-TMI-2 ADDITIONS	0	0	0	0	91,075	91,075
SUBTOTAL BWR COSTS	933,685	1,430,615	35,039,920	0	47,984,960	85,389,180
BARNWELL COUNTY BUSINESS TAX						2,049,340
SOUTHEAST COMPACT ACCESS FEE (IN-REGION)						49,593,394
SOUTHEAST COMPACT ACCESS FEE (OUT-OF-REGION)						147,439,820
TOTAL BWR COSTS (IN-REGION)						137,031,914
TOTAL BWR COSTS (OUT-OF-REGION)						234,878,340

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.15 Burial costs at the South Carolina Site Reference PWR (1995 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
VESSEL WALL	83,220	87,400	1,545,460	0	319,960	2,036,040
VESSEL HEAD & BOTTOM	0	92,000	214,000	0	336,800	642,800
UPPER CORE SUPPORT ASSM	0	9,200	21,400	0	33,680	64,280
UPPER SUPPORT COLUMN	0	9,200	32,400	0	33,680	75,280
UPPER CORE BARREL	0	4,600	81,340	0	16,840	102,780
UPPER CORE GRID PLATE	0	11,500	373,750	0	42,100	427,350
GUIDE TUBES	0	13,800	48,600	0	50,520	112,920
LOWER CORE BARREL[a]	0	73,600	3,865,600	0	269,440	4,208,640
THERMAL SHIELDS[a]	0	13,800	724,800	0	50,520	789,120
CORE SHROUD[a]	0	9,200	7,368,800	0	33,680	7,411,680
LOWER GRID PLATE[a]	0	11,500	1,208,000	0	42,100	1,261,600
LOWER SUPPORT COLUMN	0	2,300	93,470	0	8,420	104,190
LOWER CORE FORGING	0	25,300	356,840	0	92,620	474,760
MISC INTERNALS	0	18,400	259,520	0	67,360	345,280
BIO SHIELD CONCRETE	0	0	0	0	2,101,632	2,101,632
REACTOR CAVITY LINER	0	0	0	0	43,110	43,110
REACTOR COOLANT PUMPS	139,200	0	0	0	353,640	492,840
PRESSURIZER	22,560	0	0	0	303,120	325,680
R.Hx,EHx,SUMP PUMP,CAVITY PUMP	0	0	0	0	33,680	33,680
PRESSURIZER RELIEF TANK	4,380	0	0	0	101,040	105,420
SAFETY INJECTION ACCUM TANKS	33,200	0	0	0	336,800	370,000
STEAM GENERATORS	480,000	0	0	0	1,798,680	2,278,680
REACTOR COOLANT PIPING	29,050	0	0	0	277,860	306,910
REMAINING CONTAM. MATLS	0	0	0	0	4,429,594	4,429,594
CONTAMINATED MATRL OTHR BLD	0	0	0	0	40,171,988	40,171,988
FILTER CARTRIDGES	0	13,800	291,600	0	26,523	331,923
SPENT RESINS	0	46,000	1,495,000	0	168,400	1,709,400
COMBUSTIBLE WASTES	0	138,000	321,000	0	852,525	1,311,525
EVAPORATOR BOTTOMS	0	216,200	2,356,940	0	791,480	3,364,620
POST-TMI-2 ADDITIONS	0	0	0	0	1,310,405	1,310,405
SUBTOTAL PWR COSTS	791,610	795,800	20,658,520	0	54,498,197	76,744,127
BARNWELL COUNTY BUSINESS TAX						1,841,859
SOUTH CAROLINA LLRW DISPOSAL TAX (INSIDE SE COMPACT)						152,103,045
SOUTH CAROLINA LLRW DISPOSAL TAX (OUTSIDE SE COMPACT)						152,103,045
TOTAL PWR COSTS (INSIDE SE COMPACT)						230,689,031
TOTAL PWR COSTS (OUTSIDE SE COMPACT)						230,689,031

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

Table B.15 Burial costs at the South Carolina Site
Reference BWR (1995 dollars)

COMPONENT	CRANE SURCHARGE	CASK HANDLING	CURIE SURCHARGE	LINER DOSE RATE	BURIAL CHARGE	DISPOSAL COST
STEAM SEPARATOR	0	64,400	680,400	0	29,723	774,523
FUEL SUPPORT & PIECES	0	32,200	680,400	0	14,903	727,503
CONTROL RODS/INCORES	12,480	18,400	966,400	0	44,626	1,041,906
CONTROL RODS GUIDES	0	27,600	72,240	0	11,872	111,712
JET PUMPS	0	92,000	972,000	0	41,679	1,105,679
TOP FUEL GUIDES	0	165,600	2,928,240	0	71,402	3,165,242
CORE SUPPORT PLATE	0	71,300	251,100	0	32,754	355,154
CORE SHROUD[a]	0	322,000	16,912,000	0	139,772	17,373,772
REACTOR VESSEL WALL	48,180	50,600	444,400	0	23,829	567,009
SAC SHIELD	75,600	0	0	0	267,588	343,188
REACT. WATER REC	58,000	0	0	0	261,694	319,694
SAC SHIELD	205,200	0	0	0	921,822	1,127,022
OTHER PRIMARY CONTAINMENT	0	0	0	0	10,514,054	10,514,054
CONTAINM. ATMOSPHERIC	4,380	0	0	0	142,719	147,099
HIGH PRESSURE CORE SPRAY	8,300	0	0	0	50,520	58,820
LOW PRESSURE CORE SPRAY	2,820	0	0	0	29,723	32,543
REACTOR BLDG CLOSED COOLING	6,570	0	0	0	95,146	101,716
REACTOR CORE ISO COOLING	2,190	0	0	0	38,648	40,838
RESIDUAL HEAT REMOVAL	19,740	0	0	0	184,398	204,138
POOL LINER & RACKS	81,000	0	0	0	1,132,911	1,213,911
CONTAMINATED CONCRETE	35,040	0	0	0	1,290,533	1,325,573
OTHER REACTOR BUILDING	0	0	0	0	4,219,262	4,219,262
TURBINE	163,560	0	0	0	4,180,698	4,344,258
NUCLEAR STEAM CONDENSATE	33,840	0	0	0	1,079,360	1,113,200
LOW PRESSURE FEEDWATER HEATERS	226,800	0	0	0	2,191,389	2,418,189
MAIN STEAM	8,460	0	0	0	211,174	219,634
MOISTURE SEPARATOR REHEATERS	140,400	0	0	0	2,126,050	2,266,450
REACTOR FEEDWATER PUMPS	21,900	0	0	0	576,854	598,754
HIGH PRESSURE FEEDWATER HEATERS	43,200	0	0	0	359,787	402,987
OTHER TG BLDG	0	0	0	0	14,441,984	14,441,984
RAD WASTE BLDG	0	0	0	0	7,151,190	7,151,190
REACTOR BLDG	0	147,200	342,400	0	901,782	1,391,382
TG BLDG	0	96,600	224,700	0	608,766	930,066
RAD WASTE & CONTROL	0	87,400	203,300	0	525,408	816,108
CONCENTRATOR BOTTOMS	0	517,500	5,598,060	0	1,894,500	8,010,060
OTHER	0	140,300	485,020	0	513,620	1,138,940
POST-TMI-2 ADDITIONS	0	0	0	0	107,102	107,102
SUBTOTAL BWR COSTS	1,197,660	1,833,100	30,760,660	0	56,429,240	90,220,660
BARNWELL COUNTY BUSINESS TAX						2,165,296
SOUTH CAROLINA LLRW DISPOSAL TAX (INSIDE SE COMPACT)						157,492,535
SOUTH CAROLINA LLRW DISPOSAL TAX (OUTSIDE SE COMPACT)						157,492,535
TOTAL BWR COSTS (INSIDE SE COMPACT)						249,878,491
TOTAL BWR COSTS (OUTSIDE SE COMPACT)						249,878,491

(a) GTCC Material: Assumes a low density, distributed packaging scheme and final disposal as LLW. High density packaging and geologic repository disposal could reduce disposal costs.

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10. SUPPLEMENTARY NOTES

Supersedes NUREG-1307, dated June 1994.

11. ABSTRACT *(200 words or less)*

One of the requirements placed upon nuclear power reactor licensees by the U.S. Nuclear Regulatory Commission (NRC) is for the licensees to periodically adjust the estimate of the cost of decommissioning their plants, in dollars of the current year, as part of the process to provide reasonable assurance that adequate funds for decommissioning will be available when needed. This report, which is scheduled to be revised periodically, contains the development of a formula for escalating decommissioning cost estimates that is acceptable to the NRC, and contains values for the escalation of radioactive waste burial costs, by site and by year. The licensees may use the formula, the coefficients, and the burial escalation from this report in their escalation analyses, or they may use an escalation rate at least equal to the escalation approach presented herein.

12. KEY WORDS/DESCRIPTORS *(List words or phrases that will assist researchers in locating the report.)*

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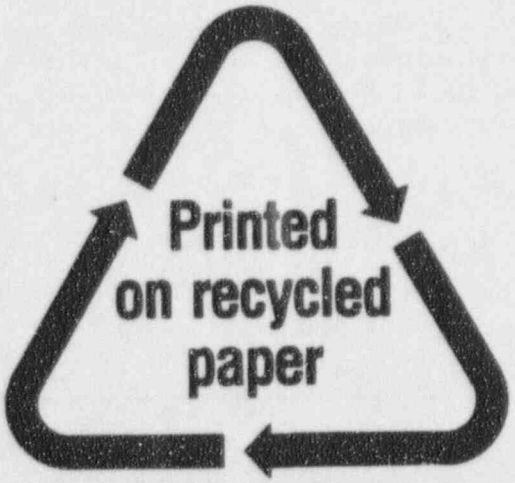

Federal Recycling Program

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001