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January 22, 2001

Ms. Blanca S. Bayó, Director
Division of Records and Reporting
Florida Public Service Commission
4075 Esplanade Way, Room 110
Tallahassee, FL 32399

Re: Docket No 981246-EI Decommissioning Studies

Dear Ms. Bayó:

FPL filed its Petition concerning Annual Decommissioning Cost Accruals for its Turkey Point and St. Lucie Nuclear Units on October 1, 1998.

Since that time and because this Docket has been on-going, FPL has, at staff's request, made various revisions and supplements that it believes should be made to its filing. The supplements and revisions to the Decommissioning studies for the two nuclear plants and which are enclosed with this letter include changes to reflect:

1. Actual December 2000 fund and reserve balances and actual inflation factors for the years 1999 and 2000 applied to the Decommissioning Study prepared in 1998 dollars.
2. The most recently published standard & Poor's DRI "The US Economy" forecasted indexes for calculating escalation and fund earnings rates used in the studies.

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3. Updated assumptions regarding extended storage of spent fuel included in the decommissioning cost estimates.
4. An updated estimate of End-of-Life Inventory values.

Pages within the studies in this submittal that contain changes or revision are marked "Revised 1/01." In addition, where there are minor changes on a page the changes are highlighted.

If further identification or discussion of the changes or revisions is necessary, please contact Don Moss (305-552-4330).

Respectfully submitted,



Donald L. Babka

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**BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION**

DOCKET NO. 981246-EI

FLORIDA POWER & LIGHT COMPANY

1998 DECOMMISSIONING STUDY

**TURKEY POINT NUCLEAR UNIT
NOS. 3 & 4**

**Revised
January 2001**

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Decommissioning Cost Study

Prepared by - TLG Services, Inc.

Dated October 1999

47 – 212 Revised

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Background Information

By order Nos. 10987 and 12356, entered in Docket No. 810100-EU on July 13, 1982 and August 12, 1983, respectively, the Florida Public Service Commission (FPSC) concluded its investigation concerning the accounting for and recovery of the costs of decommissioning nuclear units. In Docket No. 810100-EU, the FPSC concluded, among other matters, that: decommissioning costs should be accrued in equal annual amounts; decommissioning costs should be accounted for separately; and decommissioning costs should be reviewed and, if necessary, changed no less often than every five years.

By Order No. 21928, entered in Docket No. 870098-EI on September 21, 1989, the FPSC considered the petitions by Florida Power and Light Company (FPL) for an increase in the accrual of nuclear decommissioning costs for the Turkey Point and St. Lucie units. Based upon its decisions regarding decommissioning methodology, the contingency allowance, escalation rates and an assumed fund earnings rate, the FPSC approved an annual accrual and associated jurisdictional revenue requirements for each of FPL's nuclear units. Order No. 21928 also provided that the approved accrual would be subject to subsequent review every five years.

By Order Nos. PSC-95-1531-FOF-EI and PSC-95-1531A-FOF-EI, entered in Docket No. 941350-EI on December 12, 1995 and December 19, 1995 respectively, the FPSC considered the petitions by FPL for an increase in the accrual of nuclear decommissioning costs for the Turkey Point and St. Lucie units. Based upon its decisions regarding decommissioning methodology, including assumptions regarding extended on-site fuel storage, the contingency allowance, escalation rates and an assumed fund earnings rate, the FPSC approved an annual accrual and funding requirements for each of FPL's nuclear units with an effective date of January 1, 1995.

By Order No. PSC-98-0027-FOF-EI, Docket No. 970410-EI issued January 5, 1998, the FPSC authorized FPL to record additional decommissioning expenses to correct historical reserve deficiencies. In addition, FPL was ordered to file updated nuclear decommissioning studies by October 1, 1998.

On October 1, 1998, in compliance with Order No. PSC-0027-FOF-EI, FPL filed in this Docket No. 981246-EI, new decommissioning cost studies prepared by TLG Services Inc. (TLG), an updated funding and accrual analysis, and an updated theoretical reserve calculation as of December 31, 1998. The information contained in this 1998 Decommissioning Study is presented in compliance with the FPSC prior Orders.

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By Order No. PSC-99-0519-AS-EI issued March 17, 1999 in Docket No. 990067-EI, In Re: Petition for a full revenue requirements rate case for Florida Power & Light Company, the FPSC approved a Stipulation and Settlement (Stipulation). Among other things, the Stipulation terminated the continued amortization and booking of expenses and other cost recognition authorized in Docket No. 970410-EI and capped for the settlement period ending April 2002, accruals for nuclear decommissioning at the levels last approved by the Commission in Order Nos. PSC-95-1531-FOF-EI and PSC-95-1531A-EI in Docket No. 941350-EI. The schedule (CASR) for Docket No. 981246-EI was subsequently revised and extended into the year 2001.

Spent Nuclear Fuel Storage

The Nuclear Waste Policy Act of 1982 assigns to the Federal Government responsibility to provide for the permanent disposal of spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and committed the DOE to begin acceptance of SNF/HLW not later than January 31, 1998 under terms of its Standard Disposal Contracts with waste generators. The DOE has not yet provided for SNF storage and is not accepting SNF as committed to under the contract.

In Docket No. 941350-EI, the FPSC previously recognized the impact on the decommissioning process and the potential costs of on-site dry fuel storage resulting from the inability of the DOE to provide for the timely removal of SNF. In Order No. PSC-95-1531-FOF-EI, the FPSC specifically approved the inclusion of costs associated with the dry storage of spent nuclear fuel following the end of each units operating license which were considered necessary to accommodate the timely decommissioning of each unit.

Consistent with the Commission's prior findings, this updated 1998 decommissioning study includes the costs relating to the construction, operation, and dismantlement of an on-site independent spent fuel storage installation (ISFSI) that is required to accommodate the timely decommissioning of the Turkey Point units. The potential cost impact of extended spent fuel storage beyond the current DOE five year minimum that will exist subsequent to the license expiration of the Turkey Point nuclear units is presented in Appendix D of the 1998 Decommissioning Cost Study for the Turkey Point Plant and further discussed in the "General Discussion" section of this filing.

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Updated (11/00) Study Assumptions

In October 1999, at FPL's request TLG Services, Inc. revised the Decommissioning Cost Study for the Turkey Point Plant, Units 3 and 4 (Document F02-1297-003-Rev. 1). The decommissioning cost estimates were revised to reflect an update to the assumptions regarding extended storage of spent fuel. The spent fuel storage costs and schedule assumptions utilized in the update were developed consistent with prevailing assumptions of experts obtained by FPL to prepare its damage claim against the DOE. The decommissioning cost estimates included in this filing are based on the TLG prepared Decommissioning Cost Study for the Turkey Point Plant, Units 3 and 4 (Rev. 1) dated October, 1999.

Decommissioning Study

For purposes of this analysis, decommissioning is defined as the activity whereby nuclear facilities are removed safely from service and residual radioactivity is reduced to a level that permits release of the property for unrestricted use and termination of the operating license granted under Title 10 CFR Part 50. Decommissioning also includes the dismantlement, disposal and site restoration activities associated with the non-contaminated portion of the facilities. These activities are not required for termination of the operating license, but are required to address other non-radiological requirements associated with the release of the site.

The Nuclear Regulatory Commission (NRC) has defined three acceptable decommissioning methods: Prompt Removal/Dismantling (DECON); Safe Storage/Deferred Decontamination (SAFSTOR); and Entombment (ENTOMB). The study utilizes the NRC terminology, but also includes the additional activities required to accommodate the non-contaminated portion of the facilities.

The DECON and SAFSTOR alternatives were both examined and presented in the (TLG) Turkey Point Study. The ENTOMB alternative was not considered, because it is considered impractical for a facility which generates significant amounts of long-lived radioactive material due to neutron activation. FPL again selected the DECON alternative because this method provides the lowest cost and utilizes individuals familiar with the facility to support the dismantling effort. The DECON method is consistent with the Prompt/Removal Dismantling method approved by the FPSC in Docket No. 941350-EI.

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Funding Method

In Docket No. 810100-EU, Order No. 10987 issued July 13, 1982, the FPSC ordered FPL to establish a funded reserve. Beginning in 1983 FPL began making contributions, on a net of tax basis, to an externally funded reserve. In 1986, the Treasury Department issued temporary regulations under Internal Revenue Code Section 468A relating to the deductibility of contributions made to a qualified decommissioning fund. These regulations, which were finalized in March of 1988, provide for an annual election by the taxpayer to make tax-deductible contributions to a qualified nuclear decommissioning fund. Qualified nuclear decommissioning funds have been established by FPL for each of the four nuclear units. FPL elected to make contributions to the qualified funds, to the maximum allowed, for the years 1984 through 1987, 1992 through 1999 and is currently making maximum contributions to the qualified funds for the year 2000. For purposes of the funding analysis, maximum contributions to the qualified funds are assumed to continue for each unit through the remainder of the projected funding period which ends with the expiration of the unit's operating license.

In compliance with Order No. PSC-98-0027-FOF-EI, additional expenses recorded in 1999 to correct reserve deficiencies were funded on an after tax basis to the nonqualified fund.

Materials and Supplies Inventories

The decommissioning cost estimates contained in the TLG Decommissioning Cost Estimate section of this study and in the funding analysis contained in Support Schedule G of this filing do not take into consideration the unrecovered value of any Materials and Supplies Inventories that will ultimately exist at the site following shut down of both units. FPL does recognize however that there will be a level of inventories that will remain at the end of life of Unit No. 4, the last unit to reach end of license, that must be recovered prior to the end of site operations. These inventories are unique and will have little value other than scrap value when the units are decommissioned. As such, FPL has included in Support Schedule F of this filing the annual expense accrual and theoretical reserve deficiency calculations associated with the estimated End of Life inventory values.

Since the annual expense/reserve accrual associated with EOL Inventories represents the recovery of amounts already expended, there is no need to fund these amounts and therefore amounts recorded should be accounted for in a separate (unfunded) decommissioning reserve sub-account.

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Annual Accrual Requirements

Listed below are the current annual expense accrual requirements for Turkey Point Nuclear Plant Decommissioning costs, including recovery of End of Life Inventory values. Amounts are jurisdictional.

	<u>Last Approved Annual Accrual (1)</u>	<u>Annual Accrual Based on Actual Reserves (2)</u>	<u>Increase (Decrease)in Annual Accrual</u>	<u>Annual Accrual Based on Theoretical Reserves</u>	<u>Increase (Decrease) in Annual Accrual</u>
Turkey Point Unit 3	\$17,823,278	\$21,178,186	\$ 3,354,908	\$ 7,036,782	\$(10,786,496)
Turkey Point Unit 4	\$22,558,722	\$26,132,919	\$ 3,574,197	\$ 8,934,347	\$(13,624,375)
Total	\$40,382,000	\$47,311,105	\$ 6,929,105	\$15,971,129	\$(24,410,871)

(1) As approved in Docket No. 941350-EI, Order No. PSC-95-1531-FOF-EI. **Effective 1/1/95**

(2) **Effective 1/1/01**

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Major Assumptions

Following is a brief summary of the major assumptions used in our analysis. The "Base Case Assumptions Section" of this filing contains additional detail regarding these and other assumptions used.

	Turkey Point Unit No. 3	Turkey Point Unit No. 4
DECOMMISSIONING FUNDS		
A. Decommissioning Method	DECON (Prompt Removal/ Dismantling)	DECON (Prompt Removal/ Dismantling)
B. Total Decommissioning Cost Per TLG Services, Inc. (Present value @ 12/31/98)	\$ 395,359,236	\$ 452,540,306
Total Decommissioning Cost @ December 31, 2000	\$ 430,184,895	\$ 492,713,401
C. FPL's Cost of Decommissioning @ December 31, 2000 (Jurisdictional @ 99.992%)	430,150,480	492,673,984
D. Method of Funding (2001 - End)	Qualified	Qualified
E. Qualified Fund Percentage	66.67%	68.57%
F. Funding Periods (Years)	11.50	12.25
G. Assumed Fund Earnings Rate	5.2%	5.2%
H. Escalation rate for Decommissioning Costs (2001 - End)	6.0%	6.0%
I. FPL Ownership Allocation	100%	100%
MATERIALS & SUPPLIES INVENTORIES		
J. Inventory Value at End of Life	N/A	\$ 19,661,823
RESERVE DEFICIENCIES (EXCESS) @ 12/31/00		
K. 1. Decommissioning	\$ 67,940,882	\$ 84,916,193
2. Inventories	\$ -	\$ 13,564,169
L. Method of Funding (2001 - End)		
1. Decommissioning	Non Qualified	Non Qualified
2. Inventories	Non Funded Reserve	Non Funded Reserve

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DECOMMISSIONING ALTERNATIVES

The Nuclear Regulatory Commission's (NRC) "General Requirements for Decommissioning Nuclear Facilities" defines three decommissioning alternatives acceptable to the NRC, i.e., DECON, SAFSTOR and ENTOMB.

DECON is defined by the NRC as "the alternative in which equipment, structures, and the portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations."

SAFSTOR is defined as "the alternative in which the nuclear facility is placed and maintained in a condition that allows the nuclear facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use."

ENTOMB is defined as "the alternative in which radioactive contaminants are encased in a structurally long-lived material, such as concrete; the entombed structure is appropriately maintained and continued surveillance is carried out until the radioactive material decays to a level permitting unrestricted release of the property."

Currently, all three alternatives are limited to an overall duration of 60 years per Title 10 CFR Part 50.82 (a)(3) unless the utility can demonstrate that a longer period is necessary to protect the public health and safety.

On April 3, 1997 the NRC Commissioners requested that the NRC staff provide it with an analysis of whether or not the staff views entombment as a viable decommissioning option and how this option has been dealt with previously by the Commission. The Staff Requirements Memorandum (SRM) state that if the staff concludes that entombment is not a viable option, then the staff should describe the technical requirements and regulatory actions which would be necessary for entombment to become a viable decommissioning option, and that the staff analysis should include the resources involved, potential decommissioning cost savings, and vulnerabilities. On July 19, 1999 the NRC staff issued an information report in response to the SRM (SECY-99-187). The report concludes that entombment is a safe and viable option for many situations. However, the report notes implementation of the option would require changes to regulatory requirements and guidance before entombment could be treated as a generic alternative. In addition, the staff noted that there are issues involving statutory, regulatory, technical and implementation matters whose implications require

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further development. The report noted that the next step in considering the entombment option is to solicit stakeholder views on the technical basis, issues and options for treating entombment on an equal basis with other decommissioning alternatives, such as SAFSTOR and DECON.

ALTERNATIVES CONSIDERED IN STUDY

The DECON and SAFSTOR alternatives were examined for the Turkey Point Study. The ENTOMB alternative was not considered, because it is considered impractical for a facility which generates significant amounts of long-lived radioactive material due to neutron activation. Specific attributes of the ENTOMB alternative which make it uneconomical when compared to the DECON and SAFSTOR alternatives are:

- a large up-front expenditure is required to encase the contaminated portion of the facility;
- workers incur greater levels of occupational exposure (compared to SAFSTOR);
- the plant must still be decontaminated and dismantled to complete decommissioning prior to the end of the 60 year period; and
- no significant reductions in low level radioactive waste (LLRW) volumes are achieved due to the 60 year time limitation.

DISMANTLEMENT ALTERNATIVE SELECTED

FPL selected an integrated DECON prompt dismantlement option for Turkey Point Units 3 and 4. This option was selected for two reasons.

1. Prompt dismantlement provides the lowest estimated cost in current dollars.
2. This method results in the lowest estimated revenue requirement.

Additionally, the integrated DECON prompt decommissioning option selected is consistent with the Prompt Removal/Dismantling method last approved by the Commission for the Turkey Point Units in Docket No. 941350-EI. . Although FPL would prefer to promptly decommission the Turkey Point units, FPL recognizes that future circumstances may compel FPL to defer decommissioning of the units. For example, the lack of available low-level and/or high-level waste disposal facilities could result in deferred decommissioning.

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STUDY METHODOLOGY

The TLG study for Turkey Point follows the basic approach originally presented in the Atomic Industrial Forum/National Environmental Studies Project report AIF/NESP-036, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates". The contents of those guidelines were prepared under the review of a task force consisting of representatives from utilities, state regulatory commissions, architect/engineering firms, the Federal Energy Regulatory Commission, the NRC, and the National Association of Regulatory Utility Commissioners. The study also utilizes guidance provided in the Department of Energy (DOE) "Decommissioning Handbook".

These references utilize a unit cost factor method for estimating decommissioning activity costs to simplify the estimating calculations. Unit cost factors for concrete removal, steel removal and cutting costs were developed from labor and material cost information provided by FPL. With the item quantity developed from plant drawings, inventory documents and equipment data bases, the activity-dependent costs are estimated. The unit cost factors used in the study reflect the latest available information about worker productivity in actual decommissioning projects, including the Shippingport, Pathfinder, Shoreham, Yankee Rowe and Trojan reactors.

The activity duration critical path was used to determine the total decommissioning program schedule. The program schedule is used to determine the period-dependent costs for program management, administration, engineering, equipment rental, quality assurance and security costs.

The activity and period-dependent costs are combined to develop the total decommissioning costs. Contingency factors are then applied to major cost activities to provide for the types of unforeseeable events that are likely to occur in decommissioning.

**FUNDING ALTERNATIVES
QUALIFIED vs NONQUALIFIED**

Prior to 1989

In Docket No. 810100-EU, Order No. 10987 issued July 13, 1982, the Florida Public Service Commission ordered FPL to establish an internally funded reserve. FPL made net of tax contributions to the fund from 1983 through 1987. In January 1988, FPL made qualified contributions for tax years 1984 through 1986 and funds were transferred from the nonqualified fund to the qualified funds. The qualified contributions

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for tax year 1987 were made in March 1988. FPL elected to make contributions to qualified decommissioning funds for the tax years 1984 through 1987 since it believed the advantages of a qualified fund outweighed any disadvantages in those years. The reduction in corporate Federal income tax rates effective July 1, 1987 was a major consideration in reaching this conclusion. The decision to make a qualified election for these years was reviewed and approved by the Commission in Order No. 21928.

Present Company Treatment - 1989 to Date

Subsequent to 1988 the Company elected to make qualified contributions for the years 1992 through 1999, and is currently making qualified contributions, to the maximum allowed, for the year 2000. The increase in the corporate Federal income tax rate effective January 1, 1993 and the introduction of tax legislation which ultimately resulted in the reduction in the Federal income tax rate applicable to the earnings of the qualified funds from the maximum corporate Federal income tax rate to a rate of 22% for 1994 and 1995 and to 20% for years thereafter, were primary considerations which led to the election of qualified contributions for the years subsequent to 1991.

SPENT FUEL-RELATED COSTS

Background and Regulatory Guidance

Nuclear Waste Policy Act of 1982

The Nuclear Waste Policy Act of 1982 (NWPA) assigns to the Federal Government responsibility to provide for the permanent disposal of spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and committed the DOE to begin acceptance of SNF/HLW not later than January 31, 1998 under the terms of its Standard Disposal Contracts with waste generators. The DOE has not yet provided for SNF storage and is not accepting SNF as committed to under the contract.

The generators of waste are expected to bear the cost of disposal. The operators of commercial reactors fund DOE's efforts through the 1.0 mil per kilowatt-hour charge assessed on the electricity generated with nuclear fuel.

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Specific Regulations

Three provisions of current regulations affect decommissioning and SNF storage options.

1. Current NRC policy requires removal of all SNF from a facility licensed under Title 10 CFR Part 50 before decommissioning can be accomplished.
2. Title 10 CFR Part 50.54 (bb) requires the licensee, within 2 years following permanent cessation of operation of the reactor or 5 years before expiration of the reactor operating license, whichever occurs first, to submit written notification to the NRC for its review and preliminary approval of the program by which the licensee intends to manage and provide funding for the management of all irradiated fuel at the reactor following permanent cessation of operation of the reactor until title to the irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository. However, the NRC does not currently consider SNF management costs after expiration of the operating license, to be decommissioning costs.
3. Title 10 CFR Part 961, Appendix E requires SNF to be cooled in the spent fuel pools for at least five years before it can be accepted by DOE.

Litigation

FPL, along with a number of electric utilities, sued DOE over DOE's denial of its obligation to accept SNF beginning in 1998. On July 23, 1996, the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) held that DOE is required by the Nuclear Waste Policy Act (NWPA) to take title and dispose of SNF from nuclear power plants beginning on January 31, 1998 (Indiana Michigan Power Co. v. Department of Energy). DOE declined to seek further review of the decision, which was remanded to DOE for further proceedings. On December 17, 1996, DOE advised the electric utilities that it would not begin to dispose of SNF by the unconditional deadline.

In response to DOE's letter, FPL, other electric utilities, and state utility commissions filed suit on January 31, 1997 in the D.C. Circuit (Northern States Power Co. v. DOE) requesting that the court authorize the utilities to suspend payments into the Nuclear Waste Fund (NWF) until DOE performs on its unconditional obligation to take title to and dispose of SNF.

On November 14, 1997, a panel of the D.C. Circuit found that DOE did not abide by the Court's earlier ruling that the NWPA imposes an unconditional obligation on DOE to begin disposal of spent fuel by January 31, 1998. The Court's order precludes DOE from

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excusing its own delay on the grounds that it has not yet prepared a permanent repository or interim storage facility. The Court did not grant the other requests for relief. **The U.S. Supreme Court denied DOE's request for review of the D.C. Circuit decision.**

On June 8, 1998, FPL filed suit in the United States Court of Federal Claims seeking damages from the United States for DOE's failure to comply with its statutory obligation to take title to and dispose of SNF. A major element of the damages is the additional decommissioning accrual necessary as a result of DOE's delayed acceptance of SNF.

On July 31, 1998, DOE filed a motion to dismiss a companion lawsuit brought by Northern States Power Company (NSP) on grounds that NSP failed to exhaust its administrative remedies prior to filing the lawsuit and should have first filed a claim with DOE's Contracting Officer. On April 6, 1999, the Court of Federal Claims granted DOE's motion. On August 31, 2000, the U.S. Court of Appeals for the Federal Circuit reversed the decision of the Court of Federal Claims, holding that NSP could proceed with its spent fuel damages lawsuit against DOE in court without proceeding first before DOE's Contracting Officer.

It is possible that the decision of the Federal Circuit on the jurisdictional issue could be reviewed by the full panel of the Federal Circuit, and then by the U.S. Supreme Court. FPL's lawsuit has been stayed pending the outcome of the NSP case. If the Federal Circuit decision stands, FPL would move the Court of Claims for summary judgement on liability and then proceed toward a trial to determine the amount of damages owed by DOE

Private Fuel Storage, LLC

FPL purchased an interest in Private Fuel Storage, LLC (PFS) in May 2000. PFS is a consortium of eight utilities seeking to license, construct, and operate an independent spent fuel storage installation (ISFSI) in Tooele County, Utah, on the reservation of the Skull Valley Band of the Goshute Indian tribe. PFS has filed a license application with the NRC. Based on an affirmative licensing decision, PFS operations could begin by the end of 2003. PFS is an alternative to dry storage at an ISFSI at the plant site. FPL has not yet determined to what extent PFS would be utilized in lieu of on site storage if the facility is successfully licensed and constructed.

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Spent Fuel Storage Costs Estimated in Decommissioning Study

Decommissioning Study Assumptions

The decommissioning study assumes that FPL will incur additional costs for the storage of SNF. A separate appendix in the study estimates FPL's decommissioning costs if DOE had met its obligation to begin accepting SNF in January 1998.

In October 1999, at FPL's request TLG Services, Inc. revised the Decommissioning Cost Study for the St Lucie Plant, Units 1 and 2 (Document F02-1297-002-rev. 1). The decommissioning cost estimates were revised to reflect an update to the assumptions regarding extended storage of spent fuel. The spent fuel storage costs and schedule assumptions utilized in the update were developed consistent with prevailing assumptions of experts obtained by FPL to prepare its damage claim against the DOE. The decommissioning cost estimates included in this filing are based on the TLG prepared Decommissioning Cost Study for the St. Lucie Plant, Units 1 and 2 (Rev. 1) dated October, 1999.

Impact of Delayed Acceptance of SNF

FPL assumes the following in the delayed SNF acceptance scenario.

- Over the long-term, and particularly after the plant is shut down, dry storage of SNF is more cost effective than wet storage.
- DOE will not supply multipurpose canisters (MPCs) for on-site storage of SNF. The DOE terminated the MPC program in 1996 due to reduced appropriations for the waste program.
- FPL will pay for storage canisters.
- DOE's geologic repository will begin accepting SNF in 2015.
- The geologic repository will accept fuel at the receipt/emplacement rate projected in the "Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program" (DOE/RW-0510, December 1998). This projection assumes that the repository will reach an annual acceptance rate of 3,000 Metric Tons of Uranium (MTU) in the fifth year of operation.

The Turkey Point Decommissioning Study assumes that an independent spent fuel storage installation (ISFSI) will be developed at the site under the provisions of Title 10 CFR Part 72 to permit transfer of spent fuel from wet to dry storage. The expenditures

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for the development of the ISFSI are estimated to occur in 2005 through 2009. Approximately 3% of the ISFSI capacity will be required to enable operation of the Turkey Point units to the end of the respective operating licenses. The remaining 97% of facility capacity will be required to permit transfer of SNF from the spent fuel pools to dry storage from 2012 through 2018. The ISFSI is expected to operate until the transfer to DOE is complete in 2045. Ultimately, the ISFSI will be decommissioned and the Part 72 license associated with the facility will be terminated.

SNF Impact on Decommissioning Schedule and Cost

The movement of the SNF to an ISFSI permits the termination of the Title 10 CFR Part 50 licenses as soon as possible after the shut down of both units. However, the completion of decommissioning for the entire site is delayed until 2045. The impacts of delayed acceptance of SNF by DOE on decommissioning costs are as follows:

1. Capital expenditures are necessary for the portion of the ISFSI facility required to enable complete transfer of the spent fuel pool inventories to dry storage after the mandated 5 year cooling period. This is expected to be approximately 97% of the total facility capacity.
2. ISFSI operation costs are incurred after the shut down of Unit 4 from 2013 through 2045.
3. ISFSI dismantlement and disposal costs are incurred.

OTHER ISSUES

Low-Level Radioactive Waste

A bill to enact the "Atlantic Interstate Low-Level Radioactive Waste Compact Implementation Act" was signed by the Governor of South Carolina on June 6, 2000. The Atlantic Compact consists of South Carolina, Connecticut and New Jersey. Under the act, the compact will systematically reduce disposal capacity available to out of region waste generators. The disposal facility located in Barnwell, South Carolina is one of two facilities in the United States currently licensed to dispose of certain classes of Class A, as well as all Class B and C low-level radioactive waste (LLRW), but it is the only facility available to FPL for those purposes. This is an important development because the DECON and SAFSTOR decommissioning alternatives generate significant quantities of Class B and C waste.

Assuming the Atlantic Compact precludes FPL from shipping certain Class A and all Class B and C LLRW to Barnwell, two alternatives exist for future disposal of certain

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Class A, and Class B and C LLRW. First, another compact-affiliated disposal facility may be developed and provide disposal for waste generated outside of the compact. However, no new compact-affiliated disposal facilities have opened since the Low-Level Radioactive Waste Policy Act of 1980 was enacted. The second alternative is that Envirocare of Utah, Inc. will successfully obtain a license to dispose of all Class A, B and C LLRW. Envirocare has applied for a license amendment to construct a new disposal unit, which will accept all containerized Class A, B & C LLRW. Envirocare estimates that if its efforts are successful, the earliest it may be capable of receiving the additional waste streams would be mid- to late summer of 2001.

License Renewal

FPL filed its application for renewal of the operating licenses for an additional twenty years on September 11, 2000. No issues affecting the feasibility of license renewal were identified.

The license renewal project plans currently assume 30 months for NRC review, yielding receipt of the renewed license by March 2003. This will allow FPL a planning window of 2004 through 2007 to determine if the continued operation of Turkey Point is economically justified. FPL anticipates that the decision regarding utilization of the renewed license will be made in 2007.

The current operating license for Turkey Point Unit 3 expires on July 19, 2012. Per 10 CFR 50.75 (f)(2): "Each power reactor licensee shall at or about 5 years prior to the projected end of operations submit a preliminary decommissioning cost estimate which includes an up-to-date assessment of the major factors that could affect the cost to decommission." Therefore, in 2007, FPL will need to make a decision and report to the NRC regarding its intent to operate over the extended term (assuming license renewal is granted) or to decommission the units. This 5 year lead-time also accommodates FPL power supply planning requirements in the event that continued operation of the Turkey Point nuclear units is not economically justified.

Materials and Supplies Inventories

The decommissioning cost estimates contained in the TLG Decommissioning Cost Estimate section of this study and in the funding analysis contained in Support Schedule G of this filing do not take into consideration the unrecovered value of any Materials and Supplies Inventories that will ultimately exist at the site following shut down of both units. FPL does recognize however that there will be a level of inventories that will remain at the end of life of Unit No. 4, the last unit to reach end of license, that

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must be recovered prior to the end of site operations. These inventories are unique and will have little value other than scrap value when the units are decommissioned. As such, FPL has included in Support Schedule F of this filing the annual expense accrual and theoretical reserve deficiency calculations associated with the estimated End of Life (EOL) inventory values.

Since the annual expense/reserve accrual associated with EOL Inventories represents the recovery of amounts already expended, there is no need to fund these amounts and therefore amounts recorded should be accounted for in a separate (unfunded) decommissioning reserve sub-account.

Reserve Deficiencies

By Order No. PSC-98-0027-FOF-EI, Docket No. 9710410-EI issued January 5, 1998, the Commission authorized FPL to record additional decommissioning expenses to correct historical reserve deficiencies. In addition, FPL was ordered to file updated nuclear decommissioning studies by October 1, 1998. The amount of reserve deficiency to be recovered by FPL as additional expense would then be determined based on these updated studies. In compliance with the Commission Order, FPL included in its October 1998 filing in this docket, an updated calculation of the theoretical reserve deficiency (Support Schedule E) as of December 31, 1998.

By Order No. PSC-99-0519-AS-EI issued March 17, 1999 in Docket No. 990067-EI, In Re: Petition for a full revenue requirements rate case for Florida Power & Light Company, the FPSC approved a stipulation and Settlement (Stipulation). Among other things, the Stipulation terminated the continued amortization and booking of expenses and other cost recognition authorized in Docket No. 970410-EI.

In compliance with Order No. PSC-98-0027-FOF-EI, \$22.6 million of additional expenses recorded in 1999 (prior to the effective date of the Stipulation) to correct reserve deficiencies, were funded on an after tax basis to the nonqualified fund.

Updated theoretical reserve calculations as of December 31, 2000 are presented in Support Schedule E of this filing.

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Annual Accrual and Revenue Requirements

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Given below are the estimated costs of decommissioning, annual accruals, and annual funding requirements. The assumptions upon which these figures are based are given in the "Base Case Assumptions" section of this filing.

	Turkey Point Unit No. 3	Turkey Point Unit No. 4
<u>DECOMMISSIONING COSTS</u>		
Total Decommissioning Costs per TLG Services Inc. (Present Value @ 12/31/98)	\$395,359,236	\$452,540,306
Total Decommissioning Costs at December 31, 2000	\$430,184,895	\$492,713,401
Total Decommissioning Costs @ 12/31/00 Jurisdictionalized @ 99.992%	\$430,150,480	\$492,673,984
Inventory Value @ End Of Life	N/A	\$19,661,823
Inventory Value Jurisdictionalized @ 99.992%	N/A	\$19,660,250
<u>ANNUAL EXPENSE ACCRUALS</u>		
<u>Based on Actual Reserve Balances</u>		
FPL's Total Annual Accrual Including (EOL) Inventories	\$21,179,880	\$26,135,009
FPL's Total Annual Accrual Including (EOL) Inventories Jurisdictionalized @ 99.992%	\$21,178,186	\$26,132,919
<u>Based on Theoretical Reserve</u>		
FPL's Total Annual Accrual Including (EOL) Inventories	\$7,037,345	\$8,935,062
FPL's Total Annual Accrual Including (EOL) Inventories Jurisdictionalized @ 99.992%	\$7,036,782	\$8,934,347
<u>ANNUAL REVENUE REQUIREMENT</u>		
<u>Based on Actual Reserve Balances</u>		
Total Annual Revenue Requirement to Recover FPL's Cost of Decommissioning and (EOL) Inventories Jurisdictionalized @ 99.992%	\$21,574,642	\$26,622,127
<u>Based on Theoretical Reserve</u>		
Total Annual Revenue Requirement to Recover FPL's Cost of Decommissioning and (EOL) Inventories Jurisdictionalized @ 99.992%	\$7,168,511	\$9,101,598

A detailed analysis deriving the annual accruals, and funding may be found in Support Schedule E (Theoretical Reserves) Support Schedule F (M&S Inventories) and Support Schedule G ("Inflation and Funding Analysis").

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Base Case Assumptions**

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Following is a summary of the assumptions used to derive the annual accrual, and annual funding and revenue requirement amounts sought by FPL. These assumptions are more fully developed on the following pages.

1. Base Case Assumptions Summary

	<u>Unit No 3</u>	<u>Unit No. 4</u>
A. Decommissioning Method	DECON (Prompt Removal/ Dismantling)	DECON (Prompt Removal/ Dismantling)
B. Total Decommissioning Cost Per TLG Services, Inc. (Present value @ 12/31/98)	\$395,359,236	\$452,540,306
Total decommissioning Costs At December 31, 2000	\$430,184,895	\$492,713,401
C. Total Decommissioning Cost @ 12/31/00 Jurisdictional at 99.992%	\$430,150,480	\$492,673,984
D. Method of Funding (2001- End)	Qualified	Qualified
E. Funding Periods (Years)	11.5	12.25
F. Assumed Fund Earnings Rate	5.2%	5.2%
G. Escalation Rate for Decommissioning Costs (2001- End)	6.0%	6.0%
H. FPL Ownership Allocation(%)	100%	100%
I. FPSC Jurisdictional Separation Factor (%)	99.992%	99.992%
J. Actual Fund Balance - Qualified (1/1/01)	\$ 174,579,000	\$ 200,358,000
K. Est./Actual Fund Balance - Nonqualified (1/1/01)	\$ 83,956,000	\$ 90,978,000
L. M&S Inventory Value @ EOL	N/A	\$ 19,661,823

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Turkey Point Nuclear Units
Base Case Assumptions**

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2. Decommissioning Costs

Below are the estimated costs of Decommissioning the Turkey Point facility as provided by TLG in 1998 dollars and the estimated dollar costs at December 31, 2000.

		(\$) 1998		(\$) 2000 (a)
Turkey Point Unit No. 3				
Labor	\$	215,309,777	\$	235,122,798
Materials		78,160,856		81,603,295
Shipping		5,679,249		5,908,123
Burial		72,916,380		83,388,365
Other		23,292,974		24,162,314
Total		<u>395,359,236</u>		<u>430,184,895</u>
Turkey Point Unit No. 4				
Labor	\$	260,109,652	\$	284,045,202
Materials		83,777,552		87,467,367
Shipping		5,896,011		6,133,620
Burial		79,731,607		91,182,370
Other		23,025,484		23,884,841
Total		<u>452,540,306</u>		<u>492,713,401</u>

(a) 1998 dollar amounts escalated to the year 2000 using the inflation indices described in section 7 below and as set forth in Support Schedule G pages 1 – 3.

3. Funding Method

Beginning in 2001, it is assumed for both units, contributions will be made to the Qualified Funds for the maximum allowed by the IRS. The Internal Revenue Code and Regulations limit future qualified fund contributions. The Qualified Percentage for any unit is defined as the percentage of that unit's life for which there is established a qualified fund. This Qualified Percentage is applied to the unit's total estimated decommissioning cost to calculate the portion of the decommissioning cost the Internal Revenue (IRS) will consider qualified for a deduction for the tax year. However, after the IRS determines such amounts, they will, in addition, be limited to the amount included in cost of service in each year. The qualifying percentages for each of the two units are:

	<u>Qualifying Percentage</u>
Turkey Point Unit No. 3	66.67%
Turkey Point Unit No. 4	68.57%

The Qualifying Percentage Calculations can be found in Support Schedule H "Calculation of Qualifying Percentages".

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Turkey Point Nuclear Units
Base Case Assumptions**

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4. Funding Period

The funding period is that period over which revenues are collected from ratepayers for purposes of decommissioning the Turkey Point Units.

The funding period over which the new funding and revenue requirement figures are computed for Turkey Point No. 3 and No. 4 is assumed to begin in **2001**.

Funding periods for both units will end on the last day of the month proceeding the month in which the operating license for the unit is due to expire. License expiration dates for the Turkey Point units are as follows.

- Turkey Point Unit No. 3 - July 19, 2012
- Turkey Point Unit No. 4 - April 10, 2013

5. Fund Earnings Rate

In Order No. PSC-95-1531-FOF-EI, Docket No. 941350-EI the Commission found the appropriate fund earnings rate, net of taxes and all other administrative costs charged to the trust fund, to be 4.90%. This rate represented the long term average CPI rate of change as forecasted by DRI for the period over which the funds will be invested, plus an additional 1.10 basis points (3.80% + 1.10%).

For purposes of this 1998 study update **(1/01)** the projected annual funds earnings rate, net of taxes and all other administrative costs charged to the trust funds, for Units 3 and 4 qualified and nonqualified fund investments, is assumed to be **5.2%**. Consistent with the Commission's prior findings, this rate is 1.10 basis points above the forecasted average annual rate of change in the CPI for the period 2000 through the end of the decommissioning period for each unit **(4.1%)**. The annual rates of change were taken from the most recently published Standard & Poor's DRI "The U S Economy" (**Summer Issue -2000**).

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6. Revenue Expansion Factor

	<u>Qualified</u>	<u>Non-Qualified</u>
Decommissioning Revenue Requirement	100.0000%	100.0000%
Less:		
Gross Receipts Tax	1.5000%	
Regulatory Assessment Fee	0.0720%	
Uncollectible Accounts	0.2656%	
	<u>1.8376%</u>	<u>1.8376%</u>
Net Before Income Taxes	98.1624%	98.1624%
Less:		
State Income Tax Rate at 5.5%	<u>0</u>	<u>5.3989%</u>
Net Before Federal Income Taxes	98.1624%	92.7635%
Less:		
Federal Income Tax Rate at 35.0%	<u>0</u>	<u>32.4672%</u>
Net After State and Federal Income Taxes	98.1624%	60.2963%
Revenue Expansion Factor (Revenue Requirements/Net After State and Federal Income Taxes)	1.01872 (a)	1.65848 (b)

- (a) Revenue Expansion Factor/Multiplier applicable to funding requirement and accrual.
(b) Revenue Expansion Factor/Multiplier applicable to (after tax) funding requirement.
Revenue Expansion Factor/Multiplier applicable to (before tax) accrual requirement
is the same as shown for the Qualified fund.

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7. Escalation Rate

The estimated decommissioning costs by major cost component provided by TLG in 1998 dollars were escalated to the year 2000 using the individual indices described below and as set forth in Support Schedule G pages 1 – 3.

The annual escalation rates used to estimate total future dismantlement costs from January 1, 2001 through the final year of decommissioning are as follows:

	<u>Average Annual Escalation Rate</u>
Turkey Point Unit No. 3	6.0%
Turkey Point Unit No. 4	6.0%

The above rates were derived by applying separate inflation indices to each of the major cost components of Labor, Materials and Equipment, Shipping, Burial, and Other.

<u>Cost Component</u>	<u>Inflation Index</u>
Labor	Compensation per Hour
Materials and Equip.	PPI – Intermediate Materials, Supplies, and Components
Shipping	GDP Deflator-Transportation
Burial	CPI plus 3.5%
Other	GDP (Implicit)

A near-term escalation rate of 6.94% was used to escalate Low Level Radioactive Waste Disposal costs for 1999 and 2000. This annual rate was calculated by comparing the "Disposal Cost" estimate in two revisions of NUREG – 1307 "Report on Waste Burial Charges". Revision 7 estimated disposal costs at the Barnwell S.C. disposal site for the reference pressurized reactor at \$ 285,156,187 in 1997 or 1998 dollars (pricing did not change). Revision 9 estimates disposal at the South Carolina facility at \$326,122,431 in 2000 dollars. The disposal costs in the TLG Services Inc. estimate are assumed to increase at the same rate as estimated in the NRC's reference reactor estimates. Burial costs for the years 2001 through the

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end of the decommissioning period are assumed to increase at a rate similar to general inflation, adjusted for variability historically exhibited by LLRW disposal costs (Forecasted CPI + 3.50%). The rate of increase in LLRW burial cannot be predicted with exact certainty, however, the resulting annual increase is considered reasonable and is below the average annual increase experienced since 1986.

For a more detail calculation of the weighted average Escalation rate and annual rate of change for each component please refer to Support Schedule G ("Inflation and Funding Analysis") on pages 1 through 3.

8. FPL Ownership Share of Nuclear Units

FPL has 100% ownership interest in the Turkey Point facility.

9. FPSC Jurisdictional Factors

The **current** factor applicable to both units is **99.992** %.

10. Fund Balances

Actual fund balances (qualified and nonqualified) at December 31, **2000** for each of the two Turkey Point Units are as Follows:

	\$(000)	
	<u>Qualified</u>	<u>Nonqualified</u>
Unit No. 3	\$ 174,579	\$ 83,956
Unit No. 4	\$ 200,358	\$ 90,978

See support Schedule C ("Adjusted Fund and Reserve Balances") for a detail composition of the qualified and nonqualified fund balances.

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11. Materials and Supplies Inventory Values

The Materials and Supplies inventory balance, less estimated salvage, that is anticipated to remain at the End of Life of Unit No. 4, the last unit to reach end of license, is projected to be \$19,661,823.

See Support Schedule F ("End-of-Life Materials and Supplies Inventory) for annual expense accrual and reserve deficiency calculations.

NUCLEAR DECOMMISSIONING STUDY
DOCKET NO. 981246-EI

Summary of Changes Between October 1998 Initial Filing and January 2001 Revision

- **Updated** Fund and Reserve Balances
10/98 filing =Est/Actual December 31, 1998
1/01 filing = Actual December 31, 2000
- **Updated** Escalation Indices (DRI)
10/98 filing =Summer 1998 issue
1/01 filing =Summer 2000 issue
- **Updated** Burial escalation rate to reflect the summer 2000 DRI long-term forecast of CPI
- **Updated** Fund Earnings Rate to reflect the summer 2000 DRI long-term forecast of CPI.
- **Revised** Fuel Storage Assumptions (ISFSI) to reflect updated cost estimates and storage requirements consistent with litigation assumptions (FPL Vs DOE). Changes resulted in revised TLG cost estimates (Rev. 1) Dated October 1999
- **Updated** Costs to Decommission from 1998 dollars provided by TLG study (Rev. 1) to 2000 dollars, using historical inflation rates for years 1999 and 2000 applied to 1998 dollar estimates.
- **Updated** Theoretical Reserve and Theoretical Reserve Deficiency (Excess) calculations as of December 31,2000 to reflect above changes.
- **Updated** Estimated End-of-Life Materials and Supplies Inventory values to reflect more recent (year 2000) inventory levels.
- **TLG Study Update (Rev. 1) Dated October 1999 vs October 1998 (Rev. 0)**

St. Lucie

- o Fuel on Site thru 2040
- o Fuel on Site thru 2032

October 1998

October 1999 Rev. 1

Turkey Point

- o Fuel on Site thru 2031
- o Fuel on Site thru 2045

- o DOE Acceptance of Spent Fuel delayed from 2010 (10/98 filing) to 2015 (Revised 12/00 filing)
- o The estimated costs of licensing, engineering and construction of ISFSI for each site decreased
- o The estimated costs of a dual-purpose storage module for spent fuel has increased

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Support Schedule: Nuclear Decommissioning Reserve Balances
December 31, 1995 through December 31, 2000
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<u>December 31, 1995</u>	<u>Beginning Balance</u>	<u>Revenues Collected</u>	<u>Earnings to Reserve</u>	<u>Ending Balance</u>	<u>Interest On Tax Benefits Of Qualified Contribution</u>	<u>Adjusted Ending Balance</u>
<u>NONQUALIFIED</u>						
Turkey Point Unit No. 3	77,959	5,177	5,352	88,488	4,453	92,941
Turkey Point Unit No. 4	83,074	6,420	5,765	95,259	3,341	98,600
St. Lucie Unit No. 1	77,611	4,282	1,200	83,094	9,071	92,165
St. Lucie Unit No. 2	46,752	3,872	7,327	57,950	1,107	59,058
TOTAL	285,396	19,751	19,644	324,791	17,973	342,764
<u>QUALIFIED</u>						
Turkey Point Unit No. 3	51,975	12,780	3,902	68,657		68,657
Turkey Point Unit No. 4	50,925	16,307	3,867	71,100		71,100
St. Lucie Unit No. 1	61,265	20,140	4,584	85,990		85,990
St. Lucie Unit No. 2	57,864	15,675	4,308	77,847		77,847
TOTAL	222,029	64,902	16,662	303,593	0	303,593
<u>TOTAL RESERVES</u>						
Turkey Point Unit No. 3	129,934	17,957	9,254	157,144	4,453	161,598
Turkey Point Unit No. 4	134,000	22,727	9,632	166,359	3,341	169,700
St. Lucie Unit No. 1	138,876	24,422	5,785	169,083	9,071	178,154
St. Lucie Unit No. 2	104,616	19,546	11,636	135,798	1,107	136,905
TOTAL	507,425	84,652	36,306	628,384	17,973	646,357

December 31, 1996

NONQUALIFIED

Turkey Point Unit No. 3	92,941	501	4,842	98,284
Turkey Point Unit No. 4	98,600	801	5,663	105,065
St. Lucie Unit No. 1	92,165	(482)	5,230	96,913
St. Lucie Unit No. 2	59,058	(3,857)	3,188	58,389
TOTAL	342,764	(3,037)	18,924	358,651

QUALIFIED

Turkey Point Unit No. 3	68,657	17,456	2,459	88,572
Turkey Point Unit No. 4	71,100	21,927	2,558	95,584
St. Lucie Unit No. 1	85,990	24,904	3,055	113,949
St. Lucie Unit No. 2	77,847	23,403	2,843	104,093
TOTAL	303,593	87,689	10,915	402,198

TOTAL RESERVES

Turkey Point Unit No. 3	161,598	17,957	7,302	186,856
Turkey Point Unit No. 4	169,700	22,727	8,221	200,649
St. Lucie Unit No. 1	178,154	24,422	8,286	210,862
St. Lucie Unit No. 2	136,905	19,546	6,031	162,482
TOTAL	646,357	84,652	29,840	760,849

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<u>December 31, 1997</u>	<u>Beginning Balance</u>	<u>Revenues Collected</u>	<u>Earnings to Reserve</u>	<u>Ending Balance</u>
<u>NONQUALIFIED</u>				
Turkey Point Unit No. 3	98,284	2,839	5,060	106,183
Turkey Point Unit No. 4	105,065	3,610	5,411	114,086
St. Lucie Unit No. 1	96,913	1,900	4,986	103,799
St. Lucie Unit No. 2	58,389	7	3,010	61,407
TOTAL	358,651	8,357	18,466	385,474
<u>QUALIFIED</u>				
Turkey Point Unit No. 3	88,572	15,118	4,013	107,702
Turkey Point Unit No. 4	95,584	19,117	4,330	119,031
St. Lucie Unit No. 1	113,949	22,522	5,122	141,594
St. Lucie Unit No. 2	104,093	19,539	4,678	128,310
TOTAL	402,198	76,296	18,143	496,637
<u>TOTAL RESERVES</u>				
Turkey Point Unit No. 3	186,856	17,957	9,072	213,885
Turkey Point Unit No. 4	200,649	22,727	9,740	233,116
St. Lucie Unit No. 1	210,862	24,422	10,108	245,393
St. Lucie Unit No. 2	162,482	19,546	7,688	189,717
TOTAL	760,849	84,652	36,609	882,111

December 31, 1998

NONQUALIFIED

Turkey Point Unit No. 3	106,183	2,786	5,694	114,663
Turkey Point Unit No. 4	114,086	3,397	6,045	123,528
St. Lucie Unit No. 1	103,799	1,865	5,293	110,958
St. Lucie Unit No. 2	61,407	(7)	2,895	64,294
TOTAL	385,474	8,041	19,927	413,442

QUALIFIED

Turkey Point Unit No. 3	107,702	15,170	8,172	131,044
Turkey Point Unit No. 4	119,031	19,330	8,978	147,339
St. Lucie Unit No. 1	141,594	22,557	10,819	174,969
St. Lucie Unit No. 2	128,310	19,554	9,896	157,760
TOTAL	496,637	76,611	37,865	611,113

TOTAL RESERVES

Turkey Point Unit No. 3	213,885	17,957	13,866	245,707
Turkey Point Unit No. 4	233,116	22,727	15,023	270,867
St. Lucie Unit No. 1	245,393	24,422	16,112	285,927
St. Lucie Unit No. 2	189,717	19,546	12,791	222,054
TOTAL	882,111	84,652	57,792	1,024,556

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<u>December 31, 1999</u>	<u>Beginning Balance</u>	<u>Revenues Collected</u>	<u>Earnings to Reserve</u>	<u>Ending Balance</u>	<u>Supplemental Contribution</u>	<u>Adjusted Ending Balance</u>
<u>NONQUALIFIED</u>						
Turkey Point Unit No. 3	114,663	2,812	4,167	121,642		
Turkey Point Unit No. 4	123,528	3,504	4,434	131,465		
St. Lucie Unit No. 1	110,958	1,883	3,843	116,684		
St. Lucie Unit No. 2	64,294	0	2,059	66,353		
TOTAL	413,442	8,199	14,503	436,145		
<u>QUALIFIED</u>						
Turkey Point Unit No. 3	131,044	15,144	2,124	148,312		
Turkey Point Unit No. 4	147,339	19,224	2,336	168,899		
St. Lucie Unit No. 1	174,969	22,540	2,806	200,315		
St. Lucie Unit No. 2	157,760	19,546	2,559	179,865		
TOTAL	611,113	76,454	9,824	697,391		
<u>TOTAL RESERVES</u>						
Turkey Point Unit No. 3	245,707	17,957	6,291	269,954		
Turkey Point Unit No. 4	270,867	22,727	6,770	300,364		
St. Lucie Unit No. 1	285,927	24,422	6,649	316,999		
St. Lucie Unit No. 2	222,054	19,546	4,618	246,218		
TOTAL	1,024,556	84,652	24,328	1,133,536		
<u>December 31, 2000</u>						
<u>NONQUALIFIED</u>						
Turkey Point Unit No. 3	121,642	2,812	5,903	130,358	6,323	136,681
Turkey Point Unit No. 4	131,465	3,504	6,331	141,300	6,812	148,112
St. Lucie Unit No. 1	116,684	1,883	5,414	123,980	6,118	130,099
St. Lucie Unit No. 2	66,353	0	2,853	69,207	3,545	72,752
TOTAL	436,145	8,199	20,502	464,845	22,798	487,644
<u>QUALIFIED</u>						
Turkey Point Unit No. 3	148,312	15,144	11,123	174,579		174,579
Turkey Point Unit No. 4	168,899	19,224	12,236	200,358		200,358
St. Lucie Unit No. 1	200,315	21,162	16,053	237,529		237,529
St. Lucie Unit No. 2	179,865	20,924	11,975	212,764		212,764
TOTAL	697,391	76,454	51,386	825,231		825,231
<u>TOTAL RESERVES</u>						
Turkey Point Unit No. 3	269,954	17,957	17,026	304,937	6,323	311,260
Turkey Point Unit No. 4	300,364	22,727	18,567	341,659	6,812	348,470
St. Lucie Unit No. 1	316,999	23,044	21,467	361,510	6,118	367,628
St. Lucie Unit No. 2	246,218	20,924	14,828	281,971	3,545	285,516
TOTAL	1,133,536	84,652	71,886	1,290,076	22,798	1,312,874

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Florida Power & Light Company
1998 Decommissioning Study
Support Schedule: Nuclear Decommissioning Fund Balances
December 31, 1995 through December 31, 2000
\$000

Support Schedule B
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	Beginning Balance	Contribution	Fund Earnings	Ending Balance	Tax Benefits and Interest On Qualified Contribution	Adjusted Ending Balance
<u>December 31, 1995</u>						
<u>NONQUALIFIED</u>						
Turkey Point Unit No. 3	43,327	3,180	3,288	49,795	7,014	56,809
Turkey Point Unit No. 4	47,818	3,944	3,541	55,303	5,263	60,565
St Lucie Unit No. 1	42,967	2,630	3,283	48,880	7,732	56,612
St Lucie Unit No. 2	23,644	2,378	1,955	27,978	8,299	36,276
Total	157,757	12,132	12,067	181,955	28,307	210,262
<u>QUALIFIED</u>						
Turkey Point Unit No. 3	51,975	12,780	3,902	68,657		68,657
Turkey Point Unit No. 4	50,925	16,307	3,867	71,100		71,100
St Lucie Unit No. 1	61,265	20,140	4,584	85,990		85,990
St Lucie Unit No. 2	57,864	15,675	4,308	77,847		77,847
Total	222,029	64,902	16,662	303,593	0	303,593
<u>TOTAL</u>						
Turkey Point Unit No. 3	95,302	15,960	7,190	118,452	7,014	125,466
Turkey Point Unit No. 4	98,744	20,251	7,408	126,402	5,263	131,665
St Lucie Unit No. 1	104,232	22,770	7,868	134,870	7,732	142,602
St Lucie Unit No. 2	81,509	18,053	6,263	105,825	8,299	114,123
Total	379,786	77,034	28,729	485,548	28,307	513,856
<u>December 31, 1996</u>						
<u>NONQUALIFIED</u>						
Turkey Point Unit No. 3	56,809	308	3,255	60,371		
Turkey Point Unit No. 4	60,565	492	3,479	64,536		
St Lucie Unit No. 1	56,612	(296)	3,213	59,529		
St Lucie Unit No. 2	36,276	(2,369)	1,958	35,866		
Total	210,262	(1,865)	11,904	220,301		
<u>QUALIFIED</u>						
Turkey Point Unit No. 3	68,657	17,456	2,459	88,572		
Turkey Point Unit No. 4	71,100	21,927	2,558	95,584		
St Lucie Unit No. 1	85,990	24,904	3,055	113,949		
St Lucie Unit No. 2	77,847	23,403	2,843	104,093		
Total	303,593	87,690	10,915	402,198		
<u>TOTAL</u>						
Turkey Point Unit No. 3	125,466	17,763	5,714	148,943		
Turkey Point Unit No. 4	131,665	22,419	6,037	160,120		
St Lucie Unit No. 1	142,602	24,608	6,268	173,478		
St Lucie Unit No. 2	114,123	21,034	4,801	139,958		
Total	513,856	85,824	22,820	622,499		

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Florida Power & Light Company
1998 Decommissioning Study
Support Schedule: Nuclear Decommissioning Fund Balances
December 31, 1995 through December 31, 2000
\$000

Support Schedule B
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	<u>Beginning Balance</u>	<u>Contribution</u>	<u>Fund Earnings</u>	<u>Ending Balance</u>
<u>December 31, 1997</u>				
<u>NONQUALIFIED</u>				
Turkey Point Unit No. 3	60,371	1,744	3,108	65,223
Turkey Point Unit No. 4	64,536	2,218	3,324	70,077
St Lucie Unit No. 1	59,529	1,167	3,063	63,759
St Lucie Unit No. 2	35,866	5	1,849	37,719
Total	220,301	5,133	11,343	236,777
<u>QUALIFIED</u>				
Turkey Point Unit No. 3	88,572	15,118	4,013	107,702
Turkey Point Unit No. 4	95,584	19,117	4,330	119,031
St Lucie Unit No. 1	113,949	22,522	5,122	141,594
St Lucie Unit No. 2	104,093	19,539	4,678	128,310
Total	402,198	76,296	18,143	496,637
<u>TOTAL</u>				
Turkey Point Unit No. 3	148,943	16,861	7,121	172,925
Turkey Point Unit No. 4	160,120	21,335	7,653	189,108
St Lucie Unit No. 1	173,478	23,689	8,185	205,352
St Lucie Unit No. 2	139,958	19,543	6,527	166,029
Total	622,499	81,429	29,486	733,414

December 31, 1998

<u>NONQUALIFIED</u>				
Turkey Point Unit No. 3	65,223	1,711	3,498	70,432
Turkey Point Unit No. 4	70,077	2,087	3,713	75,877
St Lucie Unit No. 1	63,759	1,146	3,252	68,156
St Lucie Unit No. 2	37,719	(5)	1,778	39,493
Total	236,777	4,939	12,240	253,957
<u>QUALIFIED</u>				
Turkey Point Unit No. 3	107,702	15,170	8,172	131,044
Turkey Point Unit No. 4	119,031	19,330	8,978	147,339
St Lucie Unit No. 1	141,594	22,557	10,819	174,969
St Lucie Unit No. 2	128,310	19,554	9,896	157,760
Total	496,637	76,611	37,865	611,113
<u>TOTAL</u>				
Turkey Point Unit No. 3	172,925	16,882	11,669	201,476
Turkey Point Unit No. 4	189,108	21,417	12,692	223,216
St Lucie Unit No. 1	205,352	23,703	14,070	243,125
St Lucie Unit No. 2	166,029	19,549	11,674	197,253
Total	733,414	81,551	50,105	865,070

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Florida Power & Light Company
1998 Decommissioning Study
Support Schedule: Nuclear Decommissioning Fund Balances
December 31, 1995 through December 31, 2000
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	Beginning Balance	Contribution	Fund Earnings	Ending Balance	Supplemental Contribution	Adjusted Ending Balance
December 31, 1999						
<u>NONQUALIFIED</u>						
Turkey Point Unit No. 3	70431.687	1,728	2,559	74,719		
Turkey Point Unit No. 4	75876.921	2,152	2,723	80,753		
St Lucie Unit No. 1	68155.858	1,156	2,361	71,673		
St Lucie Unit No. 2	39492.581	0	1,265	40,758		
Total	253957.05	5,036	8,909	267,902		
<u>QUALIFIED</u>						
Turkey Point Unit No. 3	131,044	15,144	2,124	148,312		
Turkey Point Unit No. 4	147,339	19,224	2,336	168,899		
St Lucie Unit No. 1	174,969	22,540	2,806	200,315		
St Lucie Unit No. 2	157,760	19,546	2,559	179,865		
Total	611,113	76,454	9,824	697,391		
<u>TOTAL</u>						
Turkey Point Unit No. 3	201,476	16,872	4,683	223,031		
Turkey Point Unit No. 4	223,216	21,376	5,059	249,651		
St Lucie Unit No. 1	243,125	23,696	5,167	271,988		
St Lucie Unit No. 2	197,253	19,546	3,824	220,623		
Total	865,070	81,490	18,733	965,293		
December 31, 2000						
<u>NONQUALIFIED</u>						
Turkey Point Unit No. 3	74,719	1,728	3,626	80,072	3,884	83,956
Turkey Point Unit No. 4	80,753	2,152	3,889	86,794	4,184	90,978
St Lucie Unit No. 1	71,673	1,156	3,325	76,155	3,758	79,913
St Lucie Unit No. 2	40,758	0	1,753	42,510	2,178	44,688
Total	267,902	5,036	12,593	285,531	14,004	299,535
<u>QUALIFIED</u>						
Turkey Point Unit No. 3	148,312	15,144	11,123	174,579		174,579
Turkey Point Unit No. 4	168,899	19,224	12,236	200,358		200,358
St Lucie Unit No. 1	200,315	22,540	14,675	237,529		237,529
St Lucie Unit No. 2	179,865	19,546	13,353	212,764		212,764
Total	697,391	76,454	51,386	825,231		825,231
<u>TOTAL</u>						
Turkey Point Unit No. 3	223,031	16,872	14,749	254,651	3,884	258,535
Turkey Point Unit No. 4	249,651	21,376	16,125	287,152	4,184	291,336
St Lucie Unit No. 1	271,988	23,696	18,000	313,684	3,758	317,442
St Lucie Unit No. 2	220,623	19,546	15,106	255,275	2,178	257,452
Total	965,293	81,490	63,979	1,110,762	14,004	1,124,766

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Florida Power & Light Company
1998 Decommissioning Study
Support Schedule: Fund and Reserve Balance at December 31, 2000
\$000

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	TURKEY POINT UNIT 3	TURKEY POINT UNIT 4	ST. LUCIE UNIT 1	ST. LUCIE UNIT 2 (Note 1)	TOTALS
NON-QUALIFIED FUND					
Actual Fund Balance @12/31/00	83,956	90,978	79,913	44,688	299,535
QUALIFIED FUND					
Actual Fund Balance @12/31/00	174,579	200,358	237,529	212,764	825,231
TOTAL FUND					
Actual Fund Balance @12/31/00	258,535	291,336	317,442	257,452	1,124,766
NON-QUALIFIED RESERVE					
Actual Reserve Balance@12/31/00	136,681	148,112	130,099	72,752	487,644
QUALIFIED RESERVE					
Actual Reserve Balance@12/31/00	174,579	200,358	237,529	212,764	825,231
TOTAL RESERVE					
Actual Reserve Balance@12/31/00	311,260	348,470	367,628	285,516	1,312,874

Note (1): Amounts for St Lucie Common are included with Unit No. 2

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Florida Power & Light Company
1998 Decommissioning Study

Support Schedule: Reconciliation of Fund and Reserve Balance at December 31, 2000
\$000

RECONCILIATION FUND/RESERVE**Actual 12/31/00**

	TURKEY POINT UNIT 3	TURKEY POINT UNIT 4	ST. LUCIE UNIT 1	ST. LUCIE UNIT 2 (Note 1)	TOTALS
NON-QUALIFIED					
Actual Fund Balance @12/31/00	83,956	90,978	79,913	44,688	299,535
Deferred Tax @ 12/31/00	52,725	57,134	50,186	28,064	188,109
Actual Reserve Balance @ 12/31/00	136,681	148,112	130,099	72,752	487,644
QUALIFIED					
Actual Fund Balance @12/31/00	174,579	200,358	237,529	212,764	825,231
Deferred Tax @ 12/31/00	0	0	0	0	0
Actual Reserve Balance @ 12/31/00	174,579	200,358	237,529	212,764	825,231
TOTAL					
Actual Fund Balance @12/31/00	258,535	291,336	317,442	257,452	1,124,766
Deferred Tax @ 12/31/00	52,725	57,134	50,186	28,064	188,109
Actual Reserve Balance @ 12/31/00	311,260	348,470	367,628	285,516	1,312,874

Note (1): Amounts for St Lucie Common are included with Unit No. 2

Florida Power & Light Company
1998 Decommissioning Study
Support Schedule: Nuclear Decommissioning Theoretical Reserves

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Total System Amounts

	Turkey Point <u>Unit 3</u>	Turkey Point <u>Unit 4</u>	St. Lucie <u>Unit 1</u>	St. Lucie <u>Unit 2</u>	<u>Total</u>	FAS <u>115</u>
Theoretical Reserve Balance @ 12/31/00	434,244,032	495,010,104	468,313,131	312,910,306	1,710,477,573	
<u>Less:</u> Act. Reserve @ 12/00	311,259,727	348,470,164	367,628,025	285,516,447	1,312,874,363	232,169,769
Allocation of Unrealized Gains (FAS 115) @ 12/31/00	<u>55,043,423</u>	<u>61,623,747</u>	<u>65,011,639</u>	<u>50,490,960</u>	<u>232,169,769</u>	<u>(232,169,769)</u>
Funded Reserve Deficiency (Excess)	67,940,882	84,916,193	35,673,467	(23,097,101)	165,433,441	0
End of Life Inventories Unfunded Reserve Deficiency (Excess)	<u>-</u>	<u>13,564,169</u>	<u>-</u>	<u>6,479,056</u>	<u>20,043,225</u>	<u>0</u>
Total Reserve Deficiencies (Excess) @ 12/31/00	<u>67,940,882</u>	<u>98,480,362</u>	<u>35,673,467</u>	<u>(16,618,045)</u>	<u>185,476,666</u>	<u>0</u>

- Assumptions:
- 1 1998 Decommissioning Costs per TLG Study (Rev 1)
 - 2 Discount rate = Assumed after tax earnings of 5.2% for PTN Units and 4.8% for PSL Units.
Rates are equivalent to CPI + 110 basis points as approved by
FPSC Order No.PSC-95-1531-FOF-EI
 - 3 Escalation Factors 2000 to End = Standard & Poor's DRI (Summer Issue -2000)
 - 4 Burial = CPI +3.5%
 - 5 Theoretical Reserve Funding began the month following the In-Service Date
Qualifying percentage = 100%

Annual Accrual

Using Theoretical Reserves

Calculation: - DECOM	7,037,345	8,437,294	10,572,184	11,722,946	37,769,769
- EOL Inventories		497,768		373,792	871,560
Less: Last Approved (effective 1/95)	<u>17,956,515</u>	<u>22,727,359</u>	<u>24,422,287</u>	<u>19,546,295</u>	<u>84,652,456</u>
Difference	(10,919,170)	(13,792,297)	(13,850,103)	(7,449,557)	(46,011,127)

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Florida Power & Light Company
1998 Decommissioning Study
Support Schedule: Nuclear Decommissioning Theoretical Reserves

Support Schedule E
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TURKEY POINT UNIT 3 ANNUAL SUMMARY
Using In Service Year

Date in Service Dec. 1972

<u>YEAR</u>	<u>BEG BAL</u>	<u>CONTRIBUTION</u> <u>100%</u> <u>QUALIFIED</u>	<u>EARNINGS @</u> <u>5.200%</u>	<u>EXPENDITURE</u> <u>QUALIFIED</u> <u>NOMINAL \$'s</u> <u>1,484,315,211</u>	<u>END BAL</u>	<u>CUMULATIVE</u> <u>EARNINGS TO</u> <u>LAST</u> <u>FUNDING YEAR</u>
1973-1995	0	161,858,931	144,144,814		306,003,745	
1996	306,003,745	7,037,345	16,078,383		329,119,473	
1997	329,119,473	7,037,345	17,280,401		353,437,219	
1998	353,437,219	7,037,345	18,544,924		379,019,487	
1999	379,019,487	7,037,345	19,875,202		405,932,033	
2000	405,932,033	7,037,345	21,274,654		434,244,032	
2001	434,244,032	7,037,345	22,746,878		464,028,255	
2002	464,028,255	7,037,345	24,295,658		495,361,257	
2003	495,361,257	7,037,345	25,924,974		528,323,576	
2004	528,323,576	7,037,345	27,639,014		562,999,935	
2005	562,999,935	7,037,345	29,442,185	253,795	599,225,670	
2006	599,225,670	7,037,345	31,325,923	968,480	636,620,458	
2007	636,620,458	7,037,345	33,270,452	467,668	676,460,587	
2008	676,460,587	7,037,345	35,342,139	5,368,375	713,471,695	
2009	713,471,695	7,037,345	37,266,716	11,432,219	746,343,538	
2010	746,343,538	7,037,345	38,976,052		792,356,935	
2011	792,356,935	7,037,345	41,368,749		840,763,028	
2012	840,763,028	3,518,672	43,848,415	36,249,071	851,881,045	628,645,533
2013	851,881,045	0	44,297,814	98,051,078	798,127,781	
2014	798,127,781	0	41,502,645	107,199,292	732,431,134	
2015	732,431,134	0	38,086,419	112,901,986	657,615,567	
2016	657,615,567	0	34,196,009	208,344,467	483,467,110	
2017	483,467,110	0	25,140,290	100,124,331	408,483,068	
2018	408,483,068	0	21,241,120	105,390,479	324,333,709	
2019	324,333,709	0	16,865,353	111,137,659	230,061,403	
2020	230,061,403	0	11,963,193	40,694,530	201,330,066	
2021	201,330,066	0	10,469,163	9,363,468	202,435,761	
2022	202,435,761	0	10,526,660	4,408,628	208,553,792	
2023	208,553,792	0	10,844,797	4,673,146	214,725,444	
2024	214,725,444	0	11,165,723	4,967,108	220,924,058	
2025	220,924,058	0	11,488,051	5,250,747	227,161,363	
2026	227,161,363	0	11,812,391	5,565,792	233,407,962	
2027	233,407,962	0	12,137,214	5,899,739	239,645,437	
2028	239,645,437	0	12,461,563	6,270,860	245,836,139	
2029	245,836,139	0	12,783,479	6,628,947	251,990,672	
2030	251,990,672	0	13,103,515	7,026,684	258,067,503	
2031	258,067,503	0	13,419,510	7,448,285	264,038,728	
2032	264,038,728	0	13,730,014	7,916,816	269,851,926	
2033	269,851,926	0	14,032,300	8,368,893	275,515,333	
2034	275,515,333	0	14,326,797	8,871,026	280,971,104	
2035	280,971,104	0	14,610,497	9,403,288	286,178,314	
2036	286,178,314	0	14,881,272	9,994,798	291,064,788	
2037	291,064,788	0	15,135,369	10,565,534	295,634,623	
2038	295,634,623	0	15,373,000	11,199,466	299,808,157	
2039	299,808,157	0	15,590,024	11,871,434	303,526,747	
2040	303,526,747	0	15,783,391	12,618,202	306,691,936	
2041	306,691,936	0	15,947,981	13,338,744	309,301,173	
2042	309,301,173	0	16,083,661	14,139,068	311,245,766	
2043	311,245,766	0	16,184,780	14,987,412	312,443,133	
2044	312,443,133	0	16,247,043	15,930,189	312,759,986	
2045	312,759,986	0	16,263,519	329,023,506	(0)	
		277,975,121	1,206,340,091	1,484,315,211		628,645,533

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Florida Power & Light Company
1998 Decommissioning Study
Support Schedule: Nuclear Decommissioning Theoretical Reserves

Support Schedule E
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TURKEY POINT UNIT NO. 4 ANNUAL SUMMARY
Using In Service Year

Date in Service Sept. 1973

<u>YEAR</u>	<u>BEG BAL</u>	<u>CONTRIBUTION</u> <u>100%</u> <u>QUALIFIED</u>	<u>EARNINGS @</u> <u>5.200%</u>	<u>EXPENDITURE</u> <u>QUALIFIED</u> <u>NOMINAL \$'s</u> <u>1,788,749,421</u>	<u>END BAL</u>	<u>CUMULATIVE</u> <u>EARNINGS TO</u> <u>LAST</u> <u>FUNDING YEAR</u>
1973-1995	0	187,729,799	159,264,857		346,994,655	
1996	346,994,655	8,437,294	18,242,970		373,674,920	
1997	373,674,920	8,437,294	19,630,344		401,742,559	
1998	401,742,559	8,437,294	21,089,861		431,269,715	
1999	431,269,715	8,437,294	22,625,274		462,332,282	
2000	462,332,282	8,437,294	24,240,527		495,010,104	
2001	495,010,104	8,437,294	25,939,774		529,387,172	
2002	529,387,172	8,437,294	27,727,381		565,551,848	
2003	565,551,848	8,437,294	29,607,944		603,597,086	
2004	603,597,086	8,437,294	31,586,297		643,620,677	
2005	643,620,677	8,437,294	33,667,524	253,955	685,471,541	
2006	685,471,541	8,437,294	35,843,768	969,091	728,783,512	
2007	728,783,512	8,437,294	38,095,991	467,963	774,848,834	
2008	774,848,834	8,437,294	40,491,388	5,371,761	818,405,756	
2009	818,405,756	8,437,294	42,756,348	11,439,430	858,159,968	
2010	858,159,968	8,437,294	44,823,567		911,420,829	
2011	911,420,829	8,437,294	47,593,131		967,451,255	
2012	967,451,255	8,437,294	50,506,714		1,026,395,263	
2013	1,026,395,263	2,109,324	53,463,582	57,075,780	1,024,892,389	767,197,243
2014	1,024,892,389	0	53,294,404	99,968,071	978,218,722	
2015	978,218,722	0	50,867,374	129,516,912	899,569,183	
2016	899,569,183	0	46,777,598	145,520,872	800,825,908	
2017	800,825,908	0	41,642,947	260,236,663	582,232,193	
2018	582,232,193	0	30,276,074	148,004,272	464,503,994	
2019	464,503,994	0	24,154,208	156,083,609	332,574,593	
2020	332,574,593	0	17,293,879	73,365,244	276,503,228	
2021	276,503,228	0	14,378,168	16,746,578	274,134,818	
2022	274,134,818	0	14,255,011	7,247,878	281,141,951	
2023	281,141,951	0	14,619,381	7,682,750	288,078,582	
2024	288,078,582	0	14,980,086	8,166,026	294,892,642	
2025	294,892,642	0	15,334,417	8,632,338	301,594,720	
2026	301,594,720	0	15,682,925	9,150,279	308,127,367	
2027	308,127,367	0	16,022,623	9,699,295	314,450,695	
2028	314,450,695	0	16,351,436	10,309,420	320,492,711	
2029	320,492,711	0	16,665,621	10,898,128	326,260,204	
2030	326,260,204	0	16,965,531	11,552,016	331,673,718	
2031	331,673,718	0	17,247,033	12,245,137	336,675,614	
2032	336,675,614	0	17,507,132	13,015,405	341,167,341	
2033	341,167,341	0	17,740,702	13,758,636	345,149,407	
2034	345,149,407	0	17,947,769	14,584,154	348,513,022	
2035	348,513,022	0	18,122,677	15,459,203	351,176,496	
2036	351,176,496	0	18,261,178	16,431,649	353,006,024	
2037	353,006,024	0	18,356,313	17,369,961	353,992,377	
2038	353,992,377	0	18,407,604	18,412,159	353,987,822	
2039	353,987,822	0	18,407,367	19,516,888	352,878,300	
2040	352,878,300	0	18,349,672	20,744,579	350,483,394	
2041	350,483,394	0	18,225,136	21,929,175	346,779,355	
2042	346,779,355	0	18,032,526	23,244,926	341,566,955	
2043	341,566,955	0	17,761,482	24,639,622	334,688,815	
2044	334,688,815	0	17,403,818	26,189,552	325,903,081	
2045	325,903,081	0	16,946,960	342,850,041	(0)	
		333,273,126	1,455,476,295	1,788,749,421		767,197,243

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Florida Power & Light Company
1998 Decommissioning Study
Support Schedule: Nuclear Decommissioning Theoretical Reserves

Support Schedule E
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ST. LUCIE UNIT NO. 1 ANNUAL SUMMARY
Using In Service Year

Date in Service Dec. 1976

<u>YEAR</u>	<u>BEG BAL</u>	<u>CONTRIBUTION</u> <u>100%</u> <u>QUALIFIED</u>	<u>EARNINGS @</u> <u>4.800%</u>	<u>EXPENDITURE</u> <u>QUALIFIED</u> <u>NOMINAL \$'s</u> <u>1,836,198,726</u>	<u>END BAL</u>	<u>CUMULATIVE</u> <u>EARNINGS TO</u> <u>LAST</u> <u>FUNDING YEAR</u>
1976-1995	0	200,871,492	122,548,589		323,420,081	
1996	323,420,081	10,572,184	15,754,783		349,747,048	
1997	349,747,048	10,572,184	17,018,478		377,337,710	
1998	377,337,710	10,572,184	18,342,829		406,252,723	
1999	406,252,723	10,572,184	19,730,750		436,555,656	
2000	436,555,656	10,572,184	21,185,291	0	468,313,131	
2001	468,313,131	10,572,184	22,709,650	0	501,594,964	
2002	501,594,964	10,572,184	24,307,178	0	536,474,326	
2003	536,474,326	10,572,184	25,981,387	0	573,027,896	
2004	573,027,896	10,572,184	27,735,958	0	611,336,038	
2005	611,336,038	10,572,184	29,574,749	264,012	651,218,960	
2006	651,218,960	10,572,184	31,489,129	1,004,619	692,275,654	
2007	692,275,654	10,572,184	33,459,851	483,746	735,823,943	
2008	735,823,943	10,572,184	35,550,168	5,537,216	776,409,078	
2009	776,409,078	10,572,184	37,498,255	11,758,404	812,721,114	
2010	812,721,114	10,572,184	39,241,233	0	862,534,530	
2011	862,534,530	10,572,184	41,632,277	0	914,738,991	
2012	914,738,991	10,572,184	44,138,091	0	969,449,265	
2013	969,449,265	10,572,184	46,764,184	0	1,026,785,633	
2014	1,026,785,633	10,572,184	49,516,330	0	1,086,874,146	
2015	1,086,874,146	10,572,184	52,400,578	0	1,149,846,908	
2016	1,149,846,908	1,762,031	55,266,442	114,096,095	1,092,779,286	811,846,179
2017	1,092,779,286	0	52,453,406	42,393,777	1,102,838,915	
2018	1,102,838,915	0	52,936,268	23,923,520	1,131,851,663	
2019	1,131,851,663	0	54,328,880	25,287,160	1,160,893,383	
2020	1,160,893,383	0	55,722,882	112,409,039	1,104,207,226	
2021	1,104,207,226	0	53,001,947	46,830,764	1,110,378,409	
2022	1,110,378,409	0	53,298,164	134,988,587	1,028,687,985	
2023	1,028,687,985	0	49,377,023	158,370,839	919,694,170	
2024	919,694,170	0	44,145,320	166,920,587	796,918,904	
2025	796,918,904	0	38,252,107	137,730,211	697,440,800	
2026	697,440,800	0	33,477,158	94,656,096	636,261,863	
2027	636,261,863	0	30,540,569	96,692,324	570,110,108	
2028	570,110,108	0	27,365,285	102,483,796	494,991,597	
2029	494,991,597	0	23,759,597	108,029,402	410,721,792	
2030	410,721,792	0	19,714,646	157,771,123	272,665,315	
2031	272,665,315	0	13,087,935	102,124,916	183,628,334	
2032	183,628,334	0	8,814,160	192,442,494	0	
2033	0	0	0	0	0	
2034	0	0	0	0	0	
2035	0	0	0	0	0	
2036	0	0	0	0	0	
2037	0	0	0	0	0	
2038	0	0	0	0	0	
2039	0	0	0	0	0	
2040	0	0	0	0	0	
		414,077,199	1,422,121,527	1,836,198,726	811,846,179	

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Florida Power & Light Company
1998 Decommissioning Study
Support Schedule: Nuclear Decommissioning Theoretical Reserves

Support Schedule E
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ST. LUCIE UNIT NO. 2 ANNUAL SUMMARY
Using In Service Year

Date in Service Aug., 1983

YEAR	BEG BAL	CONTRIBUTION	EARNINGS @ 4.800%	QUALIFIED	END BAL	CUMULATIVE EARNINGS TO LAST FUNDING YEAR
		100% QUALIFIED		NOMINAL \$'s 1,735,949,272		
1976-1995	0	144,583,004	50,789,453		195,372,457	
1996	195,372,457	11,722,946	9,633,600		216,729,003	
1997	216,729,003	11,722,946	10,658,714		239,110,663	
1998	239,110,663	11,722,946	11,733,034		262,566,643	
1999	262,566,643	11,722,946	12,858,921		287,148,509	
2000	287,148,509	11,722,946	14,038,850	0	312,910,306	
2001	312,910,306	11,722,946	15,275,416	0	339,908,669	
2002	339,908,669	11,722,946	16,571,338	0	368,202,953	
2003	368,202,953	11,722,946	17,929,463	0	397,855,362	
2004	397,855,362	11,722,946	19,352,779	0	428,931,088	
2005	428,931,088	11,722,946	20,844,414	0	461,498,448	
2006	461,498,448	11,722,946	22,407,647	0	495,629,041	
2007	495,629,041	11,722,946	24,045,916	0	531,397,903	
2008	531,397,903	11,722,946	25,762,821	0	568,883,671	
2009	568,883,671	11,722,946	27,562,138	0	608,168,755	
2010	608,168,755	11,722,946	29,447,822	0	649,339,523	
2011	649,339,523	11,722,946	31,424,019	0	692,486,488	
2012	692,486,488	11,722,946	33,495,073	0	737,704,508	
2013	737,704,508	11,722,946	35,665,538	0	785,092,992	
2014	785,092,992	11,722,946	37,940,185	0	834,756,124	
2015	834,756,124	11,722,946	40,324,016	0	886,803,086	
2016	886,803,086	11,722,946	42,822,270	0	941,348,302	
2017	941,348,302	11,722,946	45,440,440	0	998,511,688	
2018	998,511,688	11,722,946	48,184,283	0	1,058,418,917	
2019	1,058,418,917	11,722,946	51,059,830	0	1,121,201,693	
2020	1,121,201,693	11,722,946	54,073,403	0	1,186,998,042	
2021	1,186,998,042	11,722,946	57,231,628	0	1,255,952,616	
2022	1,255,952,616	11,722,946	60,541,447	0	1,328,217,010	
2023	1,328,217,010	2,930,737	63,871,201	86,128,903	1,308,890,045	930,985,658
2024	1,308,890,045	0	62,826,722	145,243,595	1,226,473,172	
2025	1,226,473,172	0	58,870,712	177,030,640	1,108,313,245	
2026	1,108,313,245	0	53,199,036	183,180,206	978,332,075	
2027	978,332,075	0	46,959,940	188,487,442	836,804,572	
2028	836,804,572	0	40,166,619	199,777,064	677,194,127	
2029	677,194,127	0	32,505,318	211,817,632	497,881,813	
2030	497,881,813	0	23,898,327	222,862,650	298,917,490	
2031	298,917,490	0	14,348,040	143,356,977	169,908,553	
2032	169,908,553	0	8,155,611	178,064,164	0	
2033	0	0	0	0	0	
2034	0	0	0	0	0	
2035	0	0	0	0	0	
2036	0	0	0	0	0	
2037	0	0	0	0	0	
2038	0	0	0	0	0	
2039	0	0	0	0	0	
2040	0	0	0	0	0	
		464,033,290	1,271,915,982	1,735,949,272		930,985,658

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**Florida Power and Light Company
1998 Decommissioning Study
Support Schedule: End-of-Life Materials and Supplies Inventory
Expense Accrual and Reserve Deficiency**

Support Schedule F
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	Turkey Point <u>Unit 4</u>
Adjusted Ending Inventory Value @ End of License	19,912,723
Estimated Salvage	(250,900)
Inventory Subject to Write-off	<u>19,661,823</u>
 FPL's Ownership Share (100%)	 19,661,823
 Total Number of Months From:	
In-Service Date to End of Licence	474
In-Service Date to 12/31/00	327
12/31/00 to End of License	147
 Required Accrual From 1/1/01 to End of License	
Monthly	133,754
Annual	1,605,047
 Theoretical Accrual From In-Service Date to End of License	
Monthly	41,481
Annual	497,768
 Reserve Deficiency at 12/31/00	
Theoretical Reserve at 12/31/00	13,564,169
Actual Reserve at 12/31/00	<u>0</u>
Reserve Deficiency	<u><u>13,564,169</u></u>

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**Florida Power & Light Company
1998 Decommissioning Study
Turkey Point Nuclear Units
Support Schedule : Inflation and Funding Analysis**

**Support Schedule G
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INFLATION FORECAST

Summer Issue 2000

Standard & Poor's DRI "The U S Economy"

YEAR	GDP	HRLY COMP	PPI INT M&S	GDP Transport	Burial	CPI	CPI MULTIPLIER
1998	0.0%	0.0%	0.0%	0.0%	0	0.0%	1.000
1999	1.4%	4.7%	0.1%	1.0%	6.9%	2.2%	1.022
2000	2.3%	4.3%	4.3%	3.0%	6.9%	3.2%	1.000
2001	2.1%	5.4%	0.0%	2.5%	5.5%	2.0%	1.020
2002	1.4%	5.0%	-0.5%	1.7%	4.8%	1.3%	1.033
2003	1.7%	4.9%	0.7%	2.2%	5.1%	1.6%	1.050
2004	2.1%	5.0%	1.0%	2.7%	5.6%	2.1%	1.072
2005	2.3%	4.8%	0.9%	3.0%	5.9%	2.4%	1.098
2006	2.4%	4.7%	1.0%	3.1%	6.1%	2.6%	1.126
2007	2.5%	4.6%	0.9%	3.1%	6.2%	2.7%	1.157
2008	2.4%	4.5%	1.1%	3.0%	6.1%	2.6%	1.187
2009	2.4%	4.5%	1.2%	2.9%	6.1%	2.6%	1.217
2010	2.4%	4.6%	1.3%	3.0%	6.1%	2.6%	1.249
2011	2.5%	4.9%	1.5%	3.2%	6.3%	2.8%	1.284
2012	2.8%	5.2%	1.8%	3.6%	6.5%	3.0%	1.323
2013	3.0%	5.3%	2.1%	3.7%	6.7%	3.2%	1.365
2014	3.4%	5.6%	2.5%	4.1%	7.1%	3.6%	1.414
2015	3.7%	5.9%	2.7%	4.4%	7.5%	4.0%	1.471
2016	4.0%	6.1%	2.9%	4.6%	7.8%	4.3%	1.534
2017	4.1%	6.2%	2.9%	4.7%	8.0%	4.5%	1.603
2018	4.1%	6.2%	2.8%	4.7%	8.1%	4.6%	1.677
2019	4.1%	6.1%	2.7%	4.6%	8.0%	4.5%	1.752
2020	4.0%	6.1%	2.7%	4.5%	8.0%	4.5%	1.831
2021	4.1%	6.1%	2.8%	4.5%	8.0%	4.5%	1.913
2022	4.1%	6.2%	3.0%	4.6%	8.1%	4.6%	2.001
2023	4.2%	6.3%	3.1%	4.7%	8.2%	4.7%	2.095
2024	4.4%	6.4%	3.2%	4.8%	8.3%	4.8%	2.196
2025	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	2.306
2026	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	2.421
2027	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	2.542
2028	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	2.669
2029	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	2.803
2030	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	2.943
2031	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	3.090
2032	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	3.244
2033	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	3.407
2034	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	3.577
2035	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	3.756
2036	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	3.944
2037	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	4.141
2038	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	4.348
2039	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	4.565
2040	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	4.793
2041	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	5.033
2042	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	5.285
2043	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	5.549
2044	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	5.826
2045	4.5%	6.5%	3.3%	5.0%	8.5%	5.0%	6.118

3.7% = AVERAGE COMPOUND CPI INFLATION MULTILPLIER 2000-2032

4.1% = AVERAGE COMPOUND CPI INFLATION MULTILPLIER 2000-2045

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**Florida Power & Light Company
1998 Decommissioning Study
Turkey Point Nuclear Units
Support Schedule : Inflation and Funding Analysis**

Support Schedule G

TURKEY POINT UNIT 3

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AVERAGE INFLATION RATE =			6.000% 2000-End			
	5.900%	2.500%	4.300%	7.600%	3.700%	
	LABOR	MATERIAL	SHIPPING	BURIAL	OTHER	TOTAL
	HRLY COMP	PPI INT M&S	GDP Transp		GDP	
1998	215,309,777	78,160,856	5,679,249	72,916,380	23,292,974	395,359,236
1999	225,429,337	78,239,017	5,736,041	77,976,777	23,619,076	411,000,247
2000	235,122,798	81,603,295	5,908,123	83,388,365	24,162,314	430,184,895
2001	247,819,429	81,603,295	6,055,826	87,974,725	24,669,723	448,122,998
2002	260,210,401	81,195,278	6,158,775	92,197,512	25,015,099	464,777,065
2003	272,960,710	81,763,645	6,294,268	96,899,585	25,440,356	483,358,564
2004	286,608,746	82,581,282	6,464,213	102,325,962	25,974,603	503,954,805
2005	300,365,965	83,324,513	6,658,140	108,363,194	26,572,019	525,283,831
2006	314,483,166	84,157,758	6,864,542	114,973,348	27,209,748	547,688,562
2007	328,949,391	84,915,178	7,077,343	122,101,696	27,889,991	570,933,599
2008	343,752,114	85,849,245	7,289,663	129,549,899	28,559,351	595,000,272
2009	359,220,959	86,879,436	7,501,063	137,452,443	29,244,775	620,298,677
2010	375,745,123	88,008,869	7,726,095	145,837,042	29,946,650	647,263,779
2011	394,156,634	89,329,002	7,973,330	155,024,776	30,695,316	677,179,058
2012	414,652,779	90,936,924	8,260,370	165,101,386	31,554,785	710,506,245
2013	436,629,377	92,846,599	8,566,004	176,163,179	32,501,429	746,706,587
2014	461,080,622	95,167,764	8,917,210	188,670,765	33,606,477	787,442,838
2015	488,284,378	97,737,294	9,309,567	202,821,072	34,849,917	833,002,229
2016	518,069,726	100,571,675	9,737,807	218,641,116	36,243,914	883,264,238
2017	550,190,049	103,488,254	10,195,484	236,132,405	37,729,914	937,736,106
2018	584,301,832	106,385,925	10,674,672	255,259,130	39,276,841	995,898,399
2019	619,944,243	109,258,345	11,165,707	275,679,861	40,887,191	1,056,935,347
2020	657,760,842	112,208,320	11,668,163	297,734,250	42,522,679	1,121,894,254
2021	697,884,253	115,350,153	12,193,231	321,552,990	44,266,109	1,191,246,735
2022	741,153,077	118,810,658	12,754,119	347,598,782	46,081,019	1,266,397,655
2023	787,845,721	122,493,788	13,353,563	376,101,882	48,016,422	1,347,811,376
2024	838,267,847	126,413,589	13,994,534	407,318,338	50,129,144	1,436,123,453
2025	892,755,257	130,585,238	14,694,261	441,940,397	52,384,956	1,532,360,108
2026	950,784,349	134,894,551	15,428,974	479,505,330	54,742,279	1,635,355,483
2027	1,012,585,332	139,346,071	16,200,423	520,263,283	57,205,681	1,745,600,790
2028	1,078,403,378	143,944,491	17,010,444	564,485,663	59,779,937	1,863,623,913
2029	1,148,499,598	148,694,659	17,860,966	612,466,944	62,470,034	1,989,992,201
2030	1,223,152,072	153,601,583	18,754,014	664,526,634	65,281,186	2,125,315,489
2031	1,302,656,956	158,670,435	19,691,715	721,011,398	68,218,839	2,270,249,344
2032	1,387,329,658	163,906,560	20,676,301	782,297,367	71,288,687	2,425,498,573
2033	1,477,506,086	169,315,476	21,710,116	848,792,643	74,496,678	2,591,820,999
2034	1,573,543,982	174,902,887	22,795,621	920,940,018	77,849,028	2,770,031,536
2035	1,675,824,341	180,674,682	23,935,403	999,219,919	81,352,235	2,961,006,579
2036	1,784,752,923	186,636,947	25,132,173	1,084,153,612	85,013,085	3,165,688,740
2037	1,900,761,863	192,795,966	26,388,781	1,176,306,669	88,838,674	3,385,091,953
2038	2,024,311,384	199,158,233	27,708,220	1,276,292,736	92,836,414	3,620,306,988
2039	2,155,891,624	205,730,454	29,093,631	1,384,777,619	97,014,053	3,872,507,381
2040	2,296,024,579	212,519,559	30,548,313	1,502,483,716	101,379,685	4,142,955,854
2041	2,445,266,177	219,532,705	32,075,729	1,630,194,832	105,941,771	4,433,011,214
2042	2,604,208,479	226,777,284	33,679,515	1,768,761,393	110,709,151	4,744,135,822
2043	2,773,482,030	234,260,934	35,363,491	1,919,106,112	115,691,063	5,077,903,629
2044	2,953,758,362	241,991,545	37,131,665	2,082,230,131	120,897,161	5,436,008,864
2045	3,145,752,655	249,977,266	38,988,249	2,259,219,692	126,337,533	5,820,275,395

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**Florida Power & Light Company
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TURKEY POINT UNIT 4

AVERAGE INFLATION RATE =			6.000% 2000-End			
5.900%		2 500%	4 300%	7 600%	3.700%	
LABOR	MATERIAL	SHIPPING	BURIAL	OTHER	TOTAL	
HRRLY COMP	PPI INT M&S	GDP Transp		GDP		
1998	260,109,652	83,777,552	5,896,011	79,731,607	23,025,484	452,540,306
1999	272,334,806	83,861,330	5,954,971	85,264,981	23,347,841	470,763,928
2000	284,045,202	87,467,367	6,133,620	91,182,370	23,884,841	492,713,401
2001	299,383,643	87,467,367	6,286,961	96,197,401	24,386,423	513,721,794
2002	314,352,825	87,030,030	6,393,839	100,814,876	24,727,833	533,319,403
2003	329,756,114	87,639,240	6,534,504	105,956,434	25,148,206	555,034,498
2004	346,243,920	88,515,632	6,710,935	111,889,995	25,676,318	579,036,800
2005	362,863,628	89,312,273	6,912,263	118,491,504	26,266,873	603,846,542
2006	379,918,218	90,205,396	7,126,543	125,719,486	26,897,278	629,866,922
2007	397,394,456	91,017,244	7,347,466	133,514,094	27,569,710	656,842,972
2008	415,277,207	92,018,434	7,567,890	141,658,454	28,231,383	684,753,369
2009	433,964,681	93,122,655	7,787,359	150,299,620	28,908,937	714,083,252
2010	453,927,056	94,333,250	8,020,980	159,467,897	29,602,751	745,351,934
2011	476,169,482	95,748,249	8,277,651	169,514,374	30,342,820	780,052,576
2012	500,930,295	97,471,717	8,575,647	180,532,808	31,192,419	818,702,886
2013	527,479,601	99,518,623	8,892,945	192,628,507	32,128,191	860,647,868
2014	557,018,458	102,006,589	9,257,556	206,305,131	33,220,550	907,808,284
2015	589,882,547	104,760,767	9,664,889	221,778,015	34,449,710	960,535,929
2016	625,865,383	107,798,829	10,109,474	239,076,701	35,827,699	1,018,678,085
2017	664,669,037	110,924,995	10,584,619	258,202,837	37,296,634	1,081,678,121
2018	705,878,517	114,030,895	11,082,096	279,117,266	38,825,796	1,148,934,570
2019	748,937,106	117,109,729	11,591,872	301,446,648	40,417,654	1,219,503,009
2020	794,622,270	120,271,692	12,113,507	325,562,379	42,034,360	1,294,604,208
2021	843,094,228	123,639,299	12,658,614	351,607,370	43,757,769	1,374,757,281
2022	895,366,071	127,348,478	13,240,911	380,087,567	45,551,837	1,461,594,863
2023	951,774,133	131,296,281	13,863,233	411,254,747	47,465,015	1,555,653,409
2024	1,012,687,678	135,497,762	14,528,669	445,388,891	49,553,475	1,657,656,475
2025	1,078,512,377	139,969,188	15,255,102	483,246,947	51,783,382	1,768,766,995
2026	1,148,615,681	144,588,171	16,017,857	524,322,938	54,113,634	1,887,658,281
2027	1,223,275,700	149,359,581	16,818,750	568,890,387	56,548,747	2,014,893,166
2028	1,302,788,621	154,288,447	17,659,688	617,246,070	59,093,441	2,151,076,267
2029	1,387,469,881	159,379,966	18,542,672	669,711,986	61,752,646	2,296,857,151
2030	1,477,655,423	164,639,505	19,469,806	726,637,505	64,531,515	2,452,933,753
2031	1,573,703,026	170,072,608	20,443,296	788,401,693	67,435,433	2,620,056,056
2032	1,675,993,723	175,685,004	21,465,461	855,415,837	70,470,028	2,799,030,052
2033	1,784,933,315	181,482,609	22,538,734	928,126,183	73,641,179	2,990,722,019
2034	1,900,953,980	187,471,536	23,665,670	1,007,016,908	76,955,032	3,196,063,126
2035	2,024,515,989	193,658,096	24,848,954	1,092,613,346	80,418,008	3,416,054,393
2036	2,156,109,528	200,048,813	26,091,402	1,185,485,480	84,036,819	3,651,772,042
2037	2,296,256,647	206,650,424	27,395,972	1,286,251,746	87,818,476	3,904,373,265
2038	2,445,513,329	213,469,888	28,765,770	1,395,583,144	91,770,307	4,175,102,439
2039	2,604,471,696	220,514,395	30,204,059	1,514,207,711	95,899,971	4,465,297,831
2040	2,773,762,356	227,791,370	31,714,262	1,642,915,367	100,215,469	4,776,398,824
2041	2,954,056,909	235,308,485	33,299,975	1,782,563,173	104,725,166	5,109,953,707
2042	3,146,070,608	243,073,665	34,964,974	1,934,081,043	109,437,798	5,467,628,087
2043	3,350,565,198	251,095,096	36,713,222	2,098,477,932	114,362,499	5,851,213,946
2044	3,568,351,936	259,381,234	38,548,883	2,276,848,556	119,508,811	6,262,639,420
2045	3,800,294,812	267,940,815	40,476,327	2,470,380,683	124,886,708	6,703,979,344

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GENERAL ASSUMPTIONS

JURISDICTIONAL FACTOR =	99.992%
FPL'S SHARE OF ST. LUCIE 2 COST (NET OF PARTICIPANTS)	85.19215%
CORPORATE TAX RATE	38.575%

	ANNUAL	MONTHLY
EARNINGS RATE QUALIFIED FUND	5.200%	0.423336%
EARNINGS RATE NON-QUALIFIED FUND	5.200%	0.423336%

	TP3	TP4	SL1	SL2
QUALIFYING %	66.670%	68.570%	77.140%	97.560%

FUND BALANCES (\$000's)

A. QUALIFIED FUND BALANCE 12/31/00	174,579	200,358	237,529	212,764
B. CONTRIBUTIONS THRU 12/00	-	-	-	-
C. EARNINGS THRU 12/00 (A)*(MONTHLY RATE)	-	-	-	-
D	-	-	-	-
E. QUALIFIED FUND BALANCE 12/31/00	174,579	200,358	237,529	212,764
F JURISDICTIONAL FACTOR	99.992%	99.992%	99.992%	99.992%
G. JURIS. QUAL FUND BAL. 12/31/00	174,565	200,342	237,510	212,747

A. NON-QUALIFIED FUND BALANCE 12/31/00	83,956	90,978	79,913	44,688
B. CONTRIBUTIONS THRU 12/00	-	-	-	-
C EARNINGS THRU 12/00 (A)*(MONTHLY RATE)	-	-	-	-
D	-	-	-	-
E. NON-QUALIFIED FUND BALANCE 12/31/00	83,956	90,978	79,913	44,688
F JURISDICTIONAL FACTOR	99.992%	99.992%	99.992%	99.992%
G. JURIS. NON-QUAL FUND BAL. 12/31/00	83,949	90,971	79,907	44,684

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**Florida Power & Light Company
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TURKEY POINT UNIT 3

INFLATION RATE 6.000%

	NOMINAL ANNUAL 5.200%	NOMINAL MONTHLY 0.423336%
EARNINGS RATE QUALIFIED FUND		
EARNINGS RATE NON-QUALIFIED FUND	5.200%	0.423336%

CORPORATE TAX RATE 38.575%

JURISDICTIONAL FACTOR 99.992%

QUALIFYING % 66.670%

LICENSE ENDS 19-Jul-12
MONTHS TO FUND 138

YEAR	SPENDING CURVE	ESTIMATED COST IN (\$1998)	ESTIMATED COST IN (\$2000)	ESTIMATED COST IN NOMINAL \$	JURISDICTIONAL AMOUNT	QUALIFIED AMOUNT	NON-QUAL AMOUNT	TAX SAVINGS	PV @ 5.2% QUALIFIED AMOUNT	PV @ 5.2% NON-QUAL AMOUNT
2005	0.0441%	174,297	189,650	253,795	253,774	169,191	51,955	32,628	131,311	40,323
2006	0.1587%	627,469	682,740	968,480	968,403	645,634	198,261	124,508	476,313	146,266
2007	0.0723%	285,847	311,026	467,668	467,631	311,770	95,738	60,124	218,637	67,139
2008	0.7830%	3,095,513	3,368,185	5,368,375	5,367,945	3,578,809	1,098,977	690,159	2,385,682	732,593
2009	1.5730%	6,218,913	6,766,713	11,432,219	11,431,304	7,621,251	2,340,326	1,469,728	4,829,304	1,482,978
2010	0.0000%	-	-	-	-	-	-	-	-	-
2011	0.0000%	-	-	-	-	-	-	-	-	-
2012	4.1877%	16,556,298	18,014,678	36,249,071	36,246,171	24,165,323	7,420,661	4,660,187	13,152,361	4,038,813
2013	10.6861%	42,248,652	45,970,172	98,051,078	98,043,234	65,365,424	20,072,345	12,605,465	33,817,653	10,384,689
2014	11.0219%	43,575,917	47,414,350	107,199,292	107,190,716	71,464,050	21,945,104	13,781,561	35,145,301	10,792,382
2015	10.9511%	43,296,255	47,110,054	112,901,986	112,892,953	75,265,732	23,112,521	14,514,701	35,185,295	10,804,663
2016	19.0648%	75,374,572	82,014,025	208,344,467	208,327,799	138,892,144	42,650,851	26,784,804	61,719,990	18,952,909
2017	8.6434%	34,172,492	37,182,614	100,124,331	100,116,321	66,747,551	20,496,767	12,872,003	28,194,718	8,658,004
2018	8.5830%	33,933,803	36,922,900	105,390,479	105,382,047	70,258,211	21,574,817	13,549,020	28,210,694	8,662,910
2019	8.5388%	33,758,764	36,732,442	111,137,659	111,128,768	74,089,550	22,751,340	14,287,879	28,278,600	8,683,762
2020	2.9496%	11,661,528	12,688,747	40,694,530	40,691,274	27,128,872	8,330,705	5,231,696	9,842,761	3,022,505
2021	0.6403%	2,531,339	2,754,315	9,363,468	9,362,719	6,242,125	1,916,825	1,203,769	2,152,791	661,077
2022	0.2844%	1,124,375	1,223,417	4,408,628	4,408,276	2,938,997	902,504	566,774	963,503	295,871
2023	0.2844%	1,124,375	1,223,417	4,673,146	4,672,772	3,115,337	956,654	600,781	970,830	298,121
2024	0.2852%	1,127,456	1,226,769	4,967,108	4,966,711	3,311,306	1,016,832	638,572	980,893	301,212
2025	0.2844%	1,124,375	1,223,417	5,250,747	5,250,327	3,500,393	1,074,897	675,037	985,651	302,673
2026	0.2844%	1,124,375	1,223,417	5,565,792	5,565,346	3,710,416	1,139,391	715,539	993,147	304,974
2027	0.2844%	1,124,375	1,223,417	5,899,739	5,899,267	3,933,041	1,207,754	758,472	1,000,699	307,294
2028	0.2852%	1,127,456	1,226,769	6,270,860	6,270,358	4,180,448	1,283,727	806,183	1,011,072	310,479
2029	0.2844%	1,124,375	1,223,417	6,628,947	6,628,417	4,419,165	1,357,033	852,219	1,015,977	311,985
2030	0.2844%	1,124,375	1,223,417	7,026,684	7,026,122	4,684,315	1,438,455	903,352	1,023,703	314,358
2031	0.2844%	1,124,375	1,223,417	7,448,285	7,447,689	4,965,374	1,524,762	957,553	1,031,488	316,748
2032	0.2852%	1,127,456	1,226,769	7,916,816	7,916,183	5,277,719	1,620,676	1,017,787	1,042,180	320,031
2033	0.2844%	1,124,375	1,223,417	8,368,893	8,368,223	5,579,094	1,713,222	1,075,906	1,047,235	321,584
2034	0.2844%	1,124,375	1,223,417	8,871,026	8,870,317	5,913,840	1,816,016	1,140,461	1,055,199	324,029
2035	0.2844%	1,124,375	1,223,417	9,403,288	9,402,536	6,268,671	1,924,977	1,208,888	1,063,223	326,494
2036	0.2852%	1,127,456	1,226,769	9,994,798	9,993,998	6,662,999	2,046,067	1,284,933	1,074,244	329,878
2037	0.2844%	1,124,375	1,223,417	10,565,534	10,564,689	7,043,478	2,162,904	1,358,307	1,079,456	331,478
2038	0.2844%	1,124,375	1,223,417	11,199,466	11,198,570	7,466,087	2,292,678	1,439,806	1,087,664	333,999
2039	0.2844%	1,124,375	1,223,417	11,871,434	11,870,485	7,914,052	2,430,239	1,526,194	1,095,936	336,539
2040	0.2852%	1,127,456	1,226,769	12,618,202	12,617,193	8,411,882	2,583,112	1,622,198	1,107,296	340,027
2041	0.2844%	1,124,375	1,223,417	13,338,744	13,337,676	8,892,229	2,730,616	1,714,831	1,112,667	341,677
2042	0.2844%	1,124,375	1,223,417	14,139,068	14,137,937	9,425,763	2,894,453	1,817,721	1,121,129	344,275
2043	0.2844%	1,124,375	1,223,417	14,987,412	14,986,213	9,991,308	3,068,120	1,926,785	1,129,654	346,893
2044	0.2852%	1,127,456	1,226,769	15,930,189	15,928,915	10,619,808	3,261,119	2,047,988	1,141,364	350,489
2045	5.5566%	21,968,470	23,903,582	329,023,506	328,997,184	219,342,422	67,355,437	42,299,324	22,408,580	6,681,203
100.0000%		395,359,236	430,184,895	1,484,315,211	1,484,196,466	989,513,784	303,858,837	190,823,845	330,284,200	101,423,320

NPV @12/31/00	330,284,200	101,423,320	431,707,520
LESS BALANCE @ 12/31/00	174,565,157	83,949,346	258,514,502
PV OF FUNDING REQUIREMENTS	155,719,044	17,473,974	173,193,018
MONTHLY FUNDING REQUIREMENT	1,492,238	167,451	1,659,690
ANNUAL FUNDING REQUIREMENT	17,906,862	2,009,414	19,916,276
MONTHLY ACCRUAL	1,492,238	272,611	1,764,849
ANNUAL ACCRUAL	17,906,862	3,271,324	21,178,186

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TURKEY POINT UNIT 4

INFLATION RATE 6 000%

	NOMINAL	NOMINAL
EARNINGS RATE QUALIFIED FUND	ANNUAL	MONTHLY
EARNINGS RATE NON-QUALIFIED FUND	5 200%	0 423336%
	5 200%	0 423336%

CORPORATE TAX RATE 38 575%

JURISDICTIONAL FACTOR 99 992%

QUALIFYING % 68 570%

LICENSE ENDS 10-Apr-13
MONTHS TO FUND 147

YEAR	SPENDING CURVE	ESTIMATED	ESTIMATED	ESTIMATED	JURISDICTIONAL AMOUNT	QUALIFIED AMOUNT	NON-QUAL AMOUNT	TAX SAVINGS	PV @ 5 2%	PV @ 5 2%
		COST IN (\$1998)	COST IN (\$2000)	COST IN NOMINAL \$					QUALIFIED AMOUNT	NON-QUAL AMOUNT
2005	0 0385%	174,297	189,770	253,955	253,934	174,123	49,024	30,787	135,138	38,048
2006	0 1387%	627,469	683,171	969,091	969,014	664,453	187,077	117,484	490,196	138,015
2007	0 0632%	285,847	311,222	467,963	467,926	320,857	90,337	56,732	225,010	63,351
2008	0 6840%	3,095,513	3,370,309	5,371,761	5,371,331	3,683,122	1,036,983	651,227	2,455,219	691,267
2009	1 3742%	6,218,913	6,770,981	11,439,430	11,438,515	7,843,389	2,208,306	1,386,820	4,970,066	1,399,322
2010	0 0000%	-	-	-	-	-	-	-	-	-
2011	0 0000%	-	-	-	-	-	-	-	-	-
2012	0 0000%	-	-	-	-	-	-	-	-	-
2013	5 4310%	24,577,545	26,759,353	57,075,780	57,071,214	39,133,731	11,018,099	6,919,384	20,246,345	5,700,357
2014	8 9740%	40,610,851	44,215,974	99,968,071	99,960,074	68,542,622	19,298,169	12,119,282	33,708,572	9,490,646
2015	10 9684%	49,636,528	54,042,882	129,516,912	129,506,551	88,802,642	25,002,376	15,701,533	41,513,542	11,688,134
2016	11 6262%	52,613,154	57,283,751	145,520,872	145,509,231	99,775,679	28,091,834	17,641,717	44,337,669	12,483,267
2017	19 6144%	88,762,937	96,642,637	260,236,663	260,215,844	178,430,004	50,236,952	31,548,888	75,370,311	21,220,505
2018	10 5238%	47,624,625	51,852,378	148,004,272	147,992,432	101,478,411	28,571,238	17,942,784	40,746,503	11,472,174
2019	10 4701%	47,381,494	51,587,664	156,083,609	156,071,122	107,017,969	30,130,900	18,922,254	40,846,763	11,500,403
2020	4 6428%	21,010,479	22,875,630	73,365,244	73,359,375	50,302,523	14,162,671	8,894,180	18,250,509	5,138,429
2021	0 9998%	4,524,450	4,926,096	16,746,578	16,745,238	11,482,210	3,232,815	2,030,213	3,959,998	1,114,937
2022	0 4082%	1,847,331	2,011,323	7,247,878	7,247,298	4,969,472	1,399,154	878,671	1,629,161	458,690
2023	0 4082%	1,847,331	2,011,323	7,682,750	7,682,136	5,267,641	1,483,104	931,392	1,641,550	462,178
2024	0 4093%	1,852,392	2,016,833	8,166,026	8,165,373	5,598,996	1,576,397	989,980	1,658,565	466,969
2025	0 4082%	1,847,331	2,011,323	8,632,338	8,631,648	5,918,721	1,666,415	1,046,512	1,666,611	469,234
2026	0 4082%	1,847,331	2,011,323	9,150,279	9,149,547	6,273,844	1,766,400	1,109,302	1,679,285	472,803
2027	0 4082%	1,847,331	2,011,323	9,699,295	9,698,519	6,650,275	1,872,384	1,175,860	1,692,056	476,398
2028	0 4093%	1,852,392	2,016,833	10,309,420	10,308,595	7,068,604	1,990,165	1,249,827	1,709,594	481,336
2029	0 4082%	1,847,331	2,011,323	10,898,128	10,897,257	7,472,249	2,103,811	1,321,197	1,717,888	483,671
2030	0 4082%	1,847,331	2,011,323	11,552,016	11,551,092	7,920,584	2,230,040	1,400,469	1,730,952	487,349
2031	0 4082%	1,847,331	2,011,323	12,245,137	12,244,157	8,395,819	2,363,842	1,484,497	1,744,115	491,055
2032	0 4093%	1,852,392	2,016,833	13,015,405	13,014,364	8,923,949	2,512,537	1,577,877	1,762,193	496,145
2033	0 4082%	1,847,331	2,011,323	13,758,636	13,757,535	9,433,542	2,656,013	1,667,980	1,770,742	498,552
2034	0 4082%	1,847,331	2,011,323	14,584,154	14,582,987	9,999,554	2,815,374	1,768,059	1,784,208	502,344
2035	0 4082%	1,847,331	2,011,323	15,459,203	15,457,967	10,599,528	2,984,296	1,874,143	1,797,776	506,164
2036	0 4093%	1,852,392	2,016,833	16,431,649	16,430,335	11,266,280	3,172,020	1,992,034	1,816,410	511,410
2037	0 4082%	1,847,331	2,011,323	17,369,961	17,368,571	11,909,629	3,353,155	2,105,787	1,825,223	513,891
2038	0 4082%	1,847,331	2,011,323	18,412,159	18,410,686	12,624,207	3,554,344	2,232,134	1,839,103	517,799
2039	0 4082%	1,847,331	2,011,323	19,516,888	19,515,327	13,381,660	3,767,605	2,366,062	1,853,088	521,737
2040	0 4093%	1,852,392	2,016,833	20,744,579	20,742,919	14,223,420	4,004,603	2,514,897	1,872,296	527,145
2041	0 4082%	1,847,331	2,011,323	21,929,175	21,927,421	15,035,633	4,233,281	2,658,507	1,881,379	529,702
2042	0 4082%	1,847,331	2,011,323	23,244,926	23,243,066	15,937,771	4,487,278	2,818,018	1,895,686	533,730
2043	0 4082%	1,847,331	2,011,323	24,639,622	24,637,650	16,894,037	4,756,515	2,987,099	1,910,102	537,789
2044	0 4093%	1,852,392	2,016,833	26,189,552	26,187,457	17,956,739	5,055,718	3,174,999	1,929,901	543,363
2045	5 0553%	22,877,220	24,908,081	342,850,041	342,822,613	235,073,466	66,184,914	41,564,234	24,015,704	6,761,619
100 0000%		452,540,306	492,713,401	1,788,749,421	1,788,606,321	1,226,447,354	345,306,145	216,852,821	392,079,428	110,389,929

NPV @12/31/00	QUALIFIED	NON-QUAL	TOTAL
LESS BALANCE @ 12/31/00	392,079,428	110,389,929	502,469,357
PV OF FUNDING REQUIREMENTS	200,342,145	90,970,510	291,312,655
	191,737,283	19,419,419	211,156,701
MONTHLY FUNDING REQUIREMENT	1,754,678	177,716	1,932,394
ANNUAL FUNDING REQUIREMENT	21,056,133	2,132,594	23,188,728
MONTHLY ACCRUAL	1,754,678	289,322	2,044,000
ANNUAL ACCRUAL	21,056,133	3,471,866	24,528,000

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Florida power & Light Company
 1998 Decommissioning Study
 Turkey Point Nuclear Nuclear Units
 Support Schedule: Calculation of Qualifying Percentages

Support Schedule H
 Page 1 of 2

		<u>Turkey Point Unit No. 3</u>	<u>Turkey Point Unit No. 4</u>
<u>Numerator</u>			
A.	Year for which deductible payment was deemed made to a Qualified Decommissioning Fund	1984	1984
B.	Last year unit is to be included in rate base	2007	2007
	Number of years in numerator	24	24
<u>Denominator</u>			
C.	Year the nuclear unit began commercial operations	1972	1973
D.	Last year the unit is top be included in rate base	2007	2007
	Number of years in denominator	36	35
	Qualifying Percentage $\frac{(\text{Years in Numerator})}{(\text{Years in Denominator})}$	<u>66.67%</u>	<u>68.57%</u>

Florida power & Light Company
1998 Decommissioning Study
Support Schedule: Calculation of Qualifying Percentages

Under Internal Revenue Code Section 468A, the qualifying percentage for any nuclear decommissioning fund is equal to the fraction in which the numerator is the number of taxable years in the estimated period for which the nuclear decommissioning fund is in effect and the denominator is the number of taxable years in the estimated useful life of the applicable nuclear plant.

The estimated period for which a nuclear decommissioning fund is to be in effect begins on the later of:

- A. The first day of the first taxable year for which a deductible payment is made or deemed made to a nuclear decommissioning fund; or

The first day of the first taxable year that includes the date that the nuclear power plant to which the fund relates begins commercial operations.

The period for which a nuclear decommissioning fund is to be in effect ends:

- B. On the last day of the taxable year that includes the estimated date on which the nuclear power plant to which the fund relates will no longer be included in the Company's rate base for rate making purposes. *

The estimated useful life of the nuclear power plant:

- C. Begins on the first day of the taxable year that includes the date that the nuclear power plant begin commercial operations, and
- D. Ends on the last day of the taxable year that includes the estimated date on which the nuclear power plant will no longer be included in taxpayer's rate base for rate making purposes. *

* The estimated date that the nuclear power plant will not be included in rate base is established in the first rate making proceeding which included the nuclear unit in the taxpayer's rate base.

DECOMMISSIONING COST STUDY
for the
TURKEY POINT PLANT, UNITS 3 AND 4

Prepared for

Florida Power and Light

prepared by

TLG Services, Inc.
Bridgewater, Connecticut

October, 1999

000047

APPROVALS

Project Manager



Geoffrey M. Griffiths

10/18/99
Date

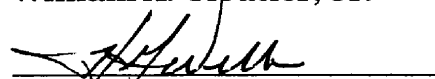
Technical Manager



William A. Cloutier, Jr.

10/18/99
Date

Quality Assurance Manager



for Carolyn A. Palmer

10/18/99
Date

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REVISION LOG

No.	CRA No.	Date	Item Revised	Reason for Revision
0		9/22/98		Original Issue
1	07-9920	10/18/99	Executive Summary, 1.3.1, 2.1.3, 2.2.2, 3.4.1, Tables 3.1a, 3.1b, 3.2a, 3.2b, Section 4.3, Fig. 4.1, 4.2a, & 4.2b, Tables 5.1a, & 5.1b, Section 6, Tables 6.1a, 6.1b, 6.2a, 6.2b, Appendix A (notes), Tables C-1, C-2, C-3, C-4, C-5, D-1, D-2, D-3, D-4, D-5	Updated Spent Fuel Storage Scenario

EXECUTIVE SUMMARY

This study, prepared for Florida Power and Light by TLG Services, Inc., evaluates four different decommissioning alternatives for the Turkey Point Plant (Turkey Point), following the final cessation of plant operations. The costs associated with the DECON and SAFSTOR scenarios (with on-site dry fuel storage) are provided in a summary table at the end of this section. The major contributors to the overall decommissioning costs are labor, radioactive waste disposal, and on-site fuel storage costs. The costs are based on several key assumptions, including regulatory requirements, contingency provisions, the disposal of low-level radioactive waste, the management of high-level radioactive waste, and the need for site restoration. A complete discussion of the assumptions used in this estimate is presented in Section 3.

A detailed breakdown of the contributors to the decommissioning cost is reported in Section 6. Schedules of annual expenditures are provided in Section 3. The detailed activity costs, waste volumes, and removal man-hours are provided in Appendices C (on-site dry fuel storage) and D (no fuel storage). Unless otherwise noted, the information provided in this report refers to the alternative with on-site dry fuel storage. The four alternatives are defined as follows:

DECON (With On-Site Dry Fuel Storage): This alternative assumes that an on-site Independent Spent Fuel Storage Facility (ISFSI) is constructed with adequate capacity to transfer all fuel to dry storage within 5 years and 2 months of plant shutdown. This allows the fuel handling buildings to be decontaminated and dismantled at an earlier date than would be otherwise possible. On-site storage is assumed to be provided by Dual Purpose Canister and Storage Modules. All fuel is assumed to be transferred to a DOE facility by the year 2045.

DECON (No Fuel Storage): This alternative assumes that an on-site ISFSI facility is not required and that the DOE takes physical possession of the fuel within 5 years and 2 months of plant shutdown. This alternative is intended to provide an "avoided cost" value if there were no requirement for long-term fuel storage. All other DECON assumptions are included in this alternative.

SAFSTOR (With On-Site Dry Fuel Storage): The station is placed in protective storage for a period of approximately 52 years. This alternative assumes that an on-site ISFSI facility is constructed with adequate capacity to transfer all fuel to dry storage within 5 years and 2 months of plant shutdown. This allows the fuel handling buildings to be

decontaminated and dismantled at an earlier date than would be otherwise possible. On-site storage is assumed to be provided by Dual Purpose Canister and Storage Modules. All fuel is assumed to be transferred to a DOE facility by the year 2045.

SAFSTOR (No Fuel Storage): This alternative assumes that an on-site ISFSI facility is not required and that the DOE takes physical possession of the fuel within 5 years and 2 months of plant shutdown. This alternative is intended to provide an "avoided cost" value if there were no requirement for long-term fuel storage. All other SAFSTOR assumptions are included in this alternative.

Alternatives and Regulations

The Nuclear Regulatory Commission (NRC) provided general decommissioning guidance in the rule adopted on June 27, 1988 ¹. In this rule the NRC set forth technical and financial criteria for decommissioning licensed nuclear facilities. The regulations addressed planning needs, timing, funding methods, and environmental review requirements for decommissioning. The rule also defined three decommissioning alternatives as being acceptable to the NRC - DECON, SAFSTOR and ENTOMB.

DECON was defined as "the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations." ²

SAFSTOR was defined as "the alternative in which the nuclear facility is placed and maintained in a condition that allows the nuclear facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use." ³

ENTOMB was defined as "the alternative in which radioactive contaminants are encased in a structurally long-lived material, such as concrete; the entombed structure is appropriately maintained and continued surveillance is carried out until the radioactive material

U.S. Code of Federal Regulations, Title 10, Parts 30, 40, 50, 51, 70 and 72 "General Requirements for Decommissioning Nuclear Facilities," Nuclear Regulatory Commission, Federal Register Volume 53, Number 123 (p 24018+), June 27, 1988.

² Ibid. Page FR24022. Column 3.

³ Ibid.

decays to a level permitting unrestricted release of the property." ⁴ However, this process is restricted in overall duration to 60 years and therefore impractical for use at a Part 50 licensee which generates significant amounts of long-lived radioactive material. Due to neutron activation it cannot be demonstrated that items such as the reactor vessel and internals will decay to unrestricted levels within 60 years of shutdown.

In 1996, the NRC published revisions to the general requirements for decommissioning nuclear power plants to clarify ambiguities and codify procedures and terminology as a means of enhancing efficiency and uniformity in the decommissioning process. The amendments allow for greater public participation and better define the transition process from operations to decommissioning. The costs and schedules presented in this estimate follow the general guidance and sequence in the amended regulations.

Methodology

The methodology used to develop the decommissioning cost estimates for Florida Power and Light follows the basic approach originally presented in the cost estimating guidelines⁵ developed by the Atomic Industrial Forum (now Nuclear Energy Institute). This reference describes a unit cost factor method for estimating decommissioning activity costs. The unit cost factors used in this study reflect site-specific costs, as well as the latest available information about worker productivity in decommissioning. Field experience acquired in the dismantling of the Shippingport and Cintichem reactor facilities, disposition of the Trojan steam generators, as well as experience from TLG's involvement in the planning and engineering for decommissioning the Shoreham, Yankee Rowe, Pathfinder and Rancho Seco nuclear units, is reflected within this estimate.

An activity duration critical path is used to determine the total decommissioning program schedule required for calculating the carrying costs which include program management, administration, field engineering, equipment rental, quality assurance, and security. This systematic approach for assembling decommissioning estimates has ensured a high degree of confidence in the reliability of the resulting costs.

⁴ Ibid. Page FR24023, Column 2.

⁵ T.S. LaGuardia et al., "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986.

Contingency

Consistent with industry practice, contingencies are applied to the decontamination and dismantling costs developed as, "specific provision for unforeseeable elements of cost within the defined project scope, particularly important where previous experience relating estimates and actual costs has shown that unforeseeable events which will increase costs are likely to occur."⁶ The cost elements in this estimate are based on ideal conditions; therefore, the types of unforeseeable events that are almost certain to occur in decommissioning, based on industry experience, are addressed through a percentage contingency applied on a line-item basis. This contingency factor is a nearly universal element in all large-scale construction and demolition projects. It should be noted that contingency, as used in this estimate, does not account for price escalation and inflation in the cost of decommissioning over the remaining operating life of the units.

The use and role of contingency within decommissioning estimates is not a safety factor issue. Safety factors provide additional security and address situations that may never occur. Contingency funds, by contrast, are expected to be fully expended throughout the program. Inclusion of contingency is necessary to provide assurance that sufficient funding will be available to accomplish the intended tasks.

Low-Level Radioactive Waste Disposal

The contaminated and activated material generated in the decontamination and dismantling of a commercial nuclear reactor is classified as low-level radioactive waste (LLW), although not all of the material is suitable for "shallow-land" disposal. With the passage of the "Low-Level Radioactive Waste Disposal Act" in 1980, and its Amendments of 1985⁷, the states became ultimately responsible for the disposition of low-level radioactive waste generated within their own borders.

Due to the lack of progress in siting the Southeast Compact regional burial facility within the host state of North Carolina, all LLW generated in the decontamination and dismantling of the Turkey Point Plant is assumed destined for disposal at the existing Chem Nuclear Systems, Inc., Barnwell Low-Level Waste Management Facility (Barnwell) in South Carolina. Prior to disposal, much of the metallic radioactive waste shipped from Turkey Point site is assumed to be routed to a recycling vendor. This vendor will apply decontamination and segmentation processes which will release much of the material as clean scrap. Other waste processors may be used, to minimize the total cost of waste disposal.

⁶ Project and Cost Engineers' Handbook, Second Edition, American Association of Cost Engineers, Marcel Dekker, Inc., New York, New York, p. 239.

⁷ "Low-Level Radioactive Waste Policy Amendments Act of 1985," Public Law 99-240, 1/15/86.

High-Level Waste

Congress passed the "Nuclear Waste Policy Act" in 1982⁸, assigning the responsibility for disposal of spent nuclear fuel created by the commercial nuclear generating plants to the Department of Energy (DOE). This legislation also created a Nuclear Waste Fund to cover the cost of the program, which is funded by the sale of electricity from nuclear reactors, and an estimated equivalent for assemblies irradiated prior to April, 1983. The target date for startup of the Federal Waste Management System was originally 1998.

Site Restoration

The efficient removal of the contaminated materials at the site may result in damage to many of the site structures. Blasting, coring, drilling and the other decontamination activities will substantially damage power block structures, potentially weakening the footings and structural supports. Prompt demolition after license termination is clearly the most appropriate and cost-effective option. It is unreasonable to anticipate that these structures would be repaired and preserved after the radiological contamination is removed. The cost to dismantle site structures with a work force already mobilized on site is more efficient and less costly than if the process is deferred. Experience at shutdown generating stations has shown that plant facilities quickly degrade without continual maintenance, adding additional expense and creating potential hazards to the public, as well as to the demolition work force. Consequently, this study assumes that site structures will be removed to a nominal depth of three feet below the local grade level whenever possible. Foundation grade slabs greater than three feet in thickness will be abandoned in place and covered over with a three-foot layer of backfill. The intake and discharge canals will be backfilled to grade with existing site rubble or soil. The site will then be graded and stabilized.

Recommendations

In most situations, the DECON alternative is the preferred mode of decommissioning. This alternative is favored because it eliminates the costs for caretaking and prevents the site from becoming a potential long-term safety hazard. More importantly, the individuals familiar with the operation of the nuclear facility are available to support the dismantling effort; plant systems and services are fully functional; structural integrity is intact; and the licensee has a comprehensive management organization available to oversee/conduct the orderly decontamination and termination of the NRC licenses of the site. For Florida Power and Light, the DECON alternative is a valid

⁸ "Nuclear Waste Policy Act of 1982 and Amendments," U.S. Department of Energy's Office of Civilian Radioactive Management, 1982.

and cost-effective option; it is also the least expensive option prior to any time-value of money considerations.

The construction of barriers and the general decontamination of plant areas in preparation for long-term storage (SAFSTOR) does not necessarily alleviate the need for continued surveillance. Therefore SAFSTOR would require a full-time preventive and corrective maintenance staff to maintain essential site services and prevent the deterioration of the facilities. Maintenance would be required on security systems, area lighting, and on-site facilities supporting the fuel storage activity. These facilities include power centers, administrative offices, and fuel transfer/repackaging facilities. Active supporting systems and components include plant fire protection, site drainage/monitoring and sewage, plant transformers and switchyard, plant grounding and lightning protection, communications, liquid collection, sampling and processing, seismic monitoring, etc. The NRC's review of currently dormant facilities has resulted in a general increase in the level of maintenance the agency is requiring, as well as a greater on-site presence by the licensee. As a result, estimates for the caretaking of a dormant facility have increased significantly from earlier projections.

Summary

The DECON alternatives involve removal of all radioactive material from the site following permanent shutdown. The facility operator may then have unrestricted use of the site with no further requirement for a license. This study also assumes that the remainder of the plant systems and structures on site, not previously removed in support of license termination, are dismantled and the site restored. For comparison, SAFSTOR decommissioning alternatives are also evaluated for a 52 year safe-storage period.

This study provides estimates for decommissioning Turkey Point under current requirements and is based on present-day costs and available technology. The schedule and sequence of decommissioning activities for the DECON and SAFSTOR alternatives are identified in Section 4. Cost summaries are provided in Section 6. Detailed cost tables are provided in Appendices C and D.

COST AND SCHEDULE ESTIMATE SUMMARY

	Costs 98\$ (thousands) ¹	Schedule (months)
DECON (WITH ON-SITE DRY FUEL STORAGE)		
Unit 3	395,359	401
Unit 4	<u>452,540</u>	393
Total	847,900	
SAFSTOR (WITH ON-SITE DRY FUEL STORAGE)		
<i>Unit 3</i>		
Preparations	99,002	18
52.31 year maintenance cost	178,958	628
Delayed dismantling	<u>239,982</u>	87
Subtotal Unit 3	517,942	
<i>Unit 4</i>		
Preparations	97,129	18
52.93 year maintenance cost	116,634	635
Delayed dismantling	<u>244,831</u>	71
Subtotal Unit 4	458,594	
TOTAL	976,536	

1. Columns may not add due to rounding.

1. INTRODUCTION

This cost estimate analysis, prepared by TLG Services, Inc., (TLG) is designed to provide Florida Power and Light (FP&L) with sufficient information to prepare financial planning documents required by the Nuclear Regulatory Commission (NRC). It is not a detailed engineering document, but a cost estimate prepared in advance of the detailed engineering preparations required to carry out the decommissioning of Turkey Point Plant (Turkey Point) Units 3 and 4.

1.1 OBJECTIVE OF STUDY

The objective of this study is to prepare an estimate of the cost, schedule, and waste volume generated to decommission Turkey Point, including all common and supporting facilities. The study considers extended on-site, dry fuel storage and the integration of two-unit dismantling, as discussed below. Unless otherwise noted, the information provided in this report refers to the alternative with on-site dry fuel storage.

The operating license for Unit 3 was issued on July 19, 1972, and currently expires at the end of 40 years on July 19, 2012. The operating license for Unit 4 was issued on April 10, 1973, and expires at the end of 40 years on April 10, 2013. For the purposes of this study, final shutdown of each of the two units is assumed to occur on the expiration date of each unit's operating license.

1.2 SITE DESCRIPTION

Turkey Point is located on the shore of Biscayne Bay approximately 25 miles south of Miami, Florida, 8 miles east of Florida City and 9 miles southeast of Homestead, Florida. Units 3 and 4 are two essentially identical 795 MWe (gross electrical output at rated power) pressurized water reactors with supporting facilities. Two nuclear units are located adjacent to oil and gas fired Units 1 and 2. Turkey Point Units 3 and 4 were designed and constructed by Bechtel Energy Corporation.

The Nuclear Steam Supply Systems (NSSS) consist of a pressurized water reactor system designed by Westinghouse Electric Corporation. The Reactor Coolant System (RCS) consists of three similar heat transfer loops connected in parallel to the reactor pressure vessel. Each loop contains a reactor coolant pump, steam generator, and associated piping and valves. In addition, the system includes a pressurizer, a pressurizer relief tank, interconnecting piping, and the instrumentation necessary for operational control. All of the system equipment, except for the digital pressure indicator, three wide range pressure

transmitters, and the containment isolation and process actuated valves located in the lines connected to the pressurizer relief tank, are located in the Containment Building. The total primary heat output is 2300 Megawatts thermal (MWt).

The Containment is a fully continuous steel lined, post-tensioned, reinforced-concrete structure consisting of a vertical cylinder with a hemispherical dome, supported on a flat foundation mat. The cylinder and dome are post-tensioned with high-strength unbounded wire tendons.

Heat produced in the reactor is converted to electrical energy by the Steam and Power Conversion System (SPCS). The function of the turbine generator is to receive steam from the steam generators, economically convert a portion of the thermal energy contained in the steam to electrical energy, and provide extract steam for six stages of feedwater heating. The turbine generator serves no safety function and has two reheaters before entering the low pressure turbines. The exhaust steam from the two low pressure turbines is condensed in the condenser.

Heat rejected in the main condensers is removed by the Circulating Water System (CWS). The circulating water system provides cooling water for removal of heat loads developed in the plant's main condenser which condenses the steam exhaust from the turbine. Cooling water for the condenser is supplied by a network of cooling canals.

1.3 REGULATORY GUIDANCE

The NRC provided decommissioning guidance in the rule "General Requirements for Decommissioning Nuclear Facilities," (Ref. 1) published and adopted on June 27, 1988. This rule amended NRC regulations to set forth technical and financial criteria for decommissioning licensed nuclear facilities. The regulation addressed decommissioning planning needs, timing, funding methods, and environmental review requirements. The intent of the rule was to ensure that decommissioning would be accomplished in a safe and timely manner and that adequate licensee funds would be available for this purpose. Subsequent to the rule, the NRC issued Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors," (Ref. 2) which provided guidance to the licensees of nuclear facilities on methods acceptable to the NRC staff for complying with the requirements of the rule. The regulatory guide addressed the funding requirements and provided guidance on the content and form of the financial assurance mechanisms indicated in the rule amendments.

The rule defined three decommissioning alternatives as being acceptable to the NRC: DECON, SAFSTOR and ENTOMB. It also placed limits on the time allowed to complete the decommissioning process. For SAFSTOR, the process is restricted in overall duration to 60 years unless it can be shown that a longer duration is necessary to protect public health and safety. The guidelines for ENTOMB are similar, providing the NRC with both sufficient leverage and flexibility to ensure that these deferred options are only used in situations where it is reasonable and consistent with the definition of decommissioning. Consequently, with these restrictions, the SAFSTOR and ENTOMB options are no longer decommissioning alternatives in themselves, as neither terminates the license for the site. At the conclusion of a 60-year dormancy period (or longer for ENTOMB if the NRC approves such a case), the site would still require significant remediation to meet the definition of unrestricted release and license termination. Further, the NRC does not believe that ENTOMB is generally a viable option for a power reactor due to the long-lived nature of the radionuclides involved.

In 1996 the NRC published revisions to the general requirements for decommissioning nuclear power plants (Ref. 3). When the decommissioning regulations were adopted in 1988, it was assumed that the majority of licensees would decommission at the end of the operating license life. Since that time, several licensees have permanently and prematurely ceased operations without having submitted a decommissioning plan. In addition, these licensees requested exemptions from certain operating requirements as being unnecessary once the reactor is defueled. Each case has been handled individually without clearly defined generic requirements. The NRC amended the decommissioning regulations in 1996 to clarify ambiguities and codify procedures and terminology as a means of enhancing efficiency and uniformity in the decommissioning process. The new amendments allow for greater public participation and better define the transition process from operations to decommissioning.

Under the revised regulations, licensees would submit written certification to the NRC within 30 days after the decision to cease operations. Certification would also be required once the fuel was permanently removed from the reactor vessel. Submittal of these notices would entitle the licensee to a fee reduction and eliminate the obligation to follow certain requirements needed only during operation of the reactor. Within two years of submitting notice of permanent cessation of operations, the licensee would be required to submit a Post-Shutdown Decommissioning Activities Report (PSDAR) to the NRC. The PSDAR describes the planned decommissioning activities, the associated sequence and schedule, and an estimate of expected costs. Prior to completing

decommissioning, the licensee would be required to submit an application to the NRC to terminate the license, along with a license termination plan.

1.3.1 Nuclear Waste Policy Act

Congress passed the Nuclear Waste Policy Act in 1982 (Ref. 4), assigning the responsibility for disposal of spent nuclear fuel from the commercial generating plants to the Department of Energy (DOE). Two permanent disposal facilities were envisioned as well as an interim facility. To recover the cost of permanent spent fuel disposal, this legislation created a Nuclear Waste Fund through which money was to be collected from the consumers of the electricity generated by commercial nuclear power plants. The date targeted for start-up of the Federal Waste Management System was 1998.

After pursuing a national site selection process, the Act was amended in 1987 to designate Yucca Mountain, Nevada, as the only site to be evaluated for geologic disposal of high-level waste. Also in 1987, the DOE announced a five-year delay in the opening date for the repository, from 1998 to 2003. Two years later, in 1989, an additional 7-year delay was announced, primarily due to problems in obtaining the required permits from the state of Nevada to perform the required characterization of the site. The DOE has projected additional delays as a result of proposed Congressional reductions in appropriations for the program.

Utilities have responded to this impasse by initiating legal action and constructing supplemental storage as a means of maintaining operating margins. On November 14, 1997, the U.S. Court of Appeals for the District of Columbia Circuit issued a decision in *Northern States Power Company, et al., v. U.S. Department of Energy*. In the decision, the Court reaffirmed its earlier *Indiana Michigan* ruling that DOE has an unconditional obligation to begin disposal of the utilities' spent nuclear fuel (SNF) by January 31, 1998. Since the agency was not in default at the time the decision was issued, the court declined to prescribe "remedies" in the likely event DOE failed to uphold its obligation. However, even with the ruling, DOE's position has remained unchanged. The agency continues to maintain that its delayed performance is unavoidable because it does not have an operational repository and does not have authority to provide storage in the interim. Consequently, DOE has no plans to receive spent fuel before the year 2010. For planning purposes fuel is not projected to be accepted by the DOE until 2015.

Both the DECON and SAFSTOR alternatives assume that the DOE begins accepting spent fuel in 2015. FP&L will therefore incur ISFSI - related construction, canister/module acquisition, and decommissioning costs. The ISFSI will be sized to accommodate 108 spent fuel storage modules and will be in operation from 2010 through 2045.

1.3.2 Low-Level Radioactive Waste Policy Amendments Act

Congress passed the "Low-Level Radioactive Waste Disposal Act" in 1980, declaring the states as being ultimately responsible for the disposition of low-level radioactive waste generated within their own borders. The federal law encouraged the formation of regional groups or compacts to implement this objective safely, efficiently and economically, and set a target date of 1986. With little progress, the "Amendments Act" of 1985 (Ref. 5) extended the target, with specific milestones and stiff sanctions for non-compliance. However, more than 10 years later, no new sites have been developed and even the most advanced program is far behind schedule.

Due to the lack of progress in siting the Southeast Compact regional burial facility within the host state of North Carolina, all LLW generated in the decontamination and dismantling of Turkey Point is assumed destined for disposal at the existing Chem Nuclear Systems, Inc., Barnwell LLW Management Facility (Barnwell) in South Carolina. Prior to disposal, much of the metallic radioactive waste shipped from the Turkey Point site is assumed to be routed to a recycling vendor. This vendor will apply decontamination and segmentation processes which will release much of the material as clean scrap. Other waste processors may be used to minimize the total cost of waste disposal.

1.3.3 Radiological Criteria for License Termination

In 1997, 10 CFR 20 Subpart E Radiological Criteria for License Termination (Ref. 6), was published. This subpart provided radiological criteria for releasing a facility for unrestricted use. The criteria specifically defined a basis [Total Effective Dose Equivalent (TEDE) not to exceed 25 mrem per year to an average member of a critical group] by which levels of acceptable established residual radioactivity can be established, provided that residual radioactivity has been reduced to levels that are as low as reasonably achievable.

This subpart provides a well-defined license termination criteria, but does create uncertainties in predicting the total disposal volume of slightly contaminated materials (such as soil and silt which may require removal and disposal). The volume of contaminated soil/silt required to be decontaminated or disposed of may vary significantly depending on the levels of soil contamination, the radioactive isotopes causing the contamination, and the geographic distribution of the contamination.

2. DECOMMISSIONING ALTERNATIVES

Cost studies were developed to decommission Turkey Point for two of the NRC-approved decommissioning alternatives: DECON and SAFSTOR. The duration of dormancy periods selected for the SAFSTOR alternatives are within the maximum allowable interval (60 years) between cessation of operations and termination of the site license(s). Although the alternatives differ with respect to technique, process, cost, and schedule, the two alternatives attain the same result: removal of all regulated radioactive material from the site and ultimate release of the site for unrestricted and/or alternative use.

The following sections describe the basic activities associated with each alternative. Although detailed procedures for each activity identified are not provided, and the actual sequence of work may vary, these activity descriptions provide a basis not only for estimating, but also for the expected scope of work, i.e., engineering and planning at the time of decommissioning.

2.1 DECON

The DECON alternative, as defined by the NRC, is "the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations." This study does not address the cost to remove spent fuel from the site; such costs are assumed to be funded through the surcharge on electrical generation (1 mill/kWhr). However, the study does recognize the constraint imposed by the spent fuel residing on site during the decommissioning process and also the costs associated with extended on-site caretaking of the fuel.

The approach that the NRC has chosen in its recently amended regulations is to divide decommissioning into three phases. The initial phase commences with the effective date of permanent cessation of operations and involves the transition of both plant and licensee from reactor operations, i.e., power production to facility de-activation and closure. During Phase I, notification is to be provided to the NRC certifying the permanent cessation of operations and the removal of fuel from the reactor vessel. The licensee is then prohibited from reactor operation. Within two years of notification to cease reactor operations, the licensee is required to provide a Post-Shutdown Decommissioning Activities Report (PSDAR). This report provides a description of the licensee's planned decommissioning activities, a corresponding schedule, and an estimate of expected costs. The PSDAR also addresses whether environmental impacts

associated with the proposed decommissioning scenario have already been considered in a previously prepared environmental statement(s). Ninety days following the NRC's receipt of the PSDAR, the licensee may initiate certain decommissioning activities, without specific NRC approval, under a modified Title 10 of the Code of Federal Regulations, Section 50.59 review process (all subsequent references to Title 10 of the Code will be by section number only, i.e. §50.59). The amended regulations permit the licensee to expend/recover up to 3% of the generic decommissioning cost for planning, with an additional 20% available following the 90-day waiting period and certification of permanent defueling. Remaining funds would be available to the licensee with submittal of a detailed, site-specific cost estimate.

The second phase identified by the NRC addresses licensed activities during a storage period, applicable to the dormancy phases of the deferred decommissioning alternative SAFSTOR.

Phase three pertains to the activities involved in license termination. The submittal of an application to terminate the license, along with a termination plan, marks the commencement of this phase. The termination plan contains a detailed site characterization, i.e., location, type, and amount of radioactivity, a description of any remaining dismantling activities to be accomplished, detailed plans for a final survey, and any planned use of the site. An updated cost to complete is required along with the reporting of any new or altered environmental consequences.

The TLG methodology divides the decommissioning project into periods based upon major milestones in the project. Phase I of the NRC's 1996 amended regulations corresponds roughly to Period 1 of DECON, with Phase III corresponding to Period 2. The NRC Phase II has no corresponding period in the DECON mode, being applicable only to the dormancy period of SAFSTOR (Period 2). DECON Period 3 and SAFSTOR Period 5, Site Restoration, are not addressed in the amended regulations.

2.1.1 Period 1 - Preparations

In anticipation of the cessation of plant operations, detailed preparations are undertaken to provide a smooth transition from plant operations to site decommissioning. The organization required to manage the intended decommissioning activities is assembled from available plant staff and outside resources, as required. Preparations include the planning for permanent defueling of the reactor, revision of technical specifications applicable to the operating conditions and requirements, a

characterization of the facility and major components, and the development of the PSDAR.

Engineering and Planning

Prior to the commencement of decommissioning operations the licensee will certify the permanent cessation of operations and the removal of fuel from the reactor vessel. The PSDAR, required within two years of the notice to cease operations, provides a description of the licensee's planned decommissioning activities, a timetable, and the associated financial requirements of the decommissioning program. Upon receipt of the PSDAR, the NRC will make the document available to the public for comment in a local hearing to be held in the vicinity of the reactor site. Ninety days following submittal and NRC receipt of the PSDAR, the licensee may begin to perform major decommissioning activities under a modified §50.59 procedure, i.e., without specific NRC approval. Major activities are defined as any activity that results in permanent removal of major radioactive components (primary coolant system components/piping), permanently modifies the structure of the containment (removal of the bioshield), or results in dismantling components containing Greater-than-Class C waste (GTCC as defined under §61). Major radioactively-contaminated components are further defined as comprising the reactor vessel and internals, steam generators, pressurizer, large bore reactor coolant system piping, and other large components. The NRC includes the following additional criteria for use of the §50.59 process in decommissioning: the proposed activity must not 1) foreclose release of the site for possible unrestricted use, 2) significantly increase decommissioning costs, 3) cause any significant environmental impact, or 4) violate the terms of the licensee's existing license. Consequently, in conjunction with the development of the PSDAR, activity specifications, cost-benefit and safety analyses, work packages and procedures, etc. must be assembled in support of the proposed decontamination and dismantling activities.

The decommissioning program outlined in the PSDAR will be designed to accomplish the required tasks within the As-Low-As-Reasonably-Achievable (ALARA, as defined in §20) guidelines for protection of personnel from exposure to radiation hazards. It will also address the continued protection of the health and safety of the public and the environment during the dismantling activity.

The NRC recognizes that the existing operational technical specifications will require review and modifications to reflect plant conditions and the

safety concerns associated with permanent cessation of operations. The environmental impact associated with the planned decommissioning activities must also be considered; an environmental report on specific and unique concerns must be submitted to the NRC for consideration and possible preparation of an environmental impact statement.

Much of the work in preparing the PSDAR is also relevant to the development of the detailed engineering plans and procedures. This work includes, but is not limited to:

1. Site preparation plans for the proposed decommissioning activities.
2. Detailed procedures and sequences for removal of systems and components.
3. Evaluation of the disposition alternatives for the reactor vessel and its internals.
4. Plans for decontamination of structures and systems.
5. Design/procurement and testing of tooling and equipment.
6. Identification/selection of specialty contractors.
7. Procedures for removal and disposal of radioactive materials.
8. Sequential planning of activities to minimize conflicts with simultaneous tasks.

Site Preparations

Following final plant shutdown and in preparation for actual decommissioning activities, the following activities are initiated.

1. Prepare site support and storage facilities, as required.
2. Perform a site characterization study to determine extent of site contamination.
3. Transfer fuel to dry storage at an on-site ISFSI constructed with adequate capacity to transfer all fuel on-site within 5 years and 2 months of plant shutdown. This allows the fuel handling buildings to

be decontaminated and dismantled at an earlier date than would be otherwise possible.

4. Clean all plant areas of loose contamination and process all liquid and solid wastes.
5. Conduct radiation surveys of work areas, major components (including the reactor vessel and its internals), sampling of internal piping contamination levels, and primary shield cores.
6. Correlate survey data and normalize for development of packaging and transportation procedures.
7. Determine transport and disposal container requirements for activated materials and/or hazardous materials, including shielding and stabilization. Fabricate or procure such containers.
8. Develop procedures for occupational exposure control, control and release of liquid and gaseous effluent, processing of radwaste including DAW, resins, filter media, metallic and non-metallic components generated in decommissioning, site security and emergency programs, and industrial safety.

Following submittal of the PSDAR and certification of permanent fuel removal from the reactor vessel, the licensee may commence major decommissioning activities. Full access to the decommissioning fund will require the preparation of a detailed site-specific cost estimate for submittal to the NRC. In addition, a license termination plan must be prepared at least two years prior to the license termination date.

2.1.2 Period 2 - Operations

Decommissioning Activities

For the DECON alternative, significant decommissioning activities involve the following steps:

1. Construct temporary facilities and modify existing storage facilities to support the dismantling activities. These may include additional changing rooms and contaminated laundry facilities for increased work force, establishment of laydown areas to facilitate equipment removal and preparation for off-site transfer, upgrading roads to

facilitate hauling and transportation, and modifications to the Reactor Building to facilitate access of large/heavy equipment.

2. Design and fabricate shielding in support of removal and transportation activities as well as contamination control envelopes; specify/procure specialty tooling and remotely operated equipment. Modify the refueling facilities to support segmentation activities and prepare rigging for segmentation and extraction of heavy components, including the reactor vessel and its internals.
3. Procure (lease or purchase) required shipping canisters, cask liners, and Industrial Packages (IPs) from suppliers.
4. Conduct decontamination of components and piping systems as required to control (minimize) worker exposure. Remove, package, and dispose of all piping and components that are no longer essential to support decommissioning operations.
5. Remove control rod drive housings and the head service structure from reactor vessel head and package for controlled disposal.
6. Segment reactor vessel closure head and vessel flange for shipment in cask liners. Load overpack liners into shielded casks or place in shielded vans for transport.
7. Segment upper internals assemblies; package segments in shielded casks. These operations are performed remotely by cutting equipment located underwater in the refueling facilities. Package and dispose of items that meet §61 "Class C" criteria or less.
8. Disassemble/segment remaining reactor internals in shielded casks. The operations are also conducted under water using remotely operated tooling and contamination controls. Package and dispose of items that meet §61 "Class C" criteria or less.
9. Package §61 GTCC components into fuel bundle containers for handling and storage along with the spent fuel assemblies. Transfer fuel bundle containers to the fuel handling facilities or suitable storage location.
10. Segment/section the reactor vessel, placing segments into shielded containers. The operation is performed remotely in air using a contamination control envelope. Sections are placed in containers

stored under water (for example in an isolated area of the refueling canal or spent fuel pool) using a remote or shielded crane. Transport the containers using shielded truck casks.

11. Remove the reactor coolant pumps. Package the piping in IPs; the reactor coolant pumps are sealed with steel plate so as to serve as their own containers. Ship piping and pumps for controlled disposal.
12. Remove systems and associated components as they become non-essential to the vessel removal operation, related decommissioning activities, or worker health and safety (e.g., waste collection and processing systems, electrical and ventilation systems, etc.).
13. The station diesel generators will remain available to provide emergency power to the spent fuel cooling and cleanup systems during the required heat decay phase for the last core off-load. The fuel handling buildings' handling and transfer equipment, which supports the transfer of the assemblies either off-site or to dry storage on-site, may also require the station diesel generators to be available.
14. Remove activated concrete biological/sacrificial shield and accessible contaminated concrete (excluding steam generator and pressurizer cubicles). If dictated by the steam generator and pressurizer removal scenarios, remove those portions of the associated cubicles necessary for access and component extraction.
15. Remove steam generators and pressurizer for shipment and controlled disposal. Decontaminate exterior surfaces, as required, and seal-weld openings (nozzles, inspection hatches, and other penetrations). These components can serve as their own burial containers provided that all penetrations are properly sealed and the internal contaminants are stabilized. Add steel shields to those external areas of the steam generators to meet transportation limits and regulations.

License Termination

The preparation of a termination plan is required at least two years prior to the anticipated date of license termination. The plan must include a site characterization, description of the remaining dismantling activities, plans for site remediation, procedures for the final radiation survey,

designation of any reuse of the site, an updated cost estimate to complete the decommissioning, and any associated environmental concerns. The NRC will publish notice of a receipt of the plan and make the plan available for public comment. A local hearing will also be scheduled. Plan approval may be subject to conditions and limitations as deemed appropriate by the NRC. The licensee may then commence with the final remediation of site facilities and services, including:

1. Remove steel liners from the refueling canal, and containment, including any contaminated concrete behind liners, and route for controlled disposition.
2. Remove contaminated equipment and material from all the remaining auxiliary structures. Remediate until radiation surveys indicate that the structure can be released for unrestricted access.
3. Remove contaminated equipment and material from the fuel handling facilities following the transfer of all residual spent fuel to the on-site storage facility. Remediate fuel handling facilities areas until radiation surveys indicate that the structure can be released for unrestricted access.
4. Decontaminate remaining site buildings and facilities with residual contaminants. Remove all remaining LLW along with any remaining hazardous and toxic materials. Material removed in the decontamination and dismantling of the nuclear units will be routed to an on-site central processing area. Material certified to be free of contamination will be released for unrestricted disposition, e.g., as scrap, recycle, or general disposal. Contaminated material will be characterized and segregated for additional on-site decontamination, off-site processing (disassembly, chemical cleaning, volume reduction, waste treatment, etc.) and/or packaged for controlled disposal at the regional low-level radioactive waste disposal facility.
5. Remediate site areas which contain concentrations of radionuclides exceeding NRC release limits.
6. Remove remaining components, equipment, and plant services in support of the area release survey(s).
7. Conduct final radiation survey to ensure that all radioactive materials in excess of permissible residual levels have been remediated. This survey may coincide with the confirmatory NRC

site inspection. These activities are scheduled at the end of Period 2, the operations phase.

8. Unit 3 decontamination and dismantling activities are assumed to be completed prior to Unit 4 decontamination and dismantling activities. This study assumes that the demolition of the Unit 3 non-contaminated facilities will be delayed such that the demolition effort for the station is integrated. As such, Unit 3 structural demolition will be delayed until the completion of the Unit 4 decontamination and dismantling activities.

Incorporated into the License Termination Plan, the Final Survey Plan details the radiological surveys to be performed once the decontamination activities are completed. The Final Survey Plan is developed using the guidance provided in NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination." This document delineates the statistical approaches to survey design and data interpretation used by the Environmental Protection Agency (EPA). It also identifies state-of-the-art, commercially available, instrumentation and procedures for conducting radiological surveys. Use of this guidance ensures that survey design and implementation are conducted in a manner that provides a high degree of confidence that applicable NRC criteria are satisfied. Once the survey is complete, the results are provided to the NRC in a format that can be verified. The NRC then reviews and evaluates the information, performs an independent confirmation of radiological site conditions, and makes a determination on final termination of the license.

The NRC will terminate the license if it determines that site remediation has been performed in accordance with the license termination plan, and that the terminal radiation survey and associated documentation demonstrate that the facility is suitable for release.

2.1.3 Period 3 - Site Restoration

Following completion of decommissioning operations, site restoration activities may begin. Efficient removal of the contaminated materials and verification that residual radionuclide concentrations are below the NRC limits will result in substantial damage to many of the structures. Blasting, coring, drilling, scarification (surface removal), and the other decontamination activities will substantially damage power block structures including the Reactor, Auxiliary, Radwaste and

Turbine Buildings. Verifying that subsurface radionuclide concentrations meet NRC site release requirements may require removal of grade slabs and lower floors, potentially weakening footings and structural supports. This removal activity will be necessary for those facilities and plant areas where historical records, when available, indicate the potential for radionuclides having been present in the soil, where system failures have been recorded, or where it is required to confirm that subsurface process and drain lines were not breached over the operating life of the station.

Prompt dismantling of site structures is clearly the most appropriate and cost-effective option. It is unreasonable to anticipate that these structures would be repaired and preserved after the radiological contamination is removed. The cost to dismantle site structures with a work force already mobilized on site is more efficient and less costly than if the process is deferred. Site facilities quickly degrade without continual maintenance, adding additional expense and creating potential hazards to the public as well as to future workers. Abandonment creates a breeding ground for vermin infestation as well as other biological hazards.

This cost study presumes that non-essential structures and site facilities will be dismantled as a continuation of the decommissioning activity. Foundations and exterior walls are assumed to be removed to a nominal depth of three feet below grade whenever possible. Foundation grade slabs greater than three feet in thickness are abandoned in place and covered over with a three-foot layer of backfill. The three-foot depth allows for the placement of both gravel for drainage, as well as topsoil so that vegetation can be established for erosion control. Site areas affected by the dismantling activities are cleaned and the plant area graded as required to prevent ponding and inhibit the refloating of subsurface materials. Activities include:

1. Perform demolition of the remaining portions of the containment structure and interior portions of the Reactor Building. Internal floors and walls are removed from the lower levels upward, using controlled blasting techniques. Concrete rubble and clean fill produced by demolition activities are used on-site to backfill voids. Suitable materials can be used on site for fill; otherwise the rubble is trucked off-site for disposal as construction debris.
2. Remove remaining buildings using conventional demolition techniques for above ground structures, including the Radwaste

Building, Turbine Building, Auxiliary Building, Control Building, Fuel Handling Building, Service Building and other site structures.

3. Throughout Period 3, FP&L will maintain an on-site ISFSI. The transfer of assemblies to a DOE facility is expected to continue until 2045. After all of the spent fuel has been shipped to the DOE, the ISFSI will be decontaminated (if needed) to levels permitting termination of the Part 72 license.
4. Following notification by FP&L, the NRC will verify that the Part 72 license termination criteria are satisfied. When the requirements are deemed satisfactory for the ISFSI, the NRC can terminate the remaining license(s) for the site. The ISFSI would then be dismantled by conventional means.
5. Prepare the final dismantling program report.

2.2 SAFSTOR

The NRC defines SAFSTOR as "the alternative in which the nuclear facility is placed and maintained in a condition that allows the nuclear facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use." The facility is left intact, (during the SAFSTOR period) with structures maintained in a sound condition. Systems not required to operate in support of the spent fuel pool or site surveillance and security are drained, de-energized, and secured. Minimal cleaning/removal of loose contamination and/or fixation and sealing of remaining contamination is performed. Access to contaminated areas is secured to provide controlled access for inspection and maintenance.

The engineering and planning requirements are similar to those for the DECON alternative, although a shorter time period is expected for these activities due to the more limited work scope. Site preparations are also similar to those for the DECON alternative. However, with the exception of the required radiation surveys and site characterizations, the mobilization and preparation of site facilities is less extensive.

2.2.1 Period 1 - SAFSTOR Operations

The NRC three phase approach to decommissioning is described in detail in Sections 2.1, 2.1.1, and 2.1.2.

In anticipation of the cessation of plant operations, detailed preparations are undertaken to provide a smooth transition from plant operations to site decommissioning. The organization required to manage the intended decommissioning program is assembled from available plant staff and outside resources, as required. Preparations include the planning for permanent defueling of the reactor, revision of technical specifications appropriate to the operating conditions and requirements, a characterization of the facility and major components, and the development of the PSDAR.

The program outlined in the PSDAR will be designed to accomplish the required tasks within the ALARA guidelines for protection of personnel from exposure to radiation hazards. It also addresses the continued protection of the health and safety of the public and the environment.

The NRC recognizes that the existing operational technical specifications will require review and modifications to reflect plant conditions and the safety concerns associated with permanent cessation of operations. The environmental impact associated with the planned decommissioning activities must be considered; an environmental report on those concerns not already assessed must be submitted to the NRC for consideration and possible preparation of an environmental impact statement.

The process of placing the plant in safe-storage includes, but is not limited to, the following activities:

1. Isolate spent fuel storage services and fuel handling systems located in the fuel handling facilities from the power block so that safe-storage operations may commence on the balance of the plant. This activity may be carried out by plant personnel in accordance with existing operating technical specifications. Activities are assumed to be scheduled around the fuel handling systems to the greatest extent possible. All remaining spent fuel on site will be stored in the existing spent fuel pools until transfer to an on-site ISFSI can be completed.
2. Drain/de-energize/secure all non-contaminated systems not required to support dormancy operations.
3. Dispose of contaminated filter elements and resin beds not required for processing wastes from decontamination activities.
4. Drain reactor vessel; internals will remain in place.

5. Drain/de-energize/secure all contaminated systems. Decontaminate systems as required for future maintenance and inspection.
6. Prepare lighting and alarm systems whose continued use is required. De-energize and/or secure portions of fire protection, electric power, and HVAC systems whose continued use is not required.
7. Clean loose surface contamination from building access pathways.
8. Perform an interim radiation survey of plant; post warning signs as appropriate.
9. Erect physical barriers and/or secure all access to radioactive or contaminated areas, except as required for controlled access, i.e., inspection and maintenance.
10. Transfer spent fuel to the ISFSI, or a DOE or intermediate facility - continuously throughout Period 1 and into the dormancy period.
11. Install security and surveillance monitoring equipment and relocate security fence around secured structures, as required.
12. This study assumes that demolition would be delayed for those structures which are located outside the secured area until after the termination of the license.

2.2.2 Period 2 - SAFSTOR Dormancy

The second phase identified by the NRC in its rule addresses licensed activities during a storage period and is applicable to the dormancy phases of the deferred decommissioning alternative SAFSTOR. After an optional period of storage (such that license termination is accomplished within 60 years of final shutdown), it is required that the licensee submit an application to terminate the license, along with a termination plan (described in Section 2.1.2), thereby initiating the third phase.

Activities required during the planned dormancy period for the SAFSTOR alternative include a 24-hour guard force, preventive and corrective maintenance on security systems, area lighting, general building maintenance, heating and ventilation of buildings, routine radiological inspections of contaminated structures, maintenance of structural integrity, and a site environmental and radiation monitoring program.

The SAFSTOR alternative assumes that an on-site ISFSI facility is constructed with adequate capacity to transfer all fuel to dry storage within 5 years and 2 months of plant shutdown. This allows the fuel handling buildings to be decontaminated and dismantled at an earlier date than would be otherwise possible. All fuel is assumed to be transferred to a DOE facility by the year 2045.

Equipment maintenance, inspection activities and routine service are performed by resident maintenance personnel. This work force will maintain the structures in a safe condition, provide adequate lighting, heating, and ventilation, and perform periodic preventive maintenance on essential site services.

An environmental surveillance program is carried out during the dormancy period to ensure that potential releases of radioactive material to the environment are detected and controlled. Appropriate emergency procedures are established and initiated for potential releases that exceed prescribed limits. The environmental surveillance program constitutes an abbreviated version of the program in effect during normal plant operations.

Security during the dormancy period is conducted primarily to prevent unauthorized entry and to protect the public from the consequences of their own actions. Security will be provided by the security fence, sensors, alarms, surveillance equipment, etc., which must be maintained in good condition for the duration of this period. Fire and radiation alarms are also to be monitored and maintained. While remote surveillance is an option, it does not offer the immediate response time of a physical presence.

Variations in the length of the dormancy period are expected to have little effect upon the quantities of radioactive wastes generated from system and structure removal operations. While there will be a decrease in the contamination levels present on all surfaces due to radioactive decay over an increased dormancy duration, it is not expected that any material that is non-releasable at the time of shutdown will decay to a releasable state over the permissible time frame (i.e. 60 years maximum). Without detailed contamination characterization information, it is not possible to make any further assumptions concerning contamination levels.

Given the levels of radioactivity and spectrum of radionuclides expected from forty years of plant operation, no plant process system identified as

being contaminated upon final shutdown will become releasable due to the decay period alone, i.e., there is no significant reduction in waste volume in delaying decommissioning. In fact, SAFSTOR estimates can show a slight increase in the total projected waste volume, due primarily to initial preparation activities for placing the units in safe-storage, as well as from follow-up housekeeping tasks over the caretaking period for the station. Since the SAFSTOR option does not require system flushes for decontamination purposes, the waste volumes associated with the liquid waste processing have been eliminated. In this case, the cost estimate showed a small increase in the total low-level waste volume in the SAFSTOR mode relative to DECON.

The delay in decommissioning yields lower working area radiation levels. As such, the difference between the prompt and delayed scenarios is moderated by reduced ALARA controls for the SAFSTOR's lower occupational exposure potential. Because this alternative provides a period of decay for the residual radioactive material, lower radiation fields are encountered than with the DECON alternative. Some of the dismantling activities may employ manual techniques rather than remote procedures. Thus, dismantling operations may be simplified for some tasks. However, this study does not attempt to quantify this effect, because it would have an immaterial impact on overall costs.

2.2.3 Periods 3 and 4 - Deferred Decommissioning

A termination plan must be prepared at least two years prior to the anticipated date of license termination. Submitted as a supplement to the FSAR, or equivalent, the plan must include a site characterization, description of the remaining dismantling activities, plans for site remediation, detailed plans for the final radiation survey, designation of the end-use of the site, an updated cost estimate to complete the decommissioning, and any associated environmental concerns. The NRC will publish notice of a receipt of the plan and make the plan available for public comment. A local hearing will also be scheduled. Plan approval will be subject to any conditions and limitations deemed appropriate by the NRC. The licensee may then commence with the final remediation of site facilities and plant services.

Although the initial radiation levels due to ^{60}Co will decrease significantly during the dormancy period, the internal components of the reactor vessel will still exhibit sufficiently high radiation dose rates to require remote sectioning under water due to the presence of long-lived radionuclides such as ^{94}Nb , ^{59}Ni , and ^{63}Ni . Therefore, the dismantling

procedures described for the DECON alternative would still be employed during SAFSTOR. Portions of the biological shield will still be radioactive due to the presence of activated trace elements with long half-lives (^{152}Eu and ^{154}Eu). Decontamination will require controlled removal and disposal. It is assumed that radioactive corrosion products on inner surfaces of piping and components will not have decayed to levels that will permit unrestricted use or allow conventional removal. These systems and components are surveyed as they are removed and disposed of in accordance with the existing radioactive release criteria.

Prior to the commencement of decommissioning operations, preparations are undertaken to reactivate site services and prepare for decommissioning. Preparations include engineering and planning, a detailed site characterization, as well as the assembly of a decommissioning management organization. Final planning for activities and writing of activity specifications and detailed procedures are also initiated at this time.

Much of the work in developing a termination plan is relevant to the development of the detailed engineering plans and procedures. The activities associated with this phase, as well as the follow-on decontamination and dismantling processes are detailed in Sections 2.1.1 and 2.1.2. The primary difference between the sequences anticipated for the DECON and SAFSTOR scenarios is the absence, in the latter, of any constraint on the availability of the fuel handling facilities for decommissioning. The timing for the SAFSTOR scenario is such that the spent fuel inventory has been removed from the site prior to the initiation of decontamination and dismantling activities, eliminating a significant scheduling hindrance. Any GTCC material generated in the segmentation of the reactor vessel internals is assumed to be directly routed to the DOE's geological facility without the need to provide for interim storage on site.

Incorporated into the License Termination Plan, the Final Survey Plan details the radiological surveys to be performed once the decontamination activities are completed. The Final Survey Plan is developed using the guidance provided in NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination." This document delineates the statistical approaches to survey design and data interpretation used by the EPA. It also identifies state-of-the-art, commercially available, instrumentation and procedures for conducting radiological surveys. Use of this guidance ensures that survey design and implementation are conducted in a

manner that provides a high degree of confidence that applicable NRC criteria are satisfied. Once the survey is complete, the results are provided to the NRC in a format that can be verified. The NRC then reviews and evaluates the information, performs an independent confirmation of radiological site conditions, and makes a determination on final termination of the license. The NRC will terminate the license if it determines that site remediation has been performed in accordance with the license termination plan, and the terminal radiation survey and associated documentation demonstrate that the facility is suitable for release.

2.2.4 Period 5 - Site Restoration

For the SAFSTOR alternative, the site restoration activities are the same as those for DECON Period 3, without restriction on the availability of the ISFSI for spent fuel or GTCC waste.

3. COST ESTIMATE

The site-specific cost estimate prepared for decommissioning Turkey Point accounts for the unique features of the site, including the primary coolant systems, electric power generation systems, site buildings, and structures. The basis of the estimate and its sources of information, methodology, site-specific considerations, assumptions, and total costs are described in this section.

3.1 BASIS OF ESTIMATE

A site-specific cost estimate was developed using the Turkey Point drawings and plant documents provided by FP&L. Components were inventoried from the mechanical and electrical Piping & Instrument Diagrams (P&ID). Structural drawings and design documents were used to analyze the general arrangement of the facility and to determine estimates of building concrete volumes, steel quantities, numbers and sizes of major components, and areas of the plant to be addressed in remediation of the site.

Representative labor rates for each designated craft and salaried worker were provided by FP&L for use in construction of the unit removal factors, as well as for estimating the carrying costs for site management, worker supervision, and essential support services, e.g., health physics and security.

For estimating purposes, all LLW generated in the decontamination and dismantling of Turkey Point, with the exception of certain metallic waste, is assumed destined for disposal at the existing Barnwell facility. Certain metallic waste is assumed to be sent to an off-site licensed waste processing facility.

3.2 METHODOLOGY

The methodology used to develop this cost estimate follows the basic approach originally presented in the AIF/NESP-036 study report, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," (Ref. 7) and the US DOE "Decommissioning Handbook" (Ref. 8). These documents present a unit cost factor method for estimating decommissioning activity costs, which simplifies the estimating calculations. Unit cost factors for concrete removal (\$/cubic yard), steel removal (\$/ton), and cutting costs (\$/inch) were developed from the labor cost information provided by FP&L. The activity-dependent costs are estimated with the item quantities (cubic yards, tons, inches, etc.) developed from plant drawings and inventory documents.

The unit cost factors used in this study reflect the latest available information about worker productivity in decommissioning, including the Shippingport Station Decommissioning Project completed in 1989, as well as from TLG's involvement in the decommissioning planning and engineering for the Shoreham, Yankee Rowe, Trojan, Rancho Seco, Pathfinder, and Cintichem reactor facilities.

The unit cost factor method provides a demonstrable basis for establishing reliable cost estimates. The detail of activities provided in the unit cost factors for activity time, labor costs (by craft), and equipment and consumable costs provides assurance that cost elements have not been omitted. These detailed unit cost factors, coupled with the plant-specific inventory of piping, components and structures, provide a high degree of confidence in the reliability of the cost estimates.

An activity duration critical path was used to determine the total decommissioning program schedule. The program schedule is used to determine the period-dependent costs for program management, administration, field engineering, equipment rental, quality assurance, and security. The study used typical salary and hourly rates for personnel associated with period-dependent costs for the region in which the station is located. Some of the costs for removal of radioactive components/structures were based on information obtained from the "Building Construction Cost Data," published by R. S. Means (Ref. 9). Examples of unit cost factor development are presented in the AIF/NESP-036 study. Appendix A presents the detailed development of a typical site-specific unit cost factor. Appendix B provides the values contained within one set of factors developed for the Turkey Point analyses.

3.3 FINANCIAL COMPONENTS OF THE COST MODEL

TLG's proprietary decommissioning cost model, DECCER, is composed of a number of distinct cost line items, calculated using the unit cost factor methodology described earlier, as well as additional cost elements in support of the field activities. These calculated costs in and of themselves, however, do not comprise the total cost to accomplish the project goal, i.e., the license termination and site restoration of Turkey Point.

Inherent in any cost estimate that does not rely on historical data is the inability to specify the precise source of costs imposed by factors such as tool breakage, accidents, illnesses, weather delays, labor stoppages, etc. In the DECCER cost model, contingency fulfills this role. Contingency is added to

each line item to account for costs that are difficult or impossible to develop analytically. Such costs are historically inevitable over the duration of a job of this magnitude; therefore, this cost analysis includes moneys to cover these types of expenses. Further discussion of this subject is presented below.

In addition to the routine uncertainties that contingency addresses, another cost element that is necessary to consider when answering the question of decommissioning costs relates to other types and levels of uncertainties. These consist of changes in work scope, pricing, job performance, and other variations that could conceivably, but not necessarily, occur. Consideration of such items may be necessary to address the question concerning how costly the decommissioning project could become, within a range of probabilities. TLG considers these types of costs under the broad term "financial risk." This cost study, however, does not add any additional costs to the estimate for financial risk.

3.3.1 Contingency

The activity- and period-dependent costs are combined to develop the total decommissioning costs. A contingency is then applied on a line-item basis, using one or more of the contingency types listed in the AIF/NESP-036 study. "Contingencies" are defined in the American Association of Cost Engineers "Project and Cost Engineers' Handbook" (Ref. 10) as "specific provision for unforeseeable elements of cost within the defined project scope; particularly important where previous experience relating estimates and actual costs has shown that unforeseeable events which will increase costs are likely to occur." The cost elements in this estimate are based upon ideal conditions and maximum efficiency; therefore, consistent with industry practice, a contingency factor has been applied. In the AIF/NESP-036 study, the types of unforeseeable events that are likely to occur in decommissioning are discussed and guidelines are provided for percentage contingency in each category. It should be noted that contingency, as used in this estimate, does not account for price escalation and inflation in the cost of decommissioning over the remaining operating life of the units.

The use and role of contingency within decommissioning estimates is not a "safety factor issue." Safety factors provide additional security and address situations that may never occur. Contingency funds are expected to be fully expended throughout the program. They also provide assurance that sufficient funding is available to accomplish the intended tasks. Some of the rationale for (and need to incorporate) contingency within any estimate is offered in the following discussion.

An estimate without contingency, or from which contingency has been removed, can disrupt the orderly progression of events and jeopardize a successful conclusion to the decommissioning process.

The most technologically challenging task in decommissioning a commercial nuclear station will be the disposition of the reactor vessel and internal components, which have become highly radioactive after a lifetime of exposure to radiation produced in the core. The disposition of these highly radioactive components forms the basis for the critical path (schedule) for decommissioning operations. Cost and schedule are interdependent and any deviation in schedule has a significant impact on cost for performing a specific activity.

Disposition of the reactor vessel internals involves the underwater cutting of complex components that are highly radioactive. Costs are based upon optimum segmentation, handling, and packaging scenarios. The schedule is primarily dependent upon the turnaround time for the heavily shielded shipping casks, including preparation, loading, and decontamination of the containers for transport. The number of casks required is a function of the pieces generated in the segmentation activity, a value calculated on optimum performance of the tooling employed in cutting the various subassemblies. The risk and uncertainties associated with this task are that the expected optimization may not be achieved, resulting in delays and additional program costs. For this reason, contingency must be included to mitigate the consequences of the expected inefficiencies inherent in this complex activity, along with related concerns associated with specialty tooling modifications and repairs, field changes, discontinuities in the coordination of plant services, system failure, water clarity, lighting, computer-controlled cutting software corrections, etc. Experience in decommissioning other plants in the past has shown that many of these problem areas have occurred during, and in support of, the segmentation process. Contingency dollars are an integral part of the total cost to complete this task. Exclusion of this component puts at risk a successful completion of the intended tasks and, potentially, subsequent related activities.

The following list is a composite of some of the activities, assembled from past decommissioning programs, in which contingency dollars were needed to respond to, compensate for, and/or provide adequate funding of decontamination and dismantling tasks:

Incomplete or Changed Conditions:

- Unavailable/incomplete operational history which led to a recontamination of a work area, because a sealed cubicle (incorrectly identified as being non-contaminated) was breached without controls.
- Surface coatings covering contamination which, due to an incomplete characterization, required additional cost and time to remediate.
- Additional decontamination, controlled removal, and disposition of previously undetected (although at some sites, suspected) contamination due to access gained to formerly inaccessible areas and components.
- Unrecorded construction modifications, facility upgrades, maintenance, enhancements, etc., which precipitated scheduling delays, more costly removal scenarios, additional costs (e.g., for re-engineering, shoring, structural modifications), and compromised worker safety.

Adverse Working Conditions:

- Lower than expected productivity due to high temperature environments, resulting in a change in the working hours (shifting to cooler periods of the day) and additional manpower.
- Confined space, low-oxygen environments where supplied air was necessary and additional safety precautions prolonged the time required to perform required tasks.

Maintenance, Repairs and Modifications

- Facility refurbishment required to support site operations, including those needed to provide new site services, as well as to maintain the integrity of existing structures.

- Damage control, repair, and maintenance from bird nestings and their fouling of equipment and controls.
- Building modification, i.e., re-supporting of floors to enhance loading capacity for heavily shielded casks.
- Roadway upgrades on site to handle heavier and wider loads; roadway rerouting, excavation, and reconstruction.
- Requests for additional safety margins by a vendor.
- Requests to analyze accident scenarios beyond those defined by the removal scenario (requested by the NRC to comply with "total scope of regulation").
- Additional collection of site runoff and processing of such due to disturbance of natural site contours and drainage.
- Concrete coring for removal of embedments and internal conduit, piping, and other potentially contaminated material not originally identified as being contaminated.
- Modifications required to respond to higher than expected worker exposure, water clarity, water disassociation, and hydrogen generation from high temperature cutting operations.
- Additional waste containers needed to accommodate cutting particulates (fines), inefficient waste geometries, and excess material.

Labor

- Turnover of personnel, e.g., craft and health physics. Replacement of labor is costly, involving additional training, badging, medical exams, and associated processing procedures. Recruitment costs are incurred for more experienced personnel and can include relocation and living expense compensation.
- Additional personnel required to comply with NRC mandates and requests.

- Replacement of personnel due to non-qualification and/or incomplete certification (e.g., welders).

Schedule

- Schedule slippage due to a conflict in required resources, i.e., the licensee was forced into a delay until prior (non-licensee) commitments of outside resources were resolved.
- Rejection of material by NRC inspectors, requiring refabrication and causing program delays in activities required to be completed prior to decommissioning operations.

Weather

- Weather-related delays in the construction of facilities required to support site operations (with compensation for delayed mobilization made to vendor).
- Frozen crane hydraulics prior to a major lift.

The cost model incorporates considerations for items such as those described above, generating contingency dollars (at varying percentages of total line-item cost) with every activity.

3.3.2 Financial Risk

Financial risk refers to the possibility and associated probabilities of certain events occurring that could increase or decrease costs for decommissioning.

Included within the category of financial risk are:

- Transition activities and costs: ancillary expenses associated with eliminating 50% to 80% of the site labor force shortly after the cessation of plant operations, added cost for worker separation packages throughout the decommissioning program, state- or company-mandated retraining, and retention incentives for key personnel.

- Delays in approval of the decommissioning plan due to intervention, public participation in local community meetings, legal challenges, state and local hearings, etc.
- Changes in the project work scope from the baseline estimate, involving the discovery of unexpected levels of contaminants, contamination in places not previously expected, contaminated soil previously undiscovered (either radioactive or hazardous material contamination), variations in plant inventory or configuration not indicated by the as-built drawings.
- Regulatory changes, e.g., affecting worker health and safety, site release criteria, waste transportation, and disposal.
- Policy decisions altering federal and state commitments, e.g., in the ability to accommodate certain waste forms for disposition, or in the timetable for such.
- Pricing changes for basic inputs, such as labor, energy, materials, and burial. Some of these inputs may vary slightly, e.g. -10% to +20%; burial could vary from -50% to +200% or more.

It has been TLG's experience that the results of a risk analysis, when compared with the base case estimate for decommissioning, indicate that the chances of the base decommissioning estimate's being too high is a low probability, and the chances that the estimate is too low is a much higher probability. This is mostly due to the pricing uncertainty for LLW burial, and to a lesser extent due to schedule increases from changes in plant conditions and to pricing variations in the cost of labor (both craft and staff). TLG did not perform a risk analysis for the Turkey Point study and therefore the estimates in this report do not include any increase as a result of any risk analysis performed for FP&L or any other TLG client.

3.4 SITE-SPECIFIC CONSIDERATIONS

There are a number of site-specific considerations that affect the method for dismantling and removal of equipment from the site and the degree of

restoration required. The cost impact of the considerations identified below is included in this cost study.

3.4.1 Spent Fuel Disposition

The spent fuel assemblies stored in the spent fuel pool and in dry storage at the site will be transferred to the DOE as per the existing contract between FP&L and the DOE.

Both the DECON and SAFSTOR alternatives assume that the DOE begins accepting spent fuel in 2015 at the rates assumed in the "Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program" (DOE/RW-0510) issued in December 1998 (TSLCC). As a result of this acceptance schedule, FP&L will incur ISFSI-related construction, canister/module acquisition and decommissioning costs.

FP&L is assumed to develop an ISFSI at Turkey Point to prevent a loss of full core off-load reserve capacity in 2011 for Unit 4. The ISFSI will be sized to accommodate 108 spent fuel storage modules and will be in operation from 2010 through 2045. Three modules (3%) are necessary to permit the plant to operate to the end of the operating licenses of each unit. The remaining capacity (97%) is necessary to facilitate timely decommissioning of the plant. As such, only 97% of the total capital/construction costs have been included in the cost estimates. Likewise, only the canister/module acquisition costs necessary to accommodate the transfer of fuel subsequent to plant shut down have been included. The cost estimates do not include the costs associated with construction and canister/module acquisition which is required to reach end of license.

3.4.2 Reactor Vessel and Internal Components

The reactor pressure vessel and reactor internal components are segmented for disposal in shielded transportation casks. Segmentation and packaging of the internals' packages are performed in the refueling canal where a turntable and remote cutter will be installed. The vessel is segmented in place, using a mast-mounted cutter supported off the lower head and directed from a shielded work platform installed overhead in the reactor cavity. Transportation cask specifications and Department of Transportation (DOT) regulations dictate segmentation and packaging methodology. All packages must meet the current

physical and radiological limitations and regulations. Cask shipments will be made in DOT-approved, currently available, truck casks.

The dismantling of reactor internals at Turkey Point will generate radioactive waste generally unsuitable for shallow land disposal (GTCC). Although the material is not classified as high-level waste, the DOE has indicated it will accept title to this waste for disposal at the future high-level waste repository. However, the DOE has not yet established an acceptance criteria or a disposition schedule for this material, and numerous questions remain as to the ultimate disposal cost and waste form requirements. As such, for purposes of this study, the GTCC waste has been packaged and disposed of as high-level waste, at a cost equivalent to that envisioned for the spent fuel.

The reactor coolant pumps and motors are lifted out intact, packaged, and transported for disposal. Reactor coolant piping is cut from the reactor vessel once the water level in the vessel (used for personnel shielding during dismantling and cutting operations in and around the vessel) is dropped below the nozzle zone. The piping is boxed and shipped by shielded van.

3.4.3 Steam Generators and Other Large System Components

The following discussion deals with the steam generators, but the techniques involved are also applicable to other large components, such as feedwater heaters.

The steam generators' size and weight, as well as their configuration and limited access in the Reactor Building itself, place constraints on the intact removal of these components. Determination of the removal strategy requires several different considerations, including modifications to the Reactor Building, for removal of the generators, rigging needed to maneuver and extract the generators from the structure, and the component preparations needed to transport the generators to a disposal site.

A potential method for removal (and the one used as the basis in this estimate) is the extraction of the generators through an opening located in the side of the Reactor Building. Removal of sections of the steam generator cubicle walls, adjoining floor slabs, and floor grating will be accomplished to allow for the generators to be maneuvered to the opening.

A trolley crane will be set up for removal of the generators. By setting the trolley crane first, it can be used to lower portions of the steam generator cubicle walls and floor slab that will have to be removed as part of the modification effort. Figure 3.1 shows removal of cubicle walls for removal of a primary coolant system component. Figure 3.2 shows the rigging process used for removal of steam generators from the reactor building.

The generators will be rigged for removal, disconnected from the surrounding piping and supports, and maneuvered into the open area where they will be lowered onto a dolly. The dolly will allow the lower end of the steam generator to rotate through the opening as it is being lowered. Nozzles and other openings will be welded closed (see Figure 3.3). When this stage has been completed, the generator will be lifted onto a multi-wheeled transporter (see Figure 3.4) and moved to an on-site steam generator processing area. The remaining steam generators will be removed using the same technique.

Once at the steam generator processing area, final preparations for shipment will be completed. The following is a list of these significant "package preparation activities:

- Install radiation shielding [of sufficient thickness to meet DOT transportation requirements] around the exterior of the primary side.
- Inject low-density cellular concrete into the primary side and secondary side voids to "fix" loose surface contamination.
- Place and secure the "primary side" package onto a transportation cradle, compatible with a public highway transporter and an ocean-going barge.

Each generator will then be loaded onto a multi-wheeled transporter and driven onto an exclusive-use barge located near the site. Figure 3.4 shows the typical overland transport used to move a steam generator on public highways. The generator-transporter package will be secured to the barge for transport to a pier-facility located near the Barnwell burial facility. Figure 3.5 shows a typical steam generator loaded on a barge. The package will be taken off the barge and proceed the short distance by road transport to the burial facility. The generator will remain on the transporter until it is unloaded at the disposal site.

3.4.4 Transportation Methods

For the purposes of the cost estimate, it was assumed that the LLW produced in the decontamination and dismantling of the nuclear units will be moved overland by truck, shielded van, railcar, exclusively-use barge, and/or multi-wheeled transporter to the burial facility. Transport costs were derived assuming Barnwell, SC as the destination for all Turkey Point wastes destined for direct burial from the site. For wastes shipped to an off-site recovery vendor, these transport costs were derived assuming Oak Ridge, TN as the destination for Turkey Point wastes.

3.4.5 Low-Level Radioactive Waste Disposal

All LLW generated in the decontamination and dismantling of Turkey Point is assumed disposed of by:

- direct burial at the existing Barnwell facility at a representative burial charge of \$4.40 per pound.
- off-site processing for metallic wastes by a recovery vendor at a rate of \$1.15 per pound.

To the greatest extent practical, non-compactable LLW is treated to reduce the total volume of radioactive material requiring controlled disposal. The treated material meeting the regulatory and/or site release criteria is released as clean scrap, requiring no further cost consideration.

3.4.6 Site Conditions Following Decommissioning

Following the decommissioning effort, the structures and remaining systems will meet the specified NRC site release limit. The NRC involvement in the decommissioning process typically will end at this point. Local building codes, state environmental regulations, and FP&L's own future plans for the site will dictate the next step in the decommissioning process. TLG assumed the total removal of all plant systems and all of the above-grade structures from the site. These non-radiological costs are a part of this study.

3.5 ASSUMPTIONS

The following are the major assumptions made in the development of the cost estimates for decommissioning Turkey Point.

1. Costs are calculated in 1998 dollars. A present-value economic analysis is not included, nor is escalation or general inflation reflected within the costs reported.
2. Common systems are assumed to be assigned to the unit as shown on the plant drawings (P&ID's). Common structures are assumed to be assigned exclusively to Unit 4. ISFSI-related decontamination and demolition costs are assumed to be equally divided between Unit 3 and Unit 4.
3. Plant drawings, equipment and structural specifications, including construction details, were provided by FP&L.
4. Employee salary and craft labor rates for site administration, operations, construction, and maintenance personnel were provided by FP&L for positions identified by TLG.
5. FP&L provides for any necessary electrical power required to decommission the plant to be brought on site. Energy costs are included in the estimate.
6. Material and heavy equipment rental and operating costs were taken from R.S. Means Building Construction Cost Data.
7. Radioactive contamination is considered to be within selected secondary steam cycle components in Units 3 and 4. FP&L provided the status of contamination by plant process system; TLG used this information to categorize the inventory for removal and disposition.
8. Radioactively contaminated piping, components, and structures other than the reactor vessel and internals are assumed to meet DOT limits for Low Specific Activity (LSA) or Surface Contaminated Object (SCO) material. For transportation calculations, the trucking distance from the plant site to the Barnwell site is 624 miles and 957 miles to a recycle facility. Rates for shipping radioactive wastes were provided by Tri-State Motor Transit in published tariffs for this cargo (Ref. 11).
9. The reactor vessel and internals' disposal costs were based on remote in-place segmentation, packaging in shielded casks, and shipping by truck to the burial ground. A maximum normal road weight limit of 80,000 pounds is assumed for all truck shipments, with the exception of several overweight cask shipments. Cask shipments may exceed 95,000 pounds, including vessel segment(s), supplementary shielding, cask tie-downs

and tractor trailer. The maximum curies per shipment assumed permissible is based upon the license limits of available shielded shipping casks. The number and curie content of vessel segments were selected to meet these limits.

10. The average number of cask shipments out of the Reactor Building is expected to average three every two weeks.

11. Reactor vessel and internals packages' conditions:

Any fuel cladding failure that has occurred or may occur during the lifetime of the plant is assumed:

- to have released fission products at sufficiently low levels that the buildup of quantities of long-lived isotopes (e.g. cesium-137, strontium-90, or transuranics) has been prevented from reaching levels exceeding those which permit the major primary coolant system components to be shipped as LSA or SCO waste and to be buried within the requirements of 10 CFR 61 or the regional burial ground; or
- to have necessitated systematic decontamination during the operating life of the plant; therefore, the radionuclide levels will be acceptable for transport as LSA or SCO waste and burial within the requirements of 10 CFR 61.

12. The estimated curie content of the vessel and internals at final shutdown was derived from those listed in NUREG/CR-3474 (Ref. 12). Actual estimates will be derived from the Ci/gram values in NUREG/CR-3474 and adjusted for the different mass of components and projected operating life, as well as for different periods of decay. Additional short-lived isotopes were derived from NUREG/CR-0130 (Ref. 13) and NUREG/CR-0672 (Ref. 14), and benchmarked to the long-lived values from NUREG/CR-3474.

13. This study estimates that there will be some radioactive waste generated which is greater than 10 CFR 61 Class C quantities (GTCC), resulting from disposal of the highly activated sections of the reactor vessel internals. This waste will most likely be disposed of as high-level waste in the DOE's deep geological repository unless an alternative solution is approved by the NRC. The cost of disposal, unlike that for the spent fuel, is not addressed by the DOE's 1 mill/kWhr surcharge, and has been estimated from equivalent disposal costs for spent nuclear fuel.

14. Reactivity control elements will be removed and disposed of along with the spent fuel assemblies.

15. GTCC waste generated through segmentation of the reactor vessel internals will be transferred to the on-site ISFSI or to the DOE high-level waste repository. If the DOE were to default on its obligations to accept spent fuel and GTCC material, decommissioning costs would almost certainly increase.
16. This study does not address the cost for the removal and disposal of spent fuel from the site. Ultimate disposition of the spent fuel is the province of the DOE's Waste Management System, as defined by the Nuclear Waste Policy Act and funded through the 1 mill/kWhr electrical generation surcharge. If the DOE were to delay its obligations to accept spent fuel later than a time consistent with the DOE initial pickup of spent fuel from Turkey Point, then decommissioning costs would increase.
17. Scrap generated during decommissioning is not included as a salvage credit line item in this study. It is difficult to estimate the potential salvage value of a decommissioned nuclear power plant for the following reasons:
 - The acceptability of nuclear plant equipment to potential salvage equipment buyers is highly speculative, regardless of the ability to free release this material.
 - Much of the equipment at a nuclear plant, especially from older units, is too specific to that plant to be of use to potential salvage buyers.
 - The cost for removal of equipment to a configuration that is attractive to a salvage dealer is variable. Dismantling techniques assumed for equipment by TLG for this estimate are not consistent with removal techniques required for salvage (resale) of equipment. Yankee Rowe experience indicated that some buyers wanted equipment stripped down to very specific requirements before they would consider purchase. This required expensive rework after the equipment had been removed from its installed location.

For these reasons, it has generally been considered that the salvage value inherent in free-releasable nuclear plant equipment is sufficient to pay for the cost of removal of this equipment from the site, (i.e., clean equipment that has been removed from its installed location and placed in a laydown area is considered to be removed from the site at no additional charge by salvage dealers). This assumption is an implicit recognition of scrap value in the disposal of clean metallic waste at no cost to the project.

18. The FP&L staffing requirements during decommissioning vary with the level of effort associated with the various phases of the project. Once the decommissioning program commences, only those staff positions necessary to support the decommissioning program are included. There are no costs included in this study for staff transition from plant operations to decommissioning.
19. FP&L will hire a Decommissioning Operations Contractor (DOC), providing contract management of the decommissioning labor force and subcontractors. Engineering services for such items as writing activity specifications, detailed procedures, detailed activation analyses, and structural modifications, etc. are assumed to be provided by the DOC.
20. FP&L will remove items such as furniture, tools, forklifts, trucks, bulldozers, other similar mobile equipment and other such items of company property that can be removed without the use of special equipment.
21. FP&L is assumed to purchase or rent 20% of the scaffolding required to support the decommissioning project. The majority of required scaffolding (80%) is available on site.
22. Existing warehouses will remain for use by FP&L and its subcontractors and will be dismantled as they are no longer needed to support the decommissioning program.
23. FP&L will perform the following activities at no cost or credit to the project:
 - Fuel oil tanks will be emptied. Tanks will be cleaned by flushing or steam cleaning as required prior to disposal.
 - Acid and caustic tanks will be emptied through normal usage; any excess acid or caustics removed to support disposal of the storage container(s) are returned to the vendor.
 - Lubricating and transformer oils will be drained and removed from site by a waste disposal vendor.
24. The decommissioning activities will be performed in accordance with current regulations, which are assumed to still be in place at the time of decommissioning. Changes in current regulations may have a cost impact on decommissioning.
25. This study follows the principles of ALARA through the use of work duration adjustment factors which incorporate such items as radiological protection instruction, mock-up training, the use of respiratory protection, and personnel protective clothing. These items lengthen a task's duration, which increases the costs and lengthens the

schedule. ALARA planning is considered in the costs for engineering and planning, and in the development of activity specifications and detailed procedures. Changes to \$20 worker exposure limits may impact the decommissioning cost and project schedule.

26. Nuclear liability insurance provides coverage for damage or injuries due to radiation exposure from equipment, material, etc. used during decommissioning. Nuclear liability insurance is phased out upon final decontamination of the site. FP&L provided current nuclear liability and property insurance premiums which were factored to reflect lower coverage limits and return of premiums during decommissioning activities.
27. Nuclear property insurance currently carried by FP&L for the site will continue throughout the decommissioning period at a rate discounted from that in effect during operations. The nuclear property insurance will cease for the station upon termination of the §72 license.
28. Only existing site structures will be considered in the decommissioning cost.
29. The perimeter fence and in-plant security barriers will be moved as appropriate to conform with the site's Security Plan in force at the various stages in the project.
30. The existing electrical switchyard will remain after decommissioning in support of the utility's electrical transmission and distribution system.
31. Underground metal and concrete piping will either be surveyed in place and released, or excavated and removed for survey. Any piping that exceeds the site release criteria will be removed.
32. Water drain holes will be drilled in the bottom of all subgrade structures to be abandoned.
33. Non-contaminated road and parking areas with asphalt or concrete surfacing will be broken up into rubble and used for backfill.
34. Structures and site improvements will be removed to a depth of three feet below local grade wherever possible and backfilled to the local grade level. At-grade foundation slabs greater than three feet thick will be abandoned in place and covered over with a three-foot thick layer of backfill.
35. Property tax costs were supplied by FP&L. Property taxes were assumed to be a constant annual cost as long as the FP&L building or equipment were located on the property.

36. Intake and Discharge canals were left in place. Circulating water structures were removed and the canal bank restored.
37. Six old steam generator lower assemblies, currently stored at the site, will be transported to and disposed of at the Barnwell disposal facility as part of the decommissioning work.
38. The remediation and disposal of 4,300 cubic feet of contaminated soil/grass like material will be required.
39. Costs for Steam Generator and old steam generator lower assemblies removal, packaging, shipping, and disposal were based on "actual" costs and vendor quotes associated with performing similar work for FP&L.

3.6 DECOMMISSIONING VERSUS SITE RESTORATION

Approximately 90% of the total cost for the DECON and SAFSTOR cases that were evaluated is attributable to the planning, engineering and the actual disposition of the residual radioactivity at the facility. It should be noted, however, that this accounting of costs includes not only those costs directly attributable to "decommissioning" as defined by the NRC, but those clean "cascading" costs necessary to be expended in order to execute the decontamination processes.

Nuclear power plants are designed to contain the radioactivity inherent in the normal operation of the facility. Accordingly, radioactive and potentially radioactive systems are located in shielded labyrinths, tunnels, and pipe chases. This inaccessibility, while essential during operation, serves to impede decommissioning activities. Consequently, disposition of these components often requires that additional access (and working space) be developed. This access is achieved by dismantling structures and components along the intended path of egress and in the immediate working area; material which in some cases is non-radioactive and therefore not normally perceived as a necessary constituent in facility decontamination. Failure to establish adequate working room will increase the residence times for decontamination and dismantling activities resulting in increases in the incurred occupational exposure. Therefore, the clean "cascading" costs necessary to perform decontamination activities are reported as decommissioning costs.

3.7 COST ESTIMATE SUMMARY

Summaries of the decommissioning costs and annual expenditures are provided in Tables 3.1 through 3.2. Appendix D provides a summary of decommissioning costs similar to Appendix C, with the assumption that long-

term spent fuel storage is not required (the DOE acceptance dates and rates permitted unhindered plant decommissioning). These costs were extracted from the detailed cost tables in Appendix C and D. The following should be considered when reviewing these tables:

- “Decon” as used in the headings of these tables, refers to decontamination activities, as opposed to the NRC term DECON, which refers to the prompt removal decommissioning scenario.
- “Total” as used in the headings of these tables, is the sum of Decon, Remove, Pack, Ship, Bury, and Contingency, as well as other miscellaneous items not listed (such as engineering and preparations).
- The subtotal reported for the major cost categories does not include contingency, which is reported in a separate column.
- “Other” includes different types of costs which are not easily categorized. For instance, in systems removal and structures decontamination, the “Other” cost consists of the off-site recycling costs for low-level radioactive waste. In most of the engineering preparatory activities the “Other” cost is strictly engineering labor; however, “Other” also includes taxes, insurance, plant energy budgets, and regulatory fees.
- Decontamination and removal costs associated with common plant systems are assigned to either Unit 3 or Unit 4, in accordance with the component designation shown on plant drawings. Costs associated with common plant buildings were assigned to Unit 4, since these buildings will be required to support Unit 4 operations after the shutdown of Unit 3.

FIGURE 3.1

Reactor Building Modification for Pressurizer Removal

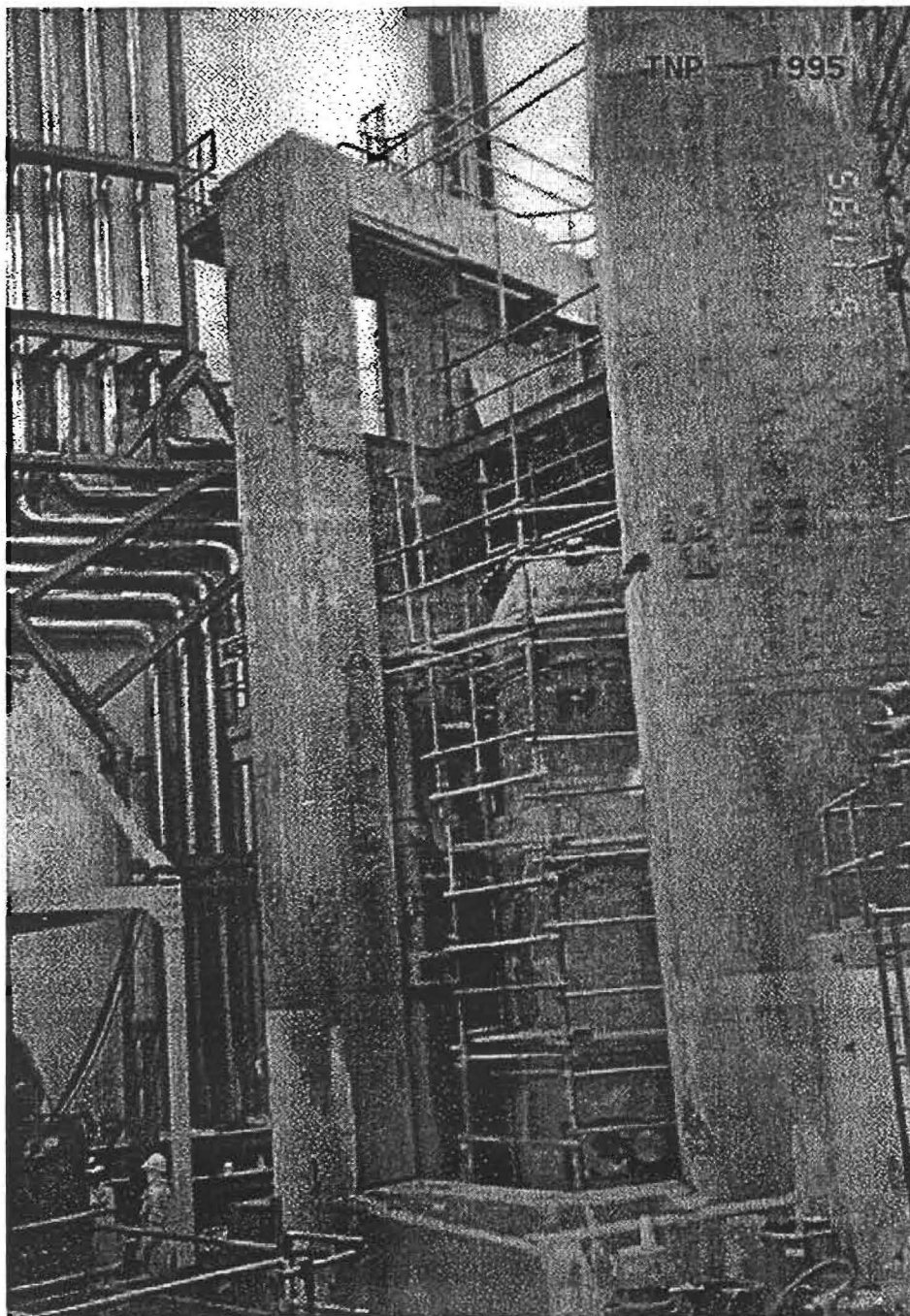


FIGURE 3.2
Removal of Steam Generator from Reactor Building

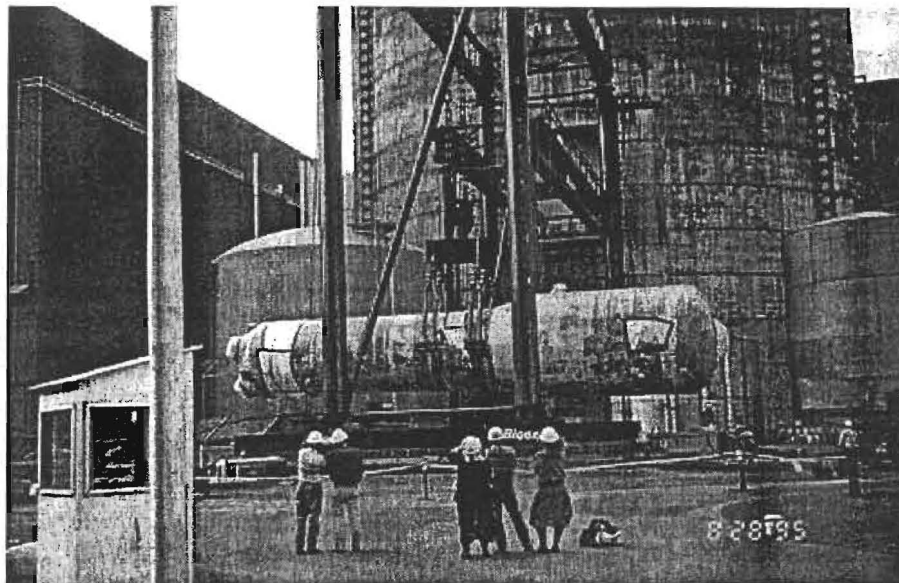
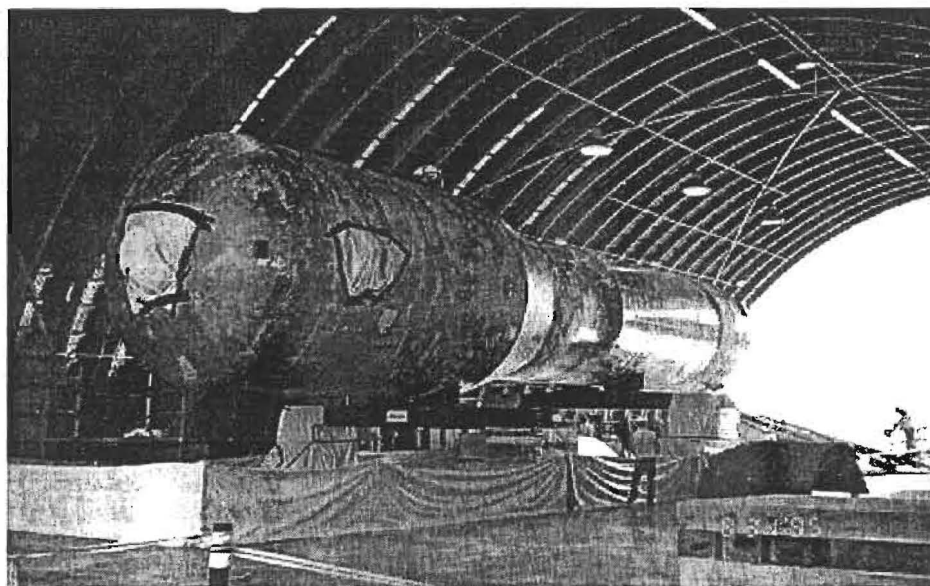
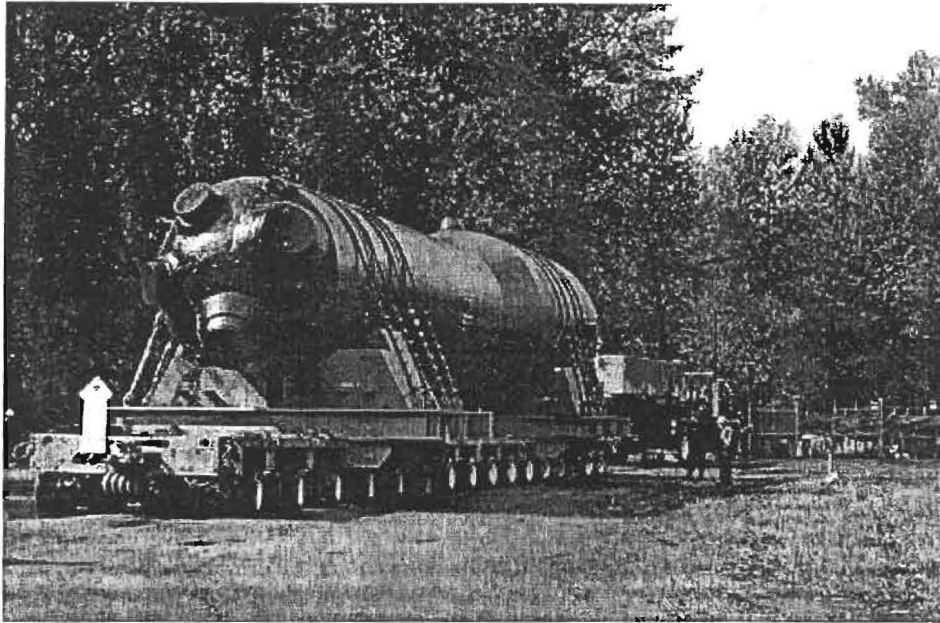


FIGURE 3.3
Preparation of Steam Generator for Transport



**FIGURE 3.4
Overland Transport of Steam Generator**



**FIGURE 3.5
Loading of Steam Generator onto Barge**

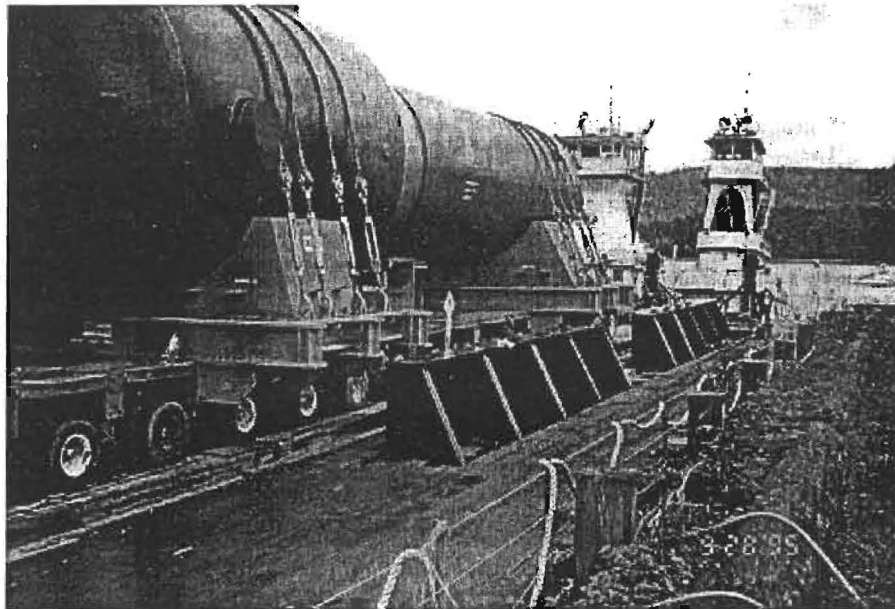


TABLE 3.1b
SCHEDULE OF ANNUAL EXPENDITURES
DECON UNIT 4
(WITH ON-SITE DRY FUEL STORAGE)
(1998 Dollars)¹

Year	Labor	Equipment & Materials	Shipping	Burial	Other	Yearly Totals
2005	87,148	87,148	0	0	0	174,297
2006	313,734	313,734	0	0	0	627,469
2007	142,923	142,923	0	0	0	285,847
2008	1,547,756	1,547,756	0	0	0	3,095,513
2009	3,109,456	3,109,456	0	0	0	6,218,913
2010	0	0	0	0	0	0
2011	0	0	0	0	0	0
2012	0	0	0	0	0	0
2013	17,120,267	2,694,192	165,319	2,621,371	1,976,396	24,577,545
2014	28,029,682	4,653,685	414,728	5,128,635	2,384,121	40,610,851
2015	29,112,492	7,889,653	1,050,176	10,308,939	1,275,269	49,636,528
2016	29,876,637	10,067,519	1,053,053	10,337,183	1,278,763	52,613,154
2017	47,538,900	28,589,653	1,050,176	10,308,939	1,275,269	88,762,937
2018	26,838,900	7,889,653	1,050,176	10,308,939	1,536,957	47,624,625
2019	26,838,900	7,889,653	1,050,176	10,308,939	1,293,826	47,381,494
2020	13,238,796	6,636,113	55,758	547,339	532,474	21,010,479
2021	3,055,285	1,008,635	0	0	460,530	4,524,450
2022	1,375,589	17,413	0	0	454,330	1,847,331
2023	1,375,589	17,413	0	0	454,330	1,847,331
2024	1,379,358	17,460	0	0	455,574	1,852,392
2025	1,375,589	17,413	0	0	454,330	1,847,331
2026	1,375,589	17,413	0	0	454,330	1,847,331
2027	1,375,589	17,413	0	0	454,330	1,847,331
2028	1,379,358	17,460	0	0	455,574	1,852,392
2029	1,375,589	17,413	0	0	454,330	1,847,331
2030	1,375,589	17,413	0	0	454,330	1,847,331
2031	1,375,589	17,413	0	0	454,330	1,847,331
2032	1,379,358	17,460	0	0	455,574	1,852,392
2033	1,375,589	17,413	0	0	454,330	1,847,331
2034	1,375,589	17,413	0	0	454,330	1,847,331
2035	1,375,589	17,413	0	0	454,330	1,847,331
2036	1,379,358	17,460	0	0	455,574	1,852,392
2037	1,375,589	17,413	0	0	454,330	1,847,331
2038	1,375,589	17,413	0	0	454,330	1,847,331
2039	1,375,589	17,413	0	0	454,330	1,847,331
2040	1,379,358	17,460	0	0	455,574	1,852,392
2041	1,375,589	17,413	0	0	454,330	1,847,331
2042	1,375,589	17,413	0	0	454,330	1,847,331
2043	1,375,589	17,413	0	0	454,330	1,847,331
2044	1,379,358	17,460	0	0	455,574	1,852,392
2045	1,597,615	856,998	6,451	19,861,322	554,833	22,877,220
	260,109,652	83,777,552	5,896,011	79,731,607	23,025,484	452,540,306

Note: Columns may not add due to rounding

TABLE 3.2a
SCHEDULE OF ANNUAL EXPENDITURES
SAFSTOR, UNIT 3
(WITH ON-SITE DRY FUEL STORAGE)
(1998 Dollars)¹

Year	Period 1 SAFSTOR Ops	Period 2 Dormancy	Period 3 D&D Prep	Period 4 Decontamination	Period 5 Site Restoration	ISFSI Eng. & Capital costs	Yearly Totals
2005	0	0	0	0	0	174,297	174,297
2006	0	0	0	0	0	627,469	627,469
2007	0	0	0	0	0	285,847	285,847
2008	0	0	0	0	0	3,095,513	3,095,513
2009	0	0	0	0	0	6,218,913	6,218,913
2010	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0
2012	13,252,762	0	0	0	0	0	13,252,762
2013	29,140,110	0	0	0	0	0	29,140,110
2014	1,357,211	6,906,308	0	0	0	0	8,263,518
2015	0	7,243,685	0	0	0	3,450,000	10,693,685
2016	0	7,263,531	0	0	0	41,400,000	48,663,531
2017	0	6,232,629	0	0	0	0	6,232,629
2018	0	3,695,266	0	0	0	0	3,695,266
2019	0	3,695,266	0	0	0	0	3,695,266
2020	0	3,705,390	0	0	0	0	3,705,390
2021	0	3,695,266	0	0	0	0	3,695,266
2022	0	3,695,266	0	0	0	0	3,695,266
2023	0	3,695,266	0	0	0	0	3,695,266
2024	0	3,705,390	0	0	0	0	3,705,390
2025	0	3,695,266	0	0	0	0	3,695,266
2026	0	3,695,266	0	0	0	0	3,695,266
2027	0	3,695,266	0	0	0	0	3,695,266
2028	0	3,705,390	0	0	0	0	3,705,390
2029	0	3,695,266	0	0	0	0	3,695,266
2030	0	3,695,266	0	0	0	0	3,695,266
2031	0	3,695,266	0	0	0	0	3,695,266
2032	0	3,705,390	0	0	0	0	3,705,390
2033	0	3,695,266	0	0	0	0	3,695,266
2034	0	3,695,266	0	0	0	0	3,695,266
2035	0	3,695,266	0	0	0	0	3,695,266
2036	0	3,705,390	0	0	0	0	3,705,390
2037	0	3,695,266	0	0	0	0	3,695,266
2038	0	3,695,266	0	0	0	0	3,695,266
2039	0	3,695,266	0	0	0	0	3,695,266
2040	0	3,705,390	0	0	0	0	3,705,390

TABLE 3.2a
SCHEDULE OF ANNUAL EXPENDITURES
SAFSTOR, UNIT 3
(WITH ON-SITE DRY FUEL STORAGE)
(1998 Dollars)
(cont'd)

Year	Period 1 SAFSTOR Ops	Period 2 Dormancy	Period 3 D&D Prep	Period 4 Decontamination	Period 5 Site Restoration	ISFSI Eng. & Capital costs	Yearly Totals
2041	0	3,695,266	0	0	0	0	3,695,266
2042	0	3,695,266	0	0	0	0	3,695,266
2043	0	3,695,266	0	0	0	0	3,695,266
2044	0	3,705,390	0	0	0	0	3,705,390
2045	0	3,031,021	0	0	0	0	3,031,021
2046	0	2,377,607	0	0	0	0	2,377,607
2047	0	2,377,607	0	0	0	0	2,377,607
2048	0	2,384,121	0	0	0	0	2,384,121
2049	0	2,377,607	0	0	0	0	2,377,607
2050	0	2,377,607	0	0	0	0	2,377,607
2051	0	2,377,607	0	0	0	0	2,377,607
2052	0	2,384,121	0	0	0	0	2,384,121
2053	0	2,377,607	0	0	0	0	2,377,607
2054	0	2,377,607	0	0	0	0	2,377,607
2055	0	2,377,607	0	0	0	0	2,377,607
2056	0	2,384,121	0	0	0	0	2,384,121
2057	0	2,377,607	0	0	0	0	2,377,607
2058	0	2,377,607	0	0	0	0	2,377,607
2059	0	2,377,607	0	0	0	0	2,377,607
2060	0	2,384,121	0	0	0	0	2,384,121
2061	0	2,377,607	0	0	0	0	2,377,607
2062	0	2,377,607	0	0	0	0	2,377,607
2063	0	2,377,607	0	0	0	0	2,377,607
2064	0	2,384,121	0	0	0	0	2,384,121
2065	0	2,377,607	0	0	0	0	2,377,607
2066	0	853,333	19,387,723	0	0	0	20,241,056
2067	0	0	30,021,859	8,708,562	0	0	38,730,421
2068	0	0	0	61,294,878	0	0	61,294,878
2069	0	0	0	62,849,095	0	0	62,849,095
2070	0	0	0	26,648,148	0	0	26,648,148
2071	0	0	0	12,066,923	0	0	12,066,923
2072	0	0	0	8,057,496	4,531,717	0	12,589,213
2073	0	0	0	0	6,415,383	0	6,415,383
	43,750,083	178,958,267	49,409,582	179,625,103	10,947,100	55,252,038	517,942,171

Note: Columns may not add due to rounding

TABLE 3.2b
SCHEDULE OF ANNUAL EXPENDITURES
SAFSTOR, UNIT 4
(WITH ON-SITE DRY FUEL STORAGE)
(1998 Dollars)¹

Year	Period 1 SAFSTOR Ops	Period 2 Dormancy	Period 3 D&D Prep	Period 4 Decontamination	Period 5 Site Restoration	ISFSI Eng. & Capital costs	Yearly Totals
2005	0	0	0	0	0	174,297	174,297
2006	0	0	0	0	0	627,469	627,469
2007	0	0	0	0	0	285,847	285,847
2008	0	0	0	0	0	3,095,513	3,095,513
2009	0	0	0	0	0	6,218,913	6,218,913
2010	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0
2013	19,908,564	0	0	0	0	0	19,908,564
2014	21,106,072	1,338,330	0	0	0	0	22,444,402
2015	0	5,885,426	0	0	0	0	5,885,426
2016	0	5,901,550	0	0	0	4,312,500	10,214,050
2017	0	5,885,426	0	0	0	41,400,000	47,285,426
2018	0	3,921,651	0	0	0	0	3,921,651
2019	0	2,388,949	0	0	0	0	2,388,949
2020	0	2,395,494	0	0	0	0	2,395,494
2021	0	2,388,949	0	0	0	0	2,388,949
2022	0	2,388,949	0	0	0	0	2,388,949
2023	0	2,388,949	0	0	0	0	2,388,949
2024	0	2,395,494	0	0	0	0	2,395,494
2025	0	2,388,949	0	0	0	0	2,388,949
2026	0	2,388,949	0	0	0	0	2,388,949
2027	0	2,388,949	0	0	0	0	2,388,949
2028	0	2,395,494	0	0	0	0	2,395,494
2029	0	2,388,949	0	0	0	0	2,388,949
2030	0	2,388,949	0	0	0	0	2,388,949
2031	0	2,388,949	0	0	0	0	2,388,949
2032	0	2,395,494	0	0	0	0	2,395,494
2033	0	2,388,949	0	0	0	0	2,388,949
2034	0	2,388,949	0	0	0	0	2,388,949
2035	0	2,388,949	0	0	0	0	2,388,949
2036	0	2,395,494	0	0	0	0	2,395,494
2037	0	2,388,949	0	0	0	0	2,388,949
2038	0	2,388,949	0	0	0	0	2,388,949
2039	0	2,388,949	0	0	0	0	2,388,949
2040	0	2,395,494	0	0	0	0	2,395,494

TABLE 3.2b
SCHEDULE OF ANNUAL EXPENDITURES
SAFSTOR, UNIT 4
(WITH ON-SITE DRY FUEL STORAGE)
(1998 Dollars)
(cont'd)

Year	Period 1 SAFSTOR Ops	Period 2 Dormancy	Period 3 D&D Prep	Period 4 Decontamination	Period 5 Site Restoration	ISFSI Eng. & Capital costs	Yearly Totals
2041	0	2,388,949	0	0	0	0	2,388,949
2042	0	2,388,949	0	0	0	0	2,388,949
2043	0	2,388,949	0	0	0	0	2,388,949
2044	0	2,395,494	0	0	0	0	2,395,494
2045	0	1,873,520	0	0	0	0	1,873,520
2046	0	1,366,495	0	0	0	0	1,366,495
2047	0	1,366,495	0	0	0	0	1,366,495
2048	0	1,370,239	0	0	0	0	1,370,239
2049	0	1,366,495	0	0	0	0	1,366,495
2050	0	1,366,495	0	0	0	0	1,366,495
2051	0	1,366,495	0	0	0	0	1,366,495
2052	0	1,370,239	0	0	0	0	1,370,239
2053	0	1,366,495	0	0	0	0	1,366,495
2054	0	1,366,495	0	0	0	0	1,366,495
2055	0	1,366,495	0	0	0	0	1,366,495
2056	0	1,370,239	0	0	0	0	1,370,239
2057	0	1,366,495	0	0	0	0	1,366,495
2058	0	1,366,495	0	0	0	0	1,366,495
2059	0	1,366,495	0	0	0	0	1,366,495
2060	0	1,370,239	0	0	0	0	1,370,239
2061	0	1,366,495	0	0	0	0	1,366,495
2062	0	1,366,495	0	0	0	0	1,366,495
2063	0	1,366,495	0	0	0	0	1,366,495
2064	0	1,370,239	0	0	0	0	1,370,239
2065	0	1,366,495	0	0	0	0	1,366,495
2066	0	1,366,495	0	0	0	0	1,366,495
2067	0	954,675	5,285,850	0	0	0	6,240,525
2068	0	0	20,824,227	0	0	0	20,824,227
2069	0	0	4,314,311	50,274,833	0	0	54,589,144
2070	0	0	0	65,344,847	0	0	65,344,847
2071	0	0	0	64,920,758	0	0	64,920,758
2072	0	0	0	13,480,218	8,439,002	0	21,919,219
2073	0	0	0	0	11,946,779	0	11,946,779
	41,014,637	116,634,190	30,424,388	194,020,656	20,385,781	56,114,538	458,594,188

Note: Columns may not add due to rounding

4. SCHEDULE ESTIMATE

The schedule for the decommissioning scenarios considered in this study follows the sequence presented in the AIF/NESP-036 study, with minor changes to reflect recent experience and site-specific constraints. In addition, the scheduling has been revised to reflect the spent fuel management plan outlined for the Turkey Point inventory.

Figure 4.1 presents a schedule for the DECON decommissioning alternative; the assumptions supporting this schedule are listed in Section 4.1. The key activities listed in the schedule do not reflect a one-to-one correspondence with those activities in the Appendix C and D cost tables, but reflect dividing some activities for clarity and combining others for convenience. The schedule was prepared using the "Microsoft Project for Windows" computer software (Ref. 15).

4.1 SCHEDULE ESTIMATE ASSUMPTIONS

The schedule estimate reflects the results of a precedence network developed for the site decommissioning activities, i.e., a PERT (Program Evaluation and Review Technique) Software Package. The durations used in the precedence network reflect the actual man-hour estimates from the cost tables in Appendix E, adjusted by stretching certain activities over their slack range and shifting the start and end dates of others. The following assumptions were made in the development of the decommissioning schedule.

- All work except vessel and internals removal activities is performed during an 8-hour workday, 5 days per week with no overtime. There are eleven paid holidays per year.
- The Fuel Handling Building will continue to serve as the spent fuel storage building/transfer facility until such time that all spent fuel can be transferred to the ISFSI. Each unit's Fuel Handling Building (spent fuel pool) operation is assumed to last approximately five years and 2 months after the cessation of operations at Unit 3 and Unit 4.
- Reactor and internals removal activities are performed by using separate crews for different activities working on different shifts, with a corresponding backshift charge for the second shift.
- Multiple crews work parallel activities to the maximum extent possible consistent with optimum efficiency, adequate access for cutting, removal and laydown space, and with the stringent safety measures necessary during demolition of heavy components and structures.

- For plant systems removal, the systems with the longest removal durations in areas on the critical path are considered to determine the duration of the activity.

4.2 PROJECT SCHEDULE

The period-dependent costs presented in the Appendix C and D cost tables are based upon the durations developed in the schedule for each decommissioning alternative. Durations are established between several milestones in each project period; these durations are used to establish a critical path for the entire project. In turn, the critical path duration for each period was used as the basis for determining the period-dependent costs.

Project timelines for the DECON and SAFSTOR alternatives are included in this section as Figures 4.2a through 4.2b. Deferred decommissioning in the SAFSTOR scenarios is assumed to commence such that the termination of the site licenses is accomplished within 60 years of final shutdown.

4.3 SPENT FUEL SCHEDULE

FP&L is assumed to develop an ISFSI at Turkey Point to prevent a loss of full core off-load reserve capacity in 2011 for Unit 4. The ISFSI will be sized to accommodate 108 spent fuel storage modules and will be in operation from 2010 through 2045. Three modules (3%) are necessary to permit the plant to operate to the end of the operating licenses of each unit. The remaining capacity (97%) is necessary to facilitate timely decommissioning of the plant. As such, only 97% of the total capital/construction costs have been included in the cost estimates. Likewise, only the canister/module acquisition costs necessary to accommodate the transfer of fuel subsequent to plant shut down have been included. The cost estimates do not include the costs associated with construction and canister/module acquisition which are required to reach end of license.

FIGURE 4.1

DECON ACTIVITY SCHEDULE

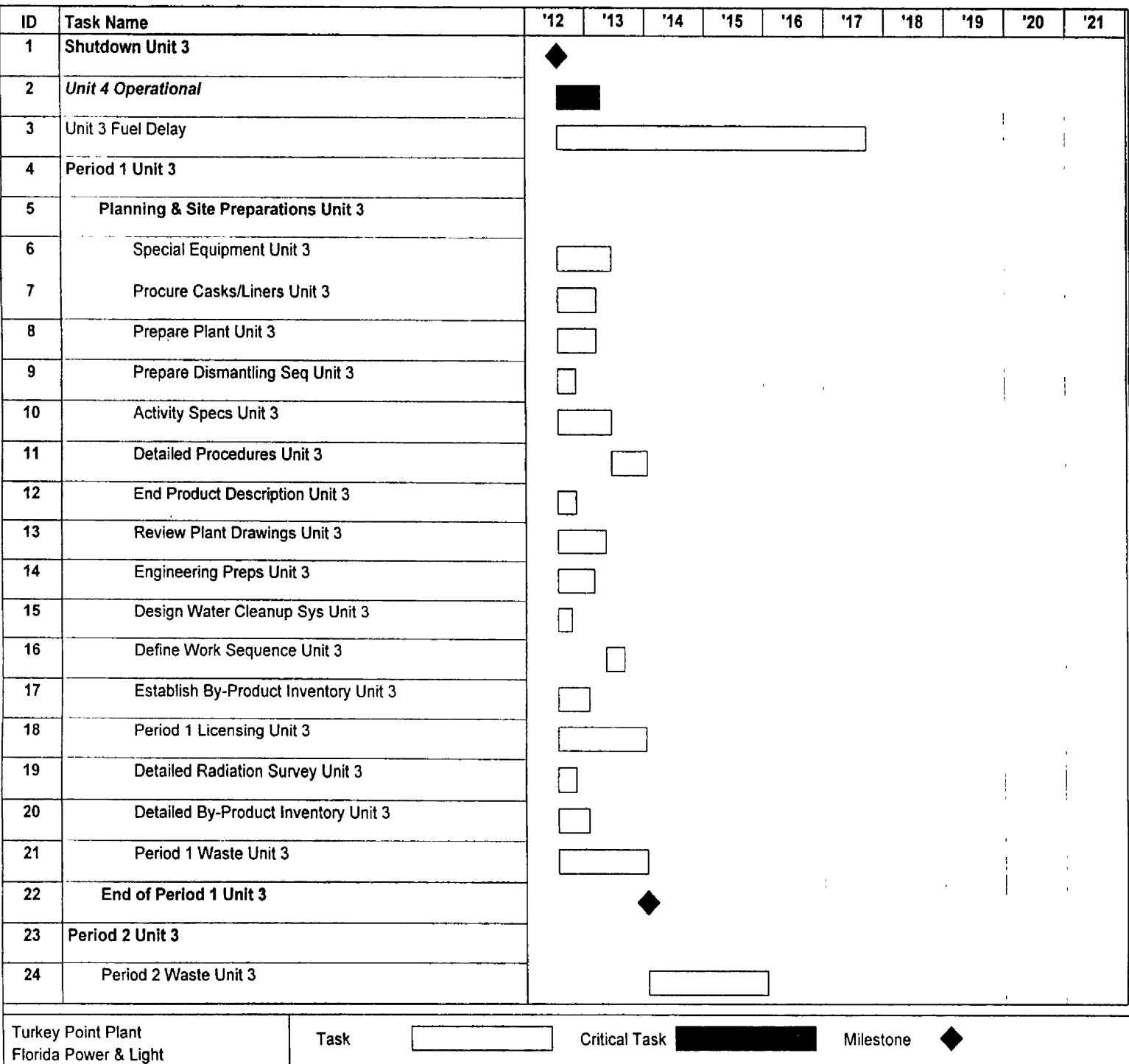


FIGURE 4.1
DECON ACTIVITY SCHEDULE
(Continued)

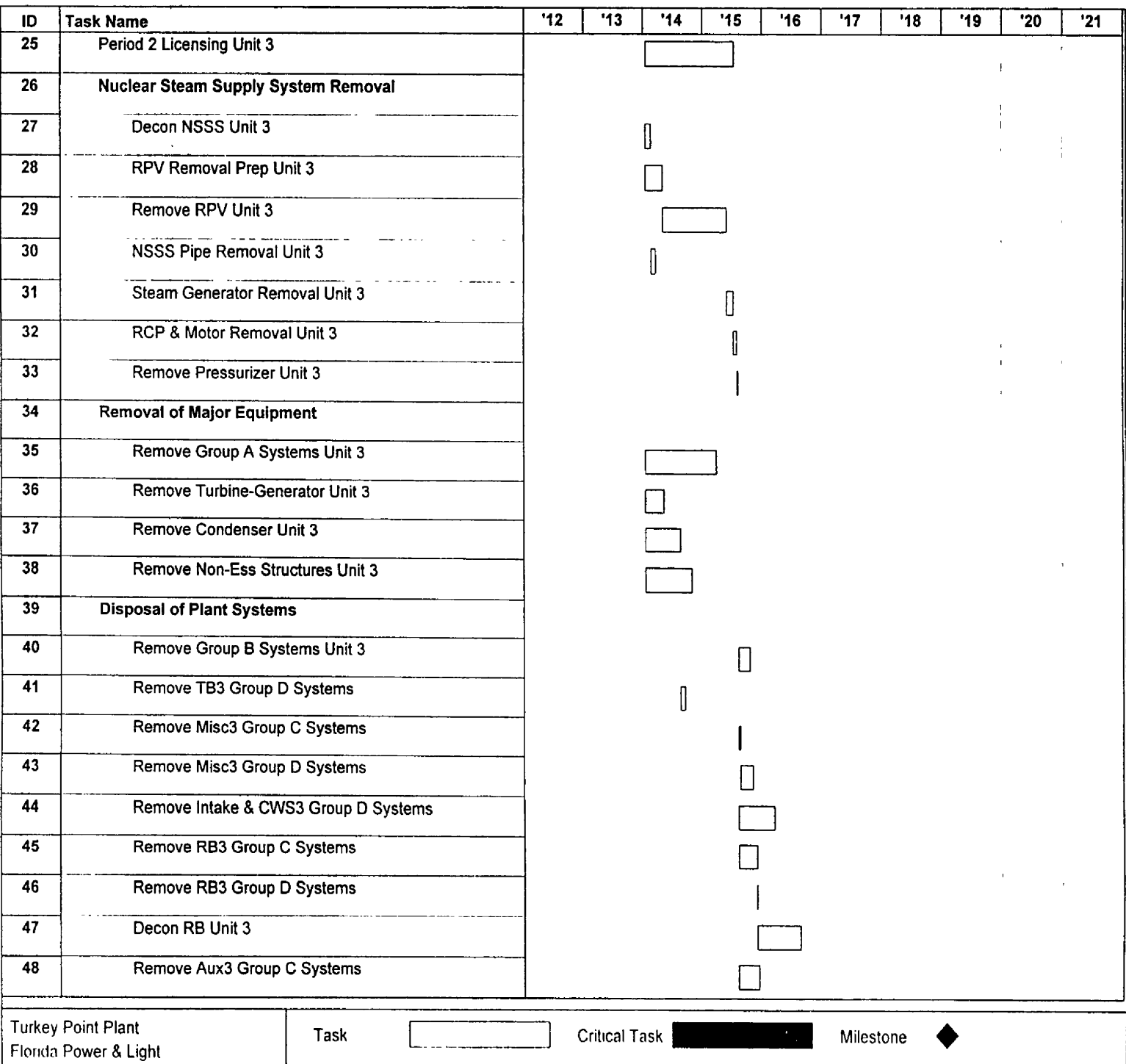


FIGURE 4.1
DECON ACTIVITY SCHEDULE
(Continued)

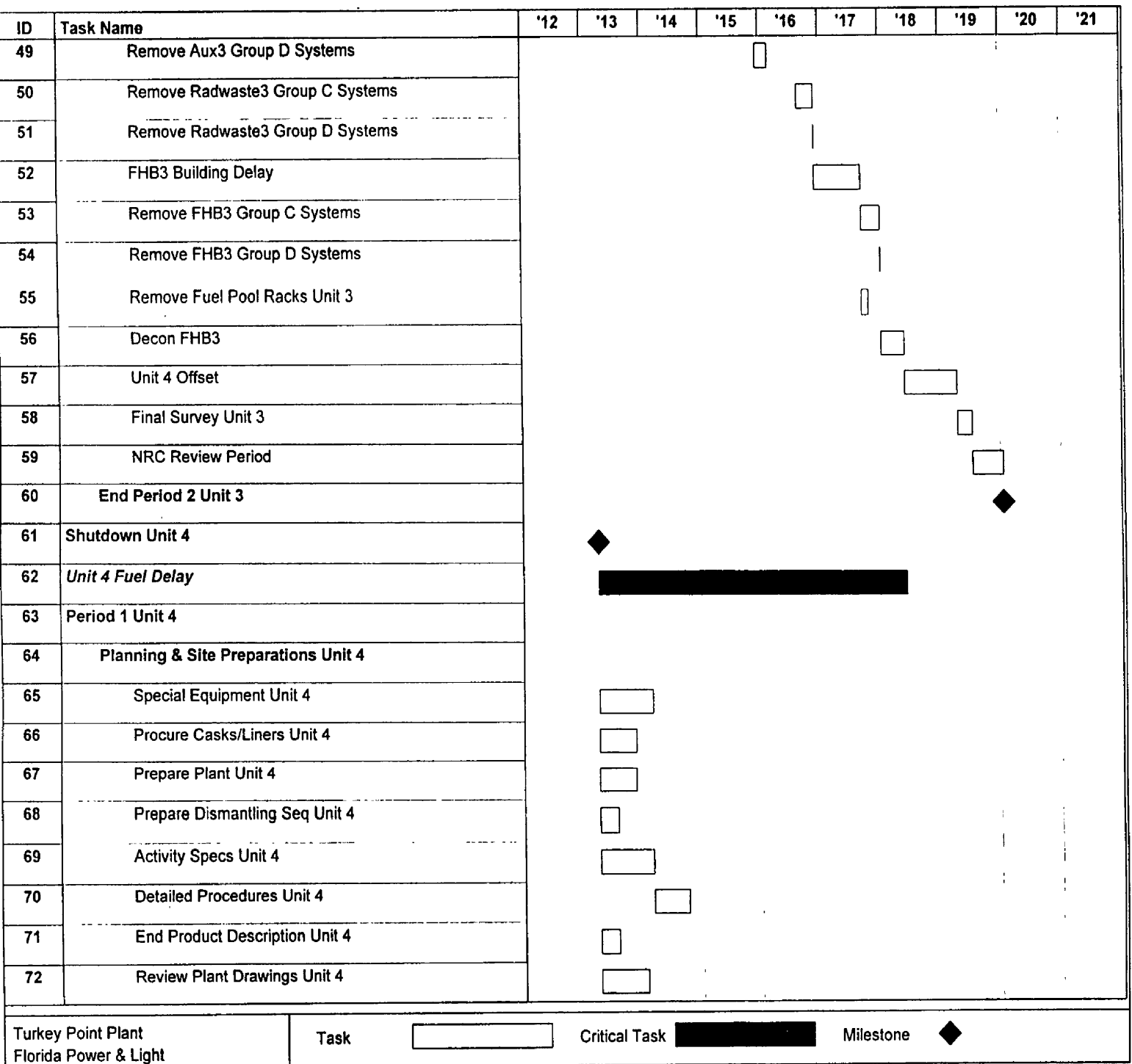


FIGURE 4.1
DECON ACTIVITY SCHEDULE
(Continued)

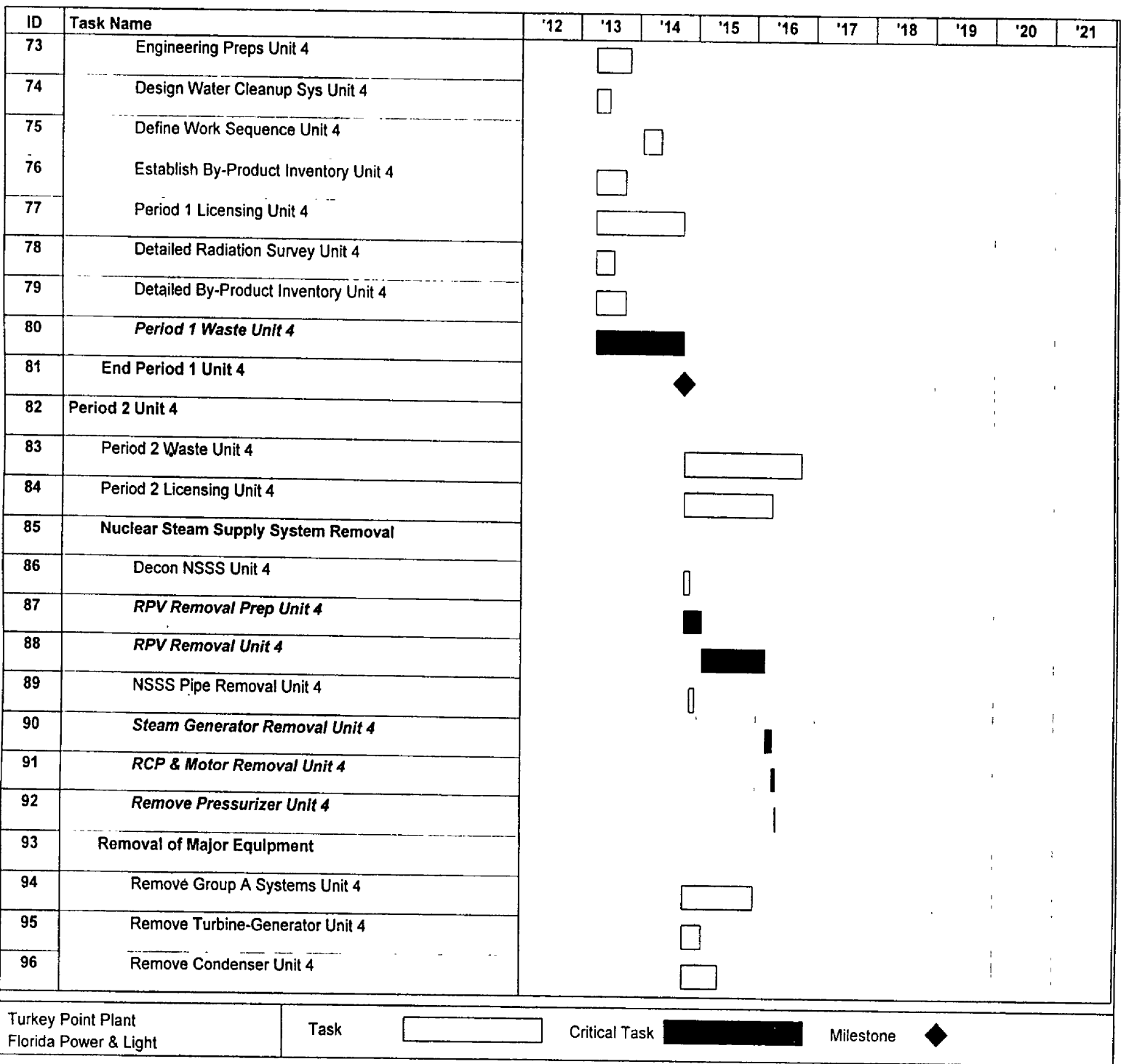


FIGURE 4.1
DECON ACTIVITY SCHEDULE
(Continued)

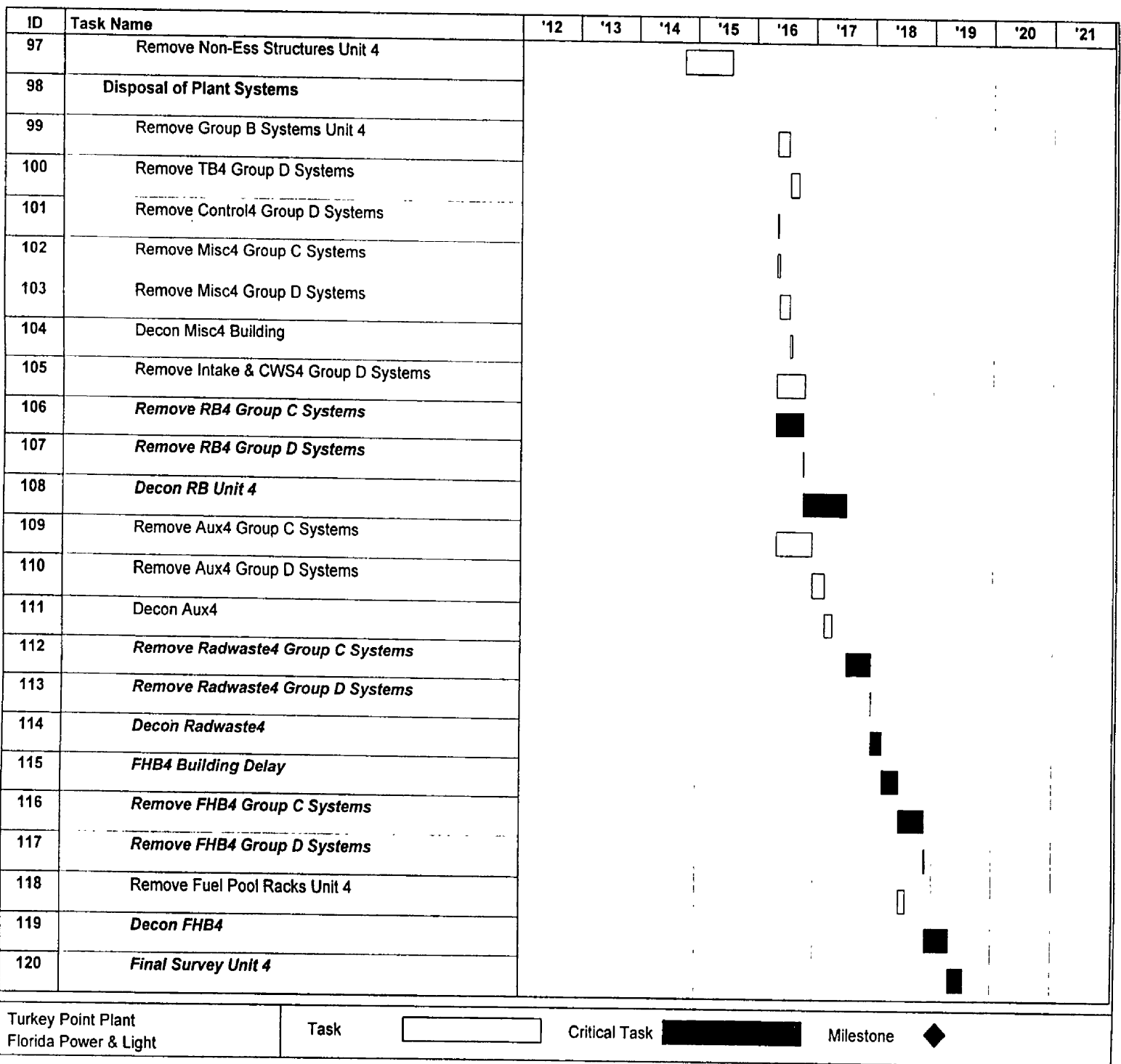


FIGURE 4.1
DECON ACTIVITY SCHEDULE
(Continued)

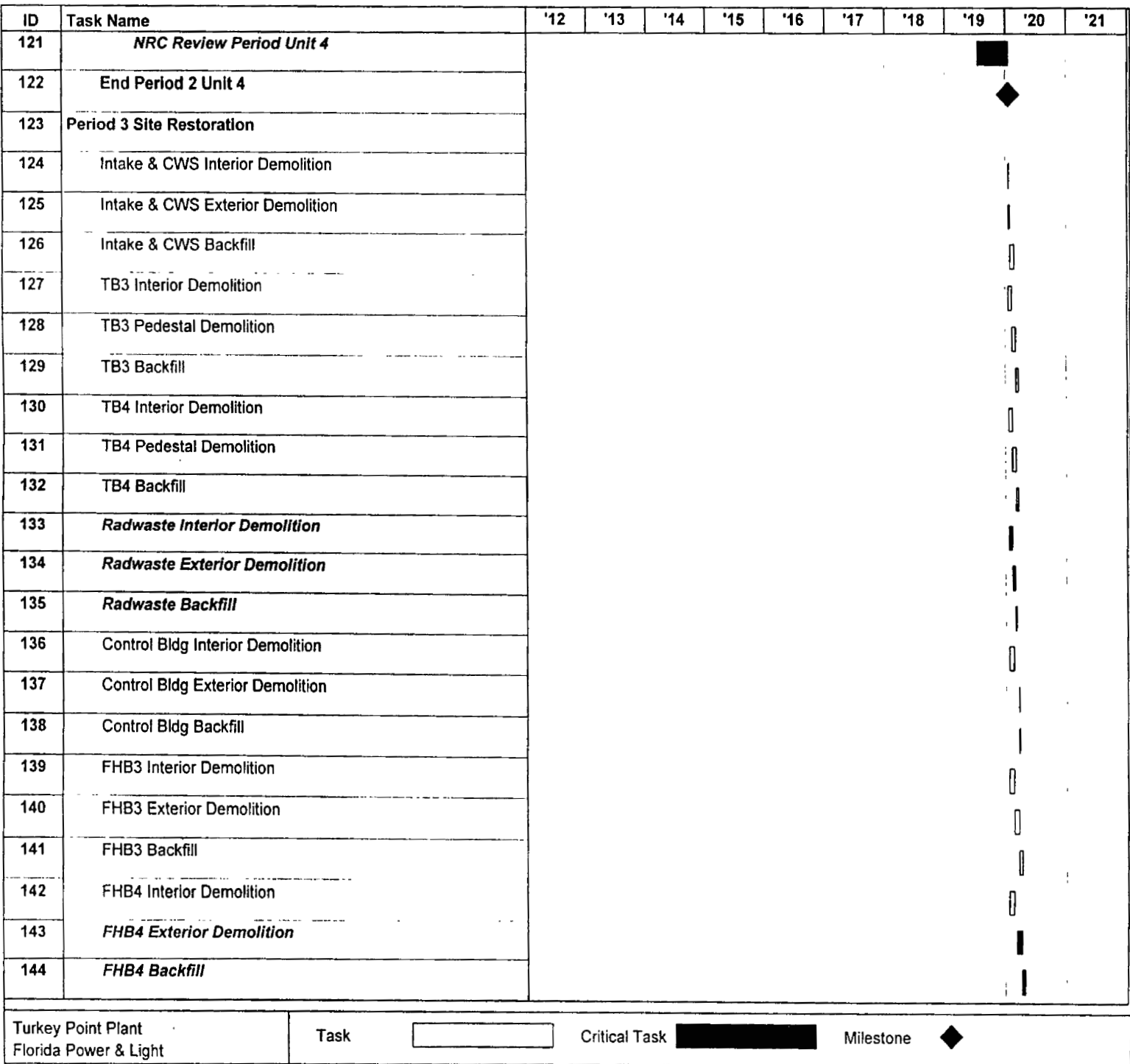


FIGURE 4.1
DECON ACTIVITY SCHEDULE
(Continued)

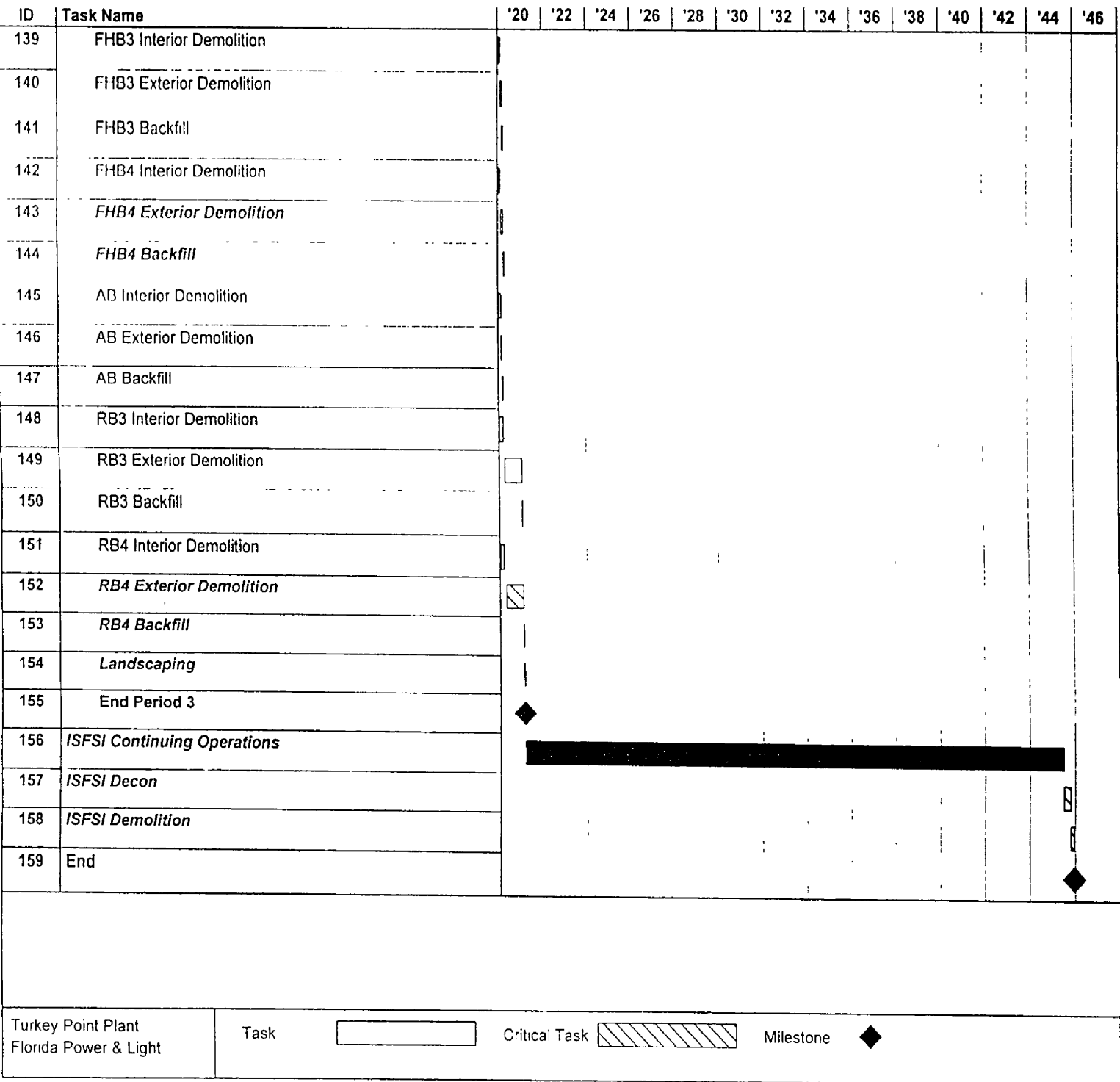
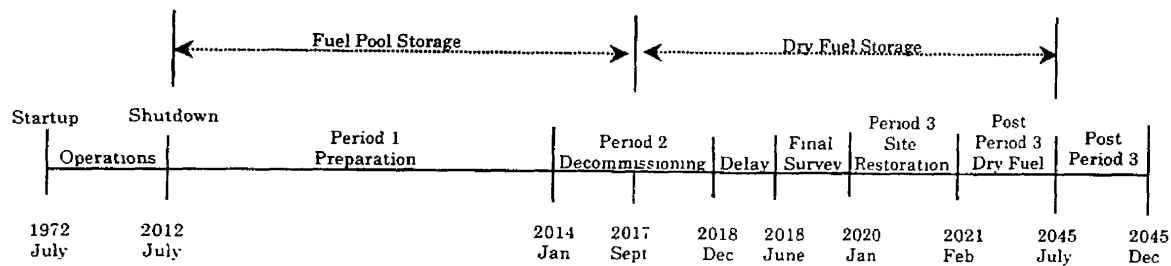


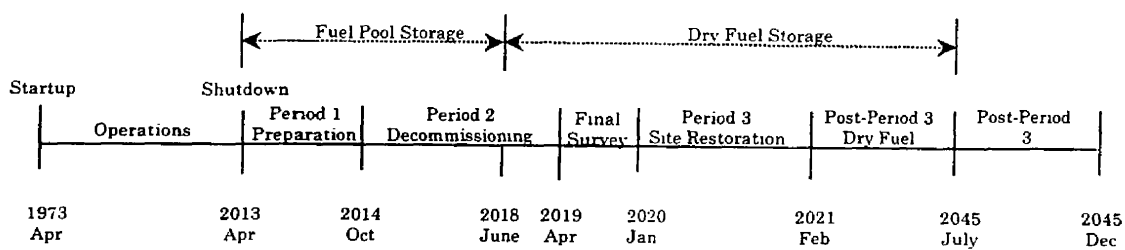
FIGURE 4.2a

DECON DECOMMISSIONING TIMELINES

TURKEY POINT UNIT 3



TURKEY POINT UNIT 4

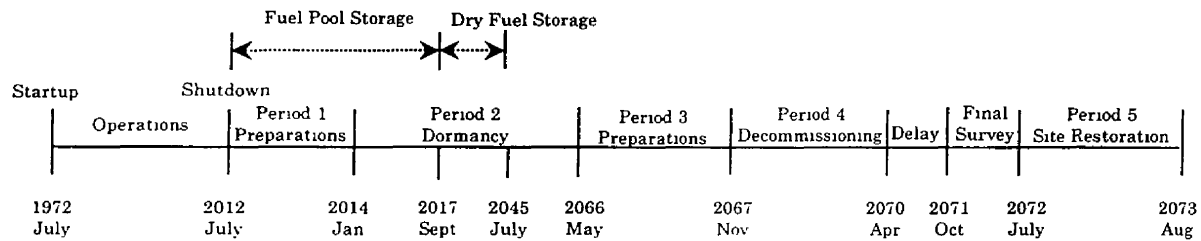


NOT TO SCALE

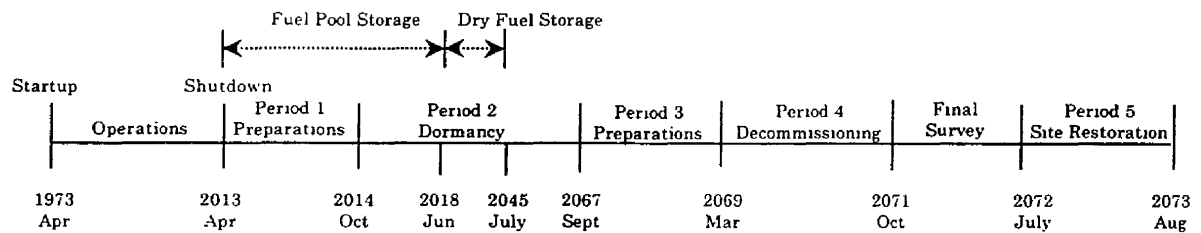
FIGURE 4.2b

SAFSTOR DECOMMISSIONING TIMELINES

TURKEY POINT UNIT 3



TURKEY POINT UNIT 4



NOT TO SCALE

5. RADIOACTIVE WASTES

The goal of the decommissioning program is the removal of all radioactive material from the site which would restrict its future use and termination of the NRC license for the site. This currently requires the remediation of all radioactive material at the site in excess of applicable legal limits. Under the Atomic Energy Act (Ref. 16), the NRC is responsible for protecting the public from sources of ionizing radiation. Title 10 of the Code of Federal Regulations delineates the production, utilization, and disposal of radioactive materials and processes. In particular, §61 controls the burial of low-level radioactive material and §71 defines radioactive material.

With increased competition from the waste recyclers and decreasing volumes (and revenues), the Barnwell facility has recently modified its past pricing policies for controlled disposal from one of volume to one based upon weight. This effectively mitigated the advantages of volume reduction, unless the mass is also reduced, e.g., through decontamination and free-release of the material. The masses and volumes of radioactive waste generated during the various decommissioning activities at the site are shown on a line-item basis in the Appendices C and D cost tables and summarized in Table 5.1. Waste volume summaries, shown in Table 5.1, are quantified consistent with §61 classifications. The volumes are calculated based on the gross container dimensions or, for components serving as their own waste container, the volume is calculated based upon the displaced volume of the component, i.e., steam generators and pressurizer.

Most of the materials being transported for controlled burial are categorized as LSA or SCO material containing Type A quantities, as defined in 49 CFR §173-178 (Ref. 17). Shipping containers are required to be Industrial Packages (IP-1 or IP-2). For this study, commercially available steel containers are presumed to be used for the disposal of piping, small components, and concrete. Larger components can serve as their own containers with proper closure of all openings, access ways, penetrations, etc.

The reactor vessel and internals are categorized as large quantity shipments and, accordingly, will be shipped in reusable shielded truck casks with disposable liners. In calculating disposal costs, the burial fees are applied against the liner volume, as well as the special handling requirements of the payload. Packaging efficiencies are lower for the highly activated materials (greater than Type A quantity waste) where high concentrations of gamma-emitting radionuclides limit the capacity of the shipping canisters. The steam generators are presumed to be shipped intact for disposal.

No process system that contains/handles radioactive substances at shutdown is presumed to meet material release criteria by decay alone, i.e., systems radioactive at shutdown will still be radioactive in a deferred decommissioning alternative due to the presence of long-lived radionuclides. While the dose rates decrease with time, radionuclides such as ^{137}Cs will still control the disposition requirements.

The waste volume generated in the decontamination and dismantling of the Turkey Point units is primarily generated during Period 2 of DECON and Period 4 of SAFSTOR. Contaminated and activated material will be characterized on site with a significant volume routed for additional processing. Components with low levels of removable surface contamination will be decontaminated on site, to the maximum extent possible. Components with low levels of internal contamination will be shipped to a waste recycling center for disassembly, decontamination, volume reduction, and/or repackaging. Heavily contaminated components and activated materials are generally routed for controlled disposal after on-site volume reduction.

Due to the lack of progress in siting the Southeast Compact regional burial facility within the host state of North Carolina, all LLW generated in the decontamination and dismantling of the Turkey Point Plant is assumed destined for disposal at the existing Chem Nuclear Systems, Inc., Barnwell LLW Management Facility (Barnwell) in South Carolina. However, much of the radioactive metallic waste shipped from Turkey Point site will eventually be released as clean scrap by a recycling vendor. Other waste processors may be used to minimize the total cost of waste disposal.

Non-compactable (metallic) radioactive waste generated from removal of the plant equipment is assumed to be sent to an off-site vendor for recycling as a means of reducing the ultimate disposal volume. Considering typical plant conditions and industry experience, the inventory of contaminated material at the Turkey Point Plant was segregated based on the likelihood of volume reduction and decontamination for radiological free release. The burial volumes reported in Tables 5.1a and b reflect the savings resulting from reprocessing and recycling. Off-site processing of non-compactable metallic waste appears as an "other" cost in the detailed decommissioning cost tables in Appendices C and D.

TABLE 5.1a

**DECOMMISSIONING RADIOACTIVE WASTE BURIAL SUMMARY
(DECON)**

	Waste Class¹	Volume² (Cubic feet)	Weight (Pounds)
Unit 3	A	68,354	
	B	9,683	
	C	1,020	
	>C	553	
Total			9,197,702
Unit 4	A	79,574	
	B	11,721	
	C	1,020	
	>C	553	
Total			10,417,732

¹ Waste is classified according to the requirements as delineated in Title 10 of the Code of Federal Regulations, Part 61.55

² Columns may not add due to rounding.

TABLE 5.1b
DECOMMISSIONING RADIOACTIVE WASTE BURIAL SUMMARY
(SAFSTOR)

	Waste Class¹	Volume² (Cubic feet)	Weight (Pounds)
Unit 3	A	73,148	
	B	4,545	
	C	1,020	
	>C	553	
Total			8,303,873
Unit 4	A	82,840	
	B	4,730	
	C	1,020	
	>C	553	
Total			9,168,712

¹ Waste is classified according to the requirements as delineated in Title 10 of the Code of Federal Regulations, Part 61.55

² Columns may not add due to rounding.

6. RESULTS

The projected costs for the DECON alternative to decommission the Turkey Point Plants, Units 3 and 4, are estimated to be \$395.4 and \$452.5 million, respectively, in 1998 dollars. The projected costs for the SAFSTOR alternatives are estimated to be \$517.9 million and \$458.6 million, respectively. The costs reflect the site-specific features of Turkey Point, the local cost of labor, a schedule for spent fuel receipt, and a projected cost for LLW disposal at the burial site. Analyses of the major activities contributing to the total cost for each of the decommissioning alternatives are provided in Tables 6.1 and 6.2. Appendix C contains a detailed list of cost by "activity description" for each decommissioning alternative (by Unit), based on the requirement that an on-site ISFSI is constructed and maintained. Appendix D contains a detailed list of costs by "activity description" for each decommissioning alternative (by Unit), assuming that an on-site ISFSI is not required.

Staffing, including management, security, and health physics combine with the removal labor cost to represent the majority of the costs to decommission a nuclear station. This is a direct result of the labor-intensive nature of the decommissioning process, as well as the management controls required to ensure a safe and successful program. LLW disposal (burial) represents the next largest cost component. These costs are indicative of the expense incurred in siting, developing, and licensing new disposal facilities. Packaging and transportation costs are most sensitive to the waste volume generated in the decontamination and dismantling process, the volume reduction achieved, transport regulations for LLW, and the final destination (i.e., distance to the disposal site). "Other" costs include off-site waste reprocessing expenses which can also be considered as "decontamination" expenditures, as well as true incidentals such as property taxes, engineering costs, insurance, and fees.

In most situations, the DECON alternative is the preferred mode of decommissioning. This alternative is favored because it eliminates the costs for caretaking and prevents the site from becoming a potential long-term safety hazard. More importantly, the individuals familiar with the operation of the nuclear facility are available to support the dismantling effort; plant systems and services are fully functional; structural integrity is intact; and the licensee has a comprehensive management organization available to oversee/conduct the orderly decontamination and termination of the NRC licenses for the site. For FP&L, the DECON alternative is a valid and cost-effective option; it is also the least expensive option prior to any time value of money calculations.

For the SAFSTOR scenario, the construction of barriers and the general decontamination of plant areas in preparation for long-term storage does not alleviate the need for continued surveillance. The structural integrity of facilities must be maintained to support eventual decontamination and dismantling activities. It is

expected that a full-time preventive and corrective maintenance staff will be needed to maintain essential site services and prevent the deterioration of the site facilities. Peripheral structures will have to be maintained or remediated where asbestos and other hazardous and toxic material could enter the environment through degradation, weathering, or insufficient maintenance of site structures.

The NRC has become increasingly concerned over the maintenance, or lack of maintenance, at shutdown facilities. As such, the decommissioning estimates for placing a facility in dormancy have become increasingly more costly. The commitment to maintain fuel storage support facilities at the site for a minimum of five years following the cessation of plant operations is stipulated by the DOE's transfer policy, irrespective of the intended decommissioning plans for the facility. This will require the continued operation of several plant systems and a cognizant operations staff. Considerable progress in the decontamination and dismantling (of systems and facilities nonessential to spent fuel storage) can be made during the initial wet storage period in a program such as DECON. By comparison, at the conclusion of the transfer activity and the placement of the facility into safe storage (SAFSTOR), the physical plant is relatively unchanged, deferring the cleanup and dismantling of the facility to a later time.

The caretaking of a dormant facility has also become more costly. The NRC's review of currently dormant facilities has resulted in a general increase in the level of maintenance required, as well as the on-site presence of the owners/operators of the sites. Currently, licensees are required to complete the decommissioning process (culminating in the termination of the NRC site licenses) within a period of 60 years. This translates into an available safe storage period of approximately 50 years during which the owner/operator would continue to maintain the property, replace roofing, and repair and upgrade surveillance and monitoring systems, lighting and communication equipment, rainwater collection, sampling and treatment equipment, etc. At the conclusion of this phase, release of the facility from the jurisdiction of the NRC will still require remediation of the property. The delay in decommissioning will not dramatically alter the cleanup requirements, i.e., the quantities of waste to be remediated will be comparable to those addressed in the DECON alternative. Although the radiation levels within the plant will have decreased substantially over the period of decay, the presence of long-lived radioisotopes will control the removal and disposal techniques used in the decontamination and dismantling of plant systems and facilities. As such, the cost savings in postponing decommissioning are relatively small and the risk that regulatory and waste disposal requirements will become more restrictive is relatively high.

Thus, for reasons provided above, the SAFSTOR cost estimate is shown to exceed that for a comparable DECON alternative (in the same year's dollars). The magnitude of

the differential is dependent on the length of the dormancy, caretaking, and other utility housekeeping costs, e.g., taxes, insurance and fees.

This study provides an estimate for decommissioning the site under current requirements based on present-day costs and available technology. Individual costs associated with decommissioning activities have increased at rates greater than general inflation. For example, there has been significant volatility in the issues and policies surrounding waste disposal, i.e., access and cost of LLRW disposal has been unpredictable and has escalated at rates historically greater than inflation (over the past ten years). The government's high-level waste program has experienced a series of delays which have impeded the prompt decommissioning of the commercial reactors retired to date. Waste disposal has become the primary driver in the escalation of decommissioning costs. It is therefore appropriate that this cost estimate be reviewed periodically.

TABLE 6.1a
SUMMARY OF DECOMMISSIONING COST CONTRIBUTORS
DECON, UNIT 3
(Thousands of 1998 Dollars) ¹

Work Category	Total Cost	Percent of Total Costs
Staffing	127,405	32.23
ISFSI Capital Expenditure	55,252	13.98
LLRW Burial	49,672	12.56
Removal	26,272	6.65
GTCC disposal	18,533	4.69
Engineering & planning costs	16,244	4.11
Heavy Equipment Rental	12,746	3.22
Security Services	12,465	3.15
Insurance	9,359	2.37
Packaging	9,260	2.34
Property Taxes	7,595	1.92
Fixed Overhead	6,257	1.58
Decontamination	6,094	1.54
Shipping	5,672	1.43
NRC ISFSI Fees	5,129	1.30
Plant Energy Budget	3,983	1.01
NRC & Emergency Planning Fees	3,848	0.97
Mixed/Hazardous Waste	3,782	0.96
License Termination Survey	3,302	0.84
ISFSI Removal	2,622	0.66
Health Physics Supplies	2,354	0.60
Decon Equipment & Supplies	1,556	0.39
Waste Conditioning / Recycling	1,108	0.28
Site Characterization	1,050	0.27
Asbestos abatement	610	0.15
Remaining Costs	3,188	0.81
Total	395,359	100.00

Note 1: Columns may not add due to rounding

TABLE 6.1b
SUMMARY OF DECOMMISSIONING COST CONTRIBUTORS
DECON, UNIT 4
(Thousands of 1998 Dollars) ¹

Work Category	Total Cost	Percent of Total Costs
Staffing	166,778	36.85
ISFSI Capital Expenditure	56,115	12.40
LLRW Burial	56,085	12.39
Removal	35,306	7.80
GTCC disposal	18,533	4.10
Security Services	14,522	3.21
Heavy Equipment Rental	11,454	2.53
Packaging	9,391	2.08
Insurance	9,256	2.05
Engineering & planning costs	9,250	2.04
Decontamination	8,795	1.94
License Termination Survey	7,647	1.69
Property Taxes	7,430	1.64
Shipping	5,888	1.30
Fixed Overhead	5,652	1.25
NRC ISFSI Fees	5,016	1.11
Plant Energy Budget	4,048	0.89
Mixed/Hazardous Waste	3,782	0.84
NRC & Emergency Planning Fees	3,604	0.80
Health Physics Supplies	3,077	0.68
ISFSI Removal	2,807	0.62
Decon Equipment & Supplies	1,725	0.38
Waste Conditioning / Recycling	1,460	0.32
Site Characterization	1,291	0.29
Asbestos abatement	610	0.13
Remaining Costs	3,019	0.67
Total	452,540	100.00

Note 1: Columns may not add due to rounding

TABLE 6.2a

SUMMARY OF DECOMMISSIONING COST CONTRIBUTORS
SAFSTOR, UNIT 3
(Thousands of 1998 Dollars) ¹

Work Category	Total Cost	Percent of Total Costs
Staffing	206,330	39.84
ISFSI Capital Expenditure	55,252	10.67
LLRW Burial	41,968	8.10
Security Services	25,523	4.93
Removal	23,821	4.60
Engineering & planning costs	20,749	4.01
GTCC disposal	18,533	3.58
Property Taxes	13,872	2.68
NRC & Emergency Planning Fees	13,461	2.60
Plant Energy Budget	12,297	2.37
Insurance	11,787	2.28
Heavy Equipment Rental	10,776	2.08
Fixed Overhead	10,769	2.08
Packaging	8,920	1.72
Health Physics Supplies	5,387	1.04
Shipping	5,270	1.02
NRC ISFSI Fees	5,129	0.99
Mixed/Hazardous Waste	3,782	0.73
Decontamination	3,343	0.65
License Termination Survey	3,302	0.64
ISFSI Removal	2,622	0.51
Decon Equipment & Supplies	1,765	0.34
Site Characterization	1,591	0.31
Waste Conditioning / Recycling	1,108	0.21
Asbestos abatement	610	0.12
Remaining Costs	9,973	1.93
Total	517,942	100.00

Note 1: Columns may not add due to rounding

TABLE 6.2b

**SUMMARY OF DECOMMISSIONING COST CONTRIBUTORS
SAFSTOR, UNIT 4
(Thousands of 1998 Dollars) ¹**

Work Category	Total Cost	Percent of Total Costs
Staffing	154,816	33.76
ISFSI Capital Expenditure	56,115	12.24
LLRW Burial	46,390	10.12
Removal	32,553	7.10
GTCC disposal	18,533	4.04
Property Taxes	13,707	2.99
NRC & Emergency Planning Fees	13,271	2.89
Insurance	11,578	2.52
Engineering & planning costs	11,176	2.44
Plant Energy Budget	10,642	2.32
Security Services	9,865	2.15
Fixed Overhead	9,704	2.12
Packaging	8,930	1.95
Heavy Equipment Rental	8,356	1.82
License Termination Survey	7,647	1.67
Health Physics Supplies	5,907	1.29
Shipping	5,294	1.15
NRC ISFSI Fees	5,016	1.09
Decontamination	4,156	0.91
Mixed/Hazardous Waste	3,782	0.82
ISFSI Removal	2,807	0.61
Decon Equipment & Supplies	2,107	0.46
Site Characterization	1,733	0.38
Waste Conditioning / Recycling	1,460	0.32
Asbestos abatement	610	0.13
Remaining Costs	12,438	2.71
Total	458,594	100.00

Note 1: Columns may not add due to rounding

7. REFERENCES

1. U.S. Code of Federal Regulations, Title 10, Parts 30, 40, 50, 51, 70 and 72, "General Requirements for Decommissioning Nuclear Facilities," Nuclear Regulatory Commission, Federal Register Volume 53, Number 123 (p 24018+), June 27, 1988.
2. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors," August, 1990.
3. U.S. Code of Federal Regulations, Title 10, Parts 2, 50 and 51, "Decommissioning of Nuclear Power Reactors," Nuclear Regulatory Commission, Federal Register Volume 61 (p39278+), July 29, 1996.
4. "Nuclear Waste Policy Act of 1982 and Amendments," U.S. Department of Energy's Office of Civilian Radioactive Management, 1982.
5. "Low-Level Radioactive Waste Policy Amendments Act of 1985," Public Law 99-240, January 15, 1986.
6. U.S. Code of Federal Regulations, Title 10, Part 20, Subpart E -"Radiological Criteria for License Termination", Federal Register, Volume 62, Number 139 (p39058t), July 21, 1997.
7. T.S. LaGuardia et al., "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May, 1986.
8. W.J. Manion and T.S. LaGuardia, "Decommissioning Handbook," U.S. Department of Energy, DOE/EV/10128-1, November, 1980.
9. "Building Construction Cost Data 1998," Robert Snow Means Company, Inc., Kingston, Massachusetts.
10. Project and Cost Engineers' Handbook, Second Edition, p. 239, American Association of Cost Engineers, Marcel Dekker, Inc., New York, New York.
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7. REFERENCES
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12. J.C. Evans et al., "Long-Lived Activation Products in Reactor Materials," NUREG/CR-3474, Pacific Northwest Laboratory for the Nuclear Regulatory Commission, August, 1984.
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14. H.D. Oak, et al., "Technology, Safety and Costs of Decommissioning a Reference Boiling Water Reactor Power Station," NUREG/CR-0672 and addenda, Pacific Northwest Laboratory for the Nuclear Regulatory Commission, June, 1980.
15. "Microsoft Project for Windows," Version 3.0, Microsoft Corporation, Redmond, WA, 1993.
16. "Atomic Energy Act" of 1954," (68 Stat. 919).
17. U.S. Department of Transportation, Section 49 of the Code of Federal Regulations, "Transportation," Parts 173 through 178, 1996.

APPENDIX A
UNIT COST FACTOR DEVELOPMENT

APPENDIX A UNIT COST FACTOR DEVELOPMENT

Example: Unit Factor for Removal of Contaminated Heat Exchanger < 3,000 lbs.

1. SCOPE

Heat exchangers weighing < 3,000 lbs. will be removed in one piece using a crane or small hoist. They will be disconnected from the inlet and outlet piping. The heat exchanger will be sent to the packing area.

2. CALCULATIONS

Act ID	Activity Description	Activity Duration	Critical Duration
a	Remove insulation	60	(b)
b	Mount pipe cutters	60	60
c	Install contamination controls	20	(b)
d	Disconnect inlet and outlet lines	60	60
e	Cap openings	20	(d)
f	Rig for removal	30	30
g	Unbolt from mounts	30	30
h	Remove contamination controls	15	15
i	Remove, wrap in plastic, send to packing area	<u>60</u>	<u>60</u>
Totals (Activity/Critical)		355	255
Duration adjustment(s):			
+ Respiratory protection adjustment (50% of critical duration)			128
+ Radiation/ALARA adjustment (40% of critical duration)			<u>102</u>
Adjusted work duration			485
+ Protective clothing adjustment (30% of adjusted duration)			<u>146</u>
Productive work duration			631
+ Work break adjustment (8.33 % of productive duration)			<u>53</u>
Total work duration min			684 min

*** Total duration = 11.400 hr ***

**APPENDIX A
(continued)**

3. LABOR REQUIRED

Crew	Number	Duration (hr)	Rate (\$/hr)	Cost
<hr/>				
Laborers	3.00	11.400	\$17.63	\$602.95
Craftsmen	2.00	11.400	\$26.71	\$608.99
Foreman	1.00	11.400	\$29.86	\$340.40
General Foreman	0.25	11.400	\$31.21	\$88.95
Fire Watch	0.05	11.400	\$17.63	\$10.05
Health Physics Technician	1.00	11.400	\$34.14	<u>\$389.20</u>
Total labor cost				\$2,040.54

4. EQUIPMENT & CONSUMABLES COSTS

Equipment Costs	none
Consumables/Materials Costs	
-Blotting paper 50 @ \$0.36 sq ft {2}	\$18.00
-Plastic sheets/bags 50 @ \$0.08/sq ft {3}	\$4.00
-Gas torch consumables 1 @ \$6.08/hr x 1 hr {1}	<u>\$6.08</u>
Subtotal cost of equipment and materials	\$28.08
Overhead & profit on equipment and materials @ 16.500%	<u>\$4.63</u>
Total costs, equipment & material	\$32.71
TOTAL COST Removal of contaminated heat exchanger <3000 pounds:	\$2,073.25
Total labor cost:	\$2,040.54
Total equipment/material costs:	\$32.71
Total adjusted exposure man-hours incurred:	46.924
Total craft labor man-hours required per unit:	83.220

**APPENDIX A
(continued)**

5. NOTES AND REFERENCES

1. Durations are shown in minutes. The integrated duration accounts for those activities that can be performed in conjunction with other activities, indicated by the alpha designator of the concurrent activity. This results in an overall decrease in the sequenced duration.
2. Work difficulty factors were developed in conjunction with the AIF program to standardize decommissioning cost studies and are delineated in the "Guidelines" study (Vol. 1, Ch. 5).
3. Adjusted for regional material costs for Miami, FL.
4. References:
 1. R.S. Means (1998) Division 016 Section 420-6360 pg 22
 2. McMaster-Carr Ed. 101
 3. R.S. Means (1998) Division 015 Section 602-0200 pg 16

APPENDIX B

**UNIT COST FACTOR LISTING
(DECON: Power Block Structures Only)**

APPENDIX B

UNIT COST FACTOR LISTING (Power Block Structures Only)

Unit Cost Factor	Cost/Unit(\$)
Removal of clean instrument and sampling tubing, \$/linear foot	0.21
Removal of clean pipe 0.25 to 2 inches diameter, \$/linear foot	2.59
Removal of clean pipe >2 to 4 inches diameter, \$/linear foot	3.15
Removal of clean pipe >4 to 8 inches diameter, \$/linear foot	6.31
Removal of clean pipe >8 to 14 inches diameter, \$/linear foot	11.98
Removal of clean pipe >14 to 20 inches diameter, \$/linear foot	15.57
Removal of clean pipe >20 to 36 inches diameter, \$/linear foot	22.91
Removal of clean pipe >36 inches diameter, \$/linear foot	27.22
Removal of clean valves >2 to 4 inches	32.71
Removal of clean valves >4 to 8 inches	63.13
Removal of clean valves >8 to 14 inches	119.76
Removal of clean valves >14 to 20 inches	155.71
Removal of clean valves >20 to 36 inches	229.09
Removal of clean valves >36 inches	272.18
Removal of clean pipe hangers for small bore piping	13.85
Removal of clean pipe hangers for large bore piping	48.33
Removal of clean pumps, <300 pound	105.26
Removal of clean pumps, 300-1000 pound	296.85
Removal of clean pumps, 1000-10,000 pound	1,173.32
Removal of clean pumps, >10,000 pound	2,261.70
Removal of clean pump motors, 300-1000 pound	125.46
Removal of clean pump motors, 1000-10,000 pound	489.62
Removal of clean pump motors, >10,000 pound	1,101.62
Removal of clean turbine-driven pumps < 10,000 pound	1,354.84
Removal of clean turbine-driven pumps > 10,000 pounds	3,026.24

**APPENDIX B
(continued)**

Unit Cost Factor	Cost/Unit(\$)
Removal of clean PWR turbine-generator	73,665.10
Removal of clean heat exchanger <3000 pound	634.73
Removal of clean heat exchanger >3000 pound	1,597.53
Removal of clean feedwater heater/deaerator	4,483.81
Removal of clean moisture separator/reheater	9,192.83
Removal of clean PWR main condenser	204,693.05
Removal of clean tanks, <300 gallons	136.93
Removal of clean tanks, 300-3000 gallon	431.83
Removal of clean tanks, >3000 gallons, \$/square foot surface area	3.67
Removal of clean electrical equipment, <300 pound	57.93
Removal of clean electrical equipment, 300-1000 pound	204.27
Removal of clean electrical equipment, 1000-10,000 pound	408.54
Removal of clean electrical equipment, >10,000 pound	985.48
Removal of clean electrical transformers < 30 tons	684.40
Removal of clean electrical transformers > 30 tons	1,970.95
Removal of clean standby diesel-generator, <100 kW	699.05
Removal of clean standby diesel-generator, 100 kW to 1 MW	1,560.33
Removal of clean standby diesel-generator, >1 MW	3,230.20
Removal of clean electrical cable tray, \$/linear foot	5.43
Removal of clean electrical conduit, \$/linear foot	2.37
Removal of clean mechanical equipment, <300 pound	57.93
Removal of clean mechanical equipment, 300-1000 pound	204.27
Removal of clean mechanical equipment, 1000-10,000 pound	408.54
Removal of clean mechanical equipment, >10,000 pound	985.48
Removal of clean HVAC equipment, <300 pound	57.93

**APPENDIX B
(continued)**

Unit Cost Factor	Cost/Unit(\$)
Removal of clean HVAC equipment, 300-1000 pound	204.27
Removal of clean HVAC equipment, 1000-10,000 pound	408.54
Removal of clean HVAC equipment, >10,000 pound	985.48
Removal of clean HVAC ductwork, \$/pound	0.43
Removal of contaminated instrument and sampling tubing, \$/linear foot	0.76
Removal of contaminated pipe 0.25 to 2 inches diameter, \$/linear foot	18.06
Removal of contaminated pipe >2 to 4 inches diameter, \$/linear foot	32.41
Removal of contaminated pipe >4 to 8 inches diameter, \$/linear foot	53.85
Removal of contaminated pipe >8 to 14 inches diameter, \$/linear foot	104.00
Removal of contaminated pipe >14 to 20 inches diameter, \$/linear foot	126.47
Removal of contaminated pipe >20 to 36 inches diameter, \$/linear foot	176.87
Removal of contaminated pipe >36 inches diameter, \$/linear foot	209.78
Removal of contaminated valves >2 to 4 inches	153.65
Removal of contaminated valves >4 to 8 inches	260.34
Removal of contaminated valves >8 to 14 inches	519.98
Removal of contaminated valves >14 to 20 inches	663.58
Removal of contaminated valves >20 to 36 inches	884.36
Removal of contaminated valves >36 inches	1,048.88
Removal of contaminated pipe hangers for small bore piping	52.33
Removal of contaminated pipe hangers for large bore piping	163.46
Removal of contaminated pumps, <300 pound	463.71
Removal of contaminated pumps, 300-1000 pound	1,070.30
Removal of contaminated pumps, 1000-10,000 pound	3,359.88
Removal of contaminated pumps, >10,000 pound	8,158.65
Removal of contaminated pump motors, 300-1000 pound	459.64

**APPENDIX B
(continued)**

Unit Cost Factor	Cost/Unit(\$)
Removal of contaminated pump motors, 1000-10,000 pound	1,367.52
Removal of contaminated pump motors, >10,000 pound	3,073.96
Removal of contaminated turbine-driven pumps < 10,000 pounds	4,136.83
Removal of contaminated turbine-driven pumps > 10,000 pounds	9,435.70
Removal of contaminated heat exchanger <3000 pound	2,073.25
Removal of contaminated heat exchanger >3000 pound	5,989.48
Removal of contaminated tanks, <300 gallons	778.68
Removal of contaminated tanks, >300 gallons, \$/square foot	15.12
Removal of contaminated electrical equipment, <300 pound	360.61
Removal of contaminated electrical equipment, 300-1000 pound	863.90
Removal of contaminated electrical equipment, 1000-10,000 pound	1,661.79
Removal of contaminated electrical equipment, >10,000 pound	3,248.23
Removal of contaminated electrical cable tray, \$/linear foot	25.84
Removal of contaminated electrical conduit, \$/linear foot	32.62
Removal of contaminated mechanical equipment, <300 pound	398.88
Removal of contaminated mechanical equipment, 300-1000 pound	953.71
Removal of contaminated mechanical equipment, 1000-10,000 pound	1,834.17
Removal of contaminated mechanical equipment, >10,000 pound	3,248.23
Removal of contaminated HVAC equipment, <300 pound	398.88
Removal of contaminated HVAC equipment, 300-1000 pound	953.71
Removal of contaminated HVAC equipment, 1000-10,000 pound	1,834.18
Removal of contaminated HVAC equipment, >10,000 pound	3,248.23
Removal of contaminated HVAC ductwork, \$/pound	1.65
Removal/plasma arc cut of contaminated thin metal components, \$/linear in.	1.85
Additional decontamination of surface by washing, \$/square foot	3.89

**APPENDIX B
(continued)**

Unit Cost Factor	Cost/Unit(\$)
Additional decontamination of surfaces by hydrolasing, \$/square foot	17.81
Decontamination rig hook-up and flush	3,400.30
Chemical flush of components/systems, \$/gallon	7.08
Removal of clean standard reinforced concrete, \$/cubic yard	85.75
Removal of grade slab concrete, \$/cubic yard	115.43
08	
Removal of clean concrete floors, \$/cubic yard	155.51
Removal of sections of clean concrete floors, \$/cubic yard	488.73
Removal of clean heavily rein concrete w/#9 rebar, \$/cubic yard	121.24
Removal of contaminated heavily rein concrete w/#9 rebar, \$/cubic yard	1,057.18
Removal of clean heavily rein concrete w/#18 rebar, \$/cubic yard	154.04
Removal of contaminated heavily rein concrete w/#18 rebar, \$/cubic yard	1,400.84
Removal heavily rein concrete w/#18 rebar & steel embedments, \$/cu yd	221.61
Removal of below-grade suspended floors, \$/square foot	155.51
Removal of clean monolithic concrete structures, \$/cubic yard	429.03
Removal of contaminated monolithic concrete structures, \$/cu yd	1,055.84
Removal of clean foundation concrete, \$/cubic yard	335.97
Removal of contaminated foundation concrete, \$/cubic yard	982.73
Explosive demolition of bulk concrete, \$/cubic yard	16.60
Removal of clean hollow masonry block wall, \$/cubic yard	41.63
Removal of contaminated hollow masonry block wall, \$/cubic yard	154.93
Removal of clean solid masonry block wall, \$/cubic yard	41.63
Removal of contaminated solid masonry block wall, \$/cubic yard	154.93
Backfill of below-grade voids, \$/cubic yard	4.37
Removal of subterranean tunnels/voids, \$/linear foot	67.92
Placement of concrete for below-grade voids, \$/cubic yard	64.19

**APPENDIX B
(continued)**

Unit Cost Factor	Cost/Unit(\$)
Excavation of clean material, \$/cubic yard	1.98
Excavation of contaminated material, \$/cubic yard	23.37
Excavation of submerged concrete rubble, \$/cubic yard	6.73
Removal of clean concrete rubble, \$/cubic yard	6.49
Removal of contaminated concrete rubble, \$/cubic yard	17.89
Removal of building by volume, \$/cubic foot	0.14
Removal of clean building metal siding, \$/square foot	0.70
Removal of contaminated building metal siding, \$/square foot	2.57
Removal of standard asphalt roofing, \$/square foot	0.97
Removal of transite panels, \$/square foot	1.13
Scarifying contaminated concrete surfaces (drill & spall)	7.68
Scabbling contaminated concrete floors, \$/square foot	1.12
Scabbling contaminated concrete walls, \$/square foot	4.32
Scabbling contaminated ceilings, \$/square foot	43.17
Scabbling structural steel, \$/square foot	3.71
Removal of clean overhead cranes/monorails < 10 ton capacity	292.11
Removal of contaminated overhead cranes/monorails < 10 ton capacity	917.76
Removal of clean overhead cranes/monorails >10-50 ton capacity	701.07
Removal of contaminated overhead cranes/monorails >10-50 ton capacity	2,201.37
Removal of polar cranes > 50 ton capacity, each	2,967.86
Removal of gantry cranes > 50 ton capacity, each	12,318.39
Removal of structural steel, \$/pound	0.17
Removal of clean steel floor grating, \$/square foot	1.54
Removal of contaminated steel floor grating, \$/square foot	5.28
Removal of clean free-standing steel liner, \$/square foot	5.50

**APPENDIX B
(continued)**

Unit Cost Factor	Cost/Unit(\$)
Removal of contaminated free-standing steel liner, \$/square foot	17.50
Removal of clean concrete-anchored steel liner, \$/square foot	2.75
Removal of contaminated concrete-anchored steel liner, \$/square foot	20.26
Placement of scaffolding in clean areas, \$/square foot	2.95
Placement of scaffolding in contaminated areas, \$/square foot	7.52
Landscaping with topsoil, \$/acre	13,224.52
Cost of CPC B-88 LSA box & preparation for use	662.88
Cost of CPC B-25 LSA box & preparation for use	709.81
Cost of CPC B-12V 12 gauge LSA box & preparation for use	542.35
Cost of CPC B-144 LSA box & preparation for use	3,065.06
Cost of LSA drum & preparation for use	65.20
Cost of cask liner for CNSI 14-195 cask	6,494.78
Cost of cask liner for CNSI 8-120A cask (resins)	6,412.59
Cost of cask liner for CNSI 8-120A cask (filters)	6,412.59
Decontamination of surfaces with vacuuming, \$/square foot	0.33

APPENDIX C

DECOMMISSIONING COSTS: DECON AND SAFSTOR ALTERNATIVES Long-Term Fuel Storage

TABLE C-1
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61
												A CF	B CF	C CF	pounds
PERIOD 1															
	1 Prepare preliminary decommissioning co	-	-	-	-		130	20	150	150	-		-	-	-
	2 Notification of Cessation of Operations								Note 1						
	3 Remove fuel & source material								Note 2						
	4 Notification of Permanent Defueling								Note 1						
	5 Deactivate plant systems & process waste								Note 1						
	6 Prepare and submit PSDAR	-	-	-	-		200	30	230	230	-		-	-	-
	7 Review plant dwgs & specs.	-	-	-	-		460	69	529	529	-		-	-	-
	8 Perform detailed rad survey								Note 1						
	9 Estimate by-product inventory	-	-	-	-		100	15	115	115	-		-	-	-
	10 End product description	-	-	-	-		100	15	115	115	-		-	-	-
	11 Detailed by-product inventory	-	-	-	-		130	20	150	150	-		-	-	-
	12 Define major work sequence	-	-	-	-		750	113	863	863	-		-	-	-
	13 Perform SER and EA	-	-	-	-		310	47	357	357	-		-	-	-
	14 Perform Site-Specific Cost Study	-	-	-	-		500	75	575	575	-		-	-	-
	15 Prepare/submit License Termination Plan	-	-	-	-		410	61	471	471	-		-	-	-
	16 Receive NRC approval of termination plan								Note 1						
Activity Specifications															
	17 1 Plant & temporary facilities	-	-	-	-		492	74	566	509	57		-	-	-
	17 2 Plant systems	-	-	-	-		417	63	479	431	48		-	-	-
	17 3 NSSS Decontamination Flush	-	-	-	-		50	8	58	58	-		-	-	-
	17 4 Reactor internals	-	-	-	-		710	107	817	817	-		-	-	-
	17 5 Reactor vessel	-	-	-	-		650	98	748	748	-		-	-	-
	17 6 Biological shield	-	-	-	-		50	8	58	58	-		-	-	-
	17 7 Steam generators	-	-	-	-		312	47	359	359	-		-	-	-
	17 8 Reinforced concrete	-	-	-	-		160	24	184	92	92		-	-	-
	17 9 Turbine & condenser	-	-	-	-		80	12	92	-	92		-	-	-
	17 10 Plant structures & buildings	-	-	-	-		312	47	359	179	179		-	-	-
	17 11 Waste management	-	-	-	-		460	69	529	529	-		-	-	-
	17 12 Facility & site closeout	-	-	-	-		90	14	104	52	52		-	-	-
	17 Total	-	-	-	-		3,783	567	4,350	3,830	520		-	-	-
Planning & Site Preparations															
	18 Prepare dismantling sequence	-	-	-	-		240	36	276	276	-		-	-	-
	19 Plant prep & temp svces	-	-	-	-		1,895	284	2,180	2,180	-		-	-	-
	20 Design water clean-up system	-	-	-	-		140	21	161	161	-		-	-	-
	21 Rigging/Cont. Cntrl Envlps/tooling/etc	-	-	-	-		1,604	241	1,845	1,845	-		-	-	-
	22 Procure casks/liners & containers	-	-	-	-		123	18	141	141	-		-	-	-
Detailed Work Procedures															
	23 1 Plant systems	-	-	-	-		473	71	544	490	54		-	-	-
	23 2 NSSS Decontamination Flush	-	-	-	-		100	15	115	115	-		-	-	-
	23 3 Reactor internals	-	-	-	-		250	38	288	288	-		-	-	-
	23 4 Remaining buildings	-	-	-	-		135	20	155	39	116		-	-	-
	23 5 CRD cooling assembly	-	-	-	-		100	15	115	115	-		-	-	-
	23 6 CRD housings & ICI tubes	-	-	-	-		100	15	115	115	-		-	-	-
	23 7 Incore instrumentation	-	-	-	-		100	15	115	115	-		-	-	-
	23 8 Reactor vessel	-	-	-	-		363	54	417	417	-		-	-	-
	23 9 Facility closeout	-	-	-	-		120	18	138	60	80		-	-	-
	23 10 Missile shields	-	-	-	-		45	7	52	52	-		-	-	-
	23 11 Biological shield	-	-	-	-		120	18	138	138	-		-	-	-
	23 12 Steam generators	-	-	-	-		460	69	529	529	-		-	-	-
	23 13 Reinforced concrete	-	-	-	-		100	15	115	58	58		-	-	-
	23 14 Turbine & condensers	-	-	-	-		312	47	359	-	359		-	-	-
	23 15 Auxiliary building	-	-	-	-		273	41	314	283	31		-	-	-
	23 16 Reactor building	-	-	-	-		273	41	314	283	31		-	-	-
	23 Total	-	-	-	-		3,324	499	3,823	3,104	719		-	-	-

TABLE C-1
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61
												A CF	B CF	C CF	pounds
24	Decon primary loop	516	-	-	-	-	-	258	774	774	-	-	-	-	-
25	Asbestos removal program	-	217	37	1	231	7	117	610	427	184	640	-	-	-
Period 1 Additional Costs															
26	Site Characterization Survey	-	-	-	-	-	683	102	785	785	-	-	-	-	-
Subtotal Period 1 Activity Costs		516	217	37	1	231	14,889	2,607	18,499	17,077	1,422	640	-	-	-
Period 1 Undistributed Costs															
1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-
2	Decon supplies	30	-	-	-	-	-	7	37	37	-	-	-	-	-
3	DOC staff relocation expenses	-	1,021	-	-	-	-	153	1,174	1,174	-	-	-	-	-
4	Process liquid waste	67	-	273	289	3,292	-	927	4,849	4,849	-	4,552	-	-	748,128
5	Insurance	-	-	-	-	-	2,060	206	2,266	2,266	-	-	-	-	-
6	Property taxes	-	-	-	-	-	310	31	340	340	-	-	-	-	-
7	Health physics supplies	-	209	-	-	-	-	52	262	262	-	-	-	-	-
8	Heavy equipment rental	-	211	-	-	-	-	32	242	242	-	-	-	-	-
9	Small tool allowance	-	3	-	-	-	-	1	4	4	-	-	-	-	-
10	Disposal of DAW generated	-	-	17	5	790	-	200	1,011	1,011	-	2,564	-	-	177,002
11	Plant energy budget	-	-	-	-	-	540	81	621	621	-	-	-	-	-
12	Fuel storage capital expenditures	-	-	-	-	-	48,045	7,207	55,252	55,252	-	-	-	-	-
13	NRC ISFSI Fees	-	-	-	-	-	212	21	233	233	-	-	-	-	-
14	NRC Fees	-	-	-	-	-	304	30	334	334	-	-	-	-	-
15	Emergency Planning Fees	-	-	-	-	-	78	8	83	83	-	-	-	-	-
16	Site Security	-	-	-	-	-	1,056	158	1,214	1,214	-	-	-	-	-
17	Fixed Overhead	-	-	-	-	-	1,087	163	1,250	1,250	-	-	-	-	-
Subtotal Undistributed Costs Period 1		587	1,445	290	295	4,081	53,689	9,351	69,738	69,738	-	2,564	4,552	-	925,130
Staff Costs															
DOC Staff Cost		-	-	-	-	-	5,326	799	6,125	6,125	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	18,819	2,823	21,642	21,642	-	-	-	-	-
TOTAL PERIOD 1 COST		1,103	1,662	327	296	4,312	92,723	15,580	116,004	114,582	1,422	3,204	4,552	-	925,130

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TABLE C-1
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft	
												A CF	B CF	C CF	pounds	
PERIOD 2																
Nuclear Steam Supply System Removal																
27 1	Reactor Coolant Piping	30	45	4	5	131	-	60	275	275	-	319	-	-	29,769	-
27 2	Pressurizer Relief Tank	13	65	3	3	87	-	45	217	217	-	300	-	-	19,699	-
27 3	Reactor Coolant Pumps & Motors	24	34	21	27	2,789	-	724	3,618	3,618	-	2,256	-	-	633,930	-
27 4	Pressurizer	18	27	4	9	943	-	253	1,253	1,253	-	1,771	-	-	214,343	-
27 5	Steam Generators	129	920	2,067	1,977	4,530	-	1,930	11,554	11,554	-	18,876	-	-	2,339,184	-
27 6	Old Steam Generator Lower Shell Units	-	-	1,650	1,578	1,896	-	878	6,000	6,000	-	7,899	-	-	1,134,000	-
27 7	CRDMs/ICIs/Service Structure Removal	73	46	41	10	185	-	100	456	456	-	2,253	-	-	64,288	-
27 8	Reactor Vessel Internals	55	1,599	3,397	427	4,789	-	4,577	14,844	14,844	-	655	539	1,020	223,866	-
27 9	Vessel & Internals GTCC Disposal	-	-	-	-	12,355	-	6,178	18,533	18,533	-	-	-	-	-	553
27 10	Reactor Vessel	110	4,037	176	263	5,835	-	6,110	16,530	16,530	-	3,930	1,703	-	786,229	-
27 Totals		451	6,774	7,364	4,299	33,540	-	20,853	73,280	73,280	-	38,258	2,242	1,020	5,445,308	553
28	Remove spent fuel racks	229	22	-	-	86	166	167	672	672	-	285	-	-	31,590	-
Removal of Major Equipment																
29	Main Turbine/Generator	-	46	-	-	-	-	7	53	-	53	-	-	-	-	-
30	Main Condensers	-	371	-	-	-	-	56	426	-	426	-	-	-	-	-
Disposal of Plant Systems																
31 1	Amerlap	-	37	-	-	-	-	6	43	-	43	-	-	-	-	-
31 2	Auxiliary Feedwater	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
31 3	Auxiliary Feedwater - Insulated	-	9	-	-	-	-	1	10	-	10	-	-	-	-	-
31 4	Auxiliary Feedwater - Insulated - RCA	15	13	-	-	-	-	10	39	39	-	-	-	-	-	-
31 5	Auxiliary Feedwater - RCA	4	3	-	-	-	-	2	9	9	-	-	-	-	-	-
31 6	Auxiliary Steam	-	0	-	-	-	-	0	0	-	0	-	-	-	-	-
31 7	Auxiliary Steam - Insulated	-	16	-	-	-	-	2	19	-	19	-	-	-	-	-
31 8	Auxiliary Steam - Insulated - RCA	1	1	-	-	-	-	1	2	2	-	-	-	-	-	-
31 9	Auxiliary Steam - RCA	0	0	-	-	-	-	0	0	0	-	-	-	-	-	-
31 10	Breathing Air - Insulated - RCA	1	1	-	-	-	-	0	1	1	-	-	-	-	-	-
31 11	Breathing Air - RCA	2	2	-	-	-	-	1	6	6	-	-	-	-	-	-
31 12	Chemical & Volume Control	38	57	-	-	280	-	103	478	478	-	748	-	-	63,666	-
31 13	Chemical & Volume Control - Insulated	192	197	-	-	245	-	207	842	842	-	456	-	-	55,760	-
31 14	Circulating Water	-	49	-	-	-	-	7	56	-	56	-	-	-	-	-
31 15	Component Cooling Water	-	78	-	-	-	-	12	90	-	90	-	-	-	-	-
31 16	Component Cooling Water - RCA	53	44	-	-	-	-	33	130	130	-	-	-	-	-	-
31 17	Condensate	-	89	-	-	-	-	13	102	-	102	-	-	-	-	-
31 18	Condensate - Insulated	-	28	-	-	-	-	4	32	-	32	-	-	-	-	-
31 19	Condensate Polishing	-	17	-	-	-	-	2	19	-	19	-	-	-	-	-
31 20	Condensate Polishing - Ins	-	43	-	-	-	-	6	50	-	50	-	-	-	-	-
31 21	Condensate Recovery	-	8	-	-	-	-	1	10	-	10	-	-	-	-	-
31 22	Condensate Recovery - Insulated	-	1	-	-	-	-	0	2	-	2	-	-	-	-	-
31 23	Condensate Recovery - Insulated - RCA	1	1	-	-	-	-	0	2	2	-	-	-	-	-	-
31 24	Condensate Recovery - RCA	3	3	-	-	-	-	2	7	7	-	-	-	-	-	-
31 25	Condensate Storage	-	36	-	-	-	-	5	42	-	42	-	-	-	-	-
31 26	Condenser	-	12	-	-	-	-	2	14	-	14	-	-	-	-	-
31 27	Containment Emergency Filter	-	3	-	-	0	2	1	6	6	-	1	-	-	105	-
31 28	Containment Normal & Emerg Cooling	-	479	-	-	88	277	183	1,027	1,027	-	170	-	-	20,009	-

TABLE C-1
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			pounds	10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF		
Disposal of Plant Systems (continued)																
31 29	Containment Normal & Emerg Cooling - I	-	4	-	-	5	-	2	12	12	-	9	-	-	1,238	-
31 30	Containment Post Accident Eval	-	0	-	-	0	0	0	1	1	-	0	-	-	35	-
31 31	Containment Purge	-	33	-	-	47	0	20	101	101	-	89	-	-	10,743	-
31 32	Containment Spray	-	56	-	-	154	-	53	263	263	-	293	-	-	34,998	-
31 33	Containment Spray - Insulated	-	49	-	-	84	-	33	166	166	-	154	-	-	19,070	-
31 34	EDG Building HVAC	-	1	-	-	-	-	0	2	-	2	-	-	-	-	-
31 35	Electrical - Clean	-	712	-	-	-	-	107	819	-	819	-	-	-	-	-
31 36	Electrical - Contaminated	-	375	-	-	16	65	108	564	564	-	32	-	-	3,664	-
31 37	Electrical - Decontaminated	68	305	-	-	-	-	80	452	452	-	-	-	-	-	-
31 38	Emergency Diesel Engine & Oil	-	35	-	-	-	-	5	40	-	40	-	-	-	-	-
31 39	Emergency Diesel Engine & Oil - Ins	-	1	-	-	-	-	0	2	-	2	-	-	-	-	-
31 40	Extraction Steam	-	5	-	-	-	-	1	6	-	6	-	-	-	-	-
31 41	Extraction Steam - Insulated	-	26	-	-	-	-	4	29	-	29	-	-	-	-	-
31 42	Feedwater	-	25	-	-	-	-	4	29	-	29	-	-	-	-	-
31 43	Feedwater - Insulated	-	72	-	-	-	-	11	83	-	83	-	-	-	-	-
31 44	Feedwater - Insulated - RCA	9	8	-	-	-	-	6	23	23	-	-	-	-	-	-
31 45	Feedwater - RCA	1	1	-	-	-	-	1	2	2	-	-	-	-	-	-
31 46	Feedwater Heater Drains & Vents	-	23	-	-	-	-	3	27	-	27	-	-	-	-	-
31 47	Feedwater Heater Drains & Vents - Ins	-	156	-	-	-	-	23	180	-	180	-	-	-	-	-
31 48	Fire Protection	-	9	-	-	-	-	1	10	-	10	-	-	-	-	-
31 49	Fire Protection - RCA	11	13	-	-	-	-	7	31	31	-	-	-	-	-	-
31 50	Fuel Handling HVAC	-	43	-	-	7	27	17	94	94	-	13	-	-	1,541	-
31 51	Generator	-	3	-	-	-	-	0	3	-	3	-	-	-	-	-
31 52	Generator - Insulated	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
31 53	Instrument Air	-	7	-	-	-	-	1	7	-	7	-	-	-	-	-
31 54	Instrument Air - Insulated	-	5	-	-	-	-	1	6	-	6	-	-	-	-	-
31 55	Instrument Air - Insulated - RCA	9	8	-	-	-	-	5	22	22	-	-	-	-	-	-
31 56	Instrument Air - RCA	6	5	-	-	-	-	4	14	14	-	-	-	-	-	-
31 57	Intake Cooling Water	-	77	-	-	-	-	12	89	-	89	-	-	-	-	-
31 58	Main Steam - Insulated	-	86	-	-	-	-	13	99	-	99	-	-	-	-	-
31 59	Main Steam - Insulated - RCA	6	5	-	-	-	-	4	15	15	-	-	-	-	-	-
31 60	Miscellaneous - RCA	1	1	-	-	-	-	1	3	3	-	-	-	-	-	-
31 61	Primary Water Makeup	-	38	-	-	-	-	6	44	-	44	-	-	-	-	-
31 62	Reactor Coolant - Insulated	44	54	-	-	69	-	53	221	221	-	132	-	-	15,773	-
31 63	Refueling Equipment	-	83	-	-	290	-	93	466	466	-	569	-	-	65,804	-
31 64	Residual Heat Removal	74	51	-	-	1,155	-	338	1,617	1,617	-	2,159	-	-	262,460	-
31 65	Residual Heat Removal - Insulated	164	223	-	-	617	-	292	1,295	1,295	-	1,176	-	-	140,165	-
31 66	Safety Injection	-	121	-	-	43	145	63	373	373	-	140	-	-	9,813	-
31 67	Safety Injection - Insulated	-	93	-	-	215	-	77	386	386	-	412	-	-	48,960	-
31 68	Safety Injection Accumulator	-	175	-	-	137	29	82	423	423	-	279	-	-	31,098	-
31 69	Sample - NSSS	-	14	-	-	7	1	5	28	28	-	12	-	-	1,602	-
31 70	Sample - NSSS - Ins	-	14	-	-	8	-	6	28	28	-	14	-	-	1,858	-
31 71	Screen Wash	-	12	-	-	-	-	2	14	-	14	-	-	-	-	-
31 72	Secondary Sample	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
31 73	Secondary Sample - RCA	1	0	-	-	-	-	0	2	2	-	-	-	-	-	-
31 74	Secondary Wet Layup	-	11	-	-	-	-	2	13	-	13	-	-	-	-	-

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TABLE C-1
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
Disposal of Plant Systems (continued)																
31 75	Secondary Wet Layup - RCA	2	2	-	-		-	2	6	6	-		-	-		-
31 76	Service Water	-	0	-	-		-	0	0	-	0		-	-		-
31 77	Service Water - RCA	1	0	-	-		-	0	1	1	-		-	-		-
31 78	Spent Fuel Pool Cooling	68	77	-	-	216	-	107	467	467	-	431	-	-	49,000	-
31 79	Spent Fuel Pool Cooling - Insulated	40	42	-	-	79	-	50	212	212	-	149	-	-	18,053	-
31 80	Steam Generator Wet Layup	-	1	-	-		-	0	1		1		-	-		-
31 81	Steam Generator Wet Layup - RCA	0	0	-	-		-	0	0	0	-		-	-		-
31 82	Turbine Building HVAC	-	10	-	-		-	1	11	-	11		-	-		-
31 83	Turbine Lube Oil	-	20	-	-		-	3	23	-	23		-	-		-
31 84	Turbine Plant Chemical Addition	-	2	-	-		-	0	2	-	2		-	-		-
31 85	Turbine Plant Cooling Water	-	43	-	-		-	6	50	-	50		-	-		-
31 86	Turbine Plant Cooling Water - Insulated	-	24	-	-		-	4	27	-	27		-	-		-
31 87	Turbine Steam	-	32	-	-		-	5	37	-	37		-	-		-
31 88	Turbine Steam - Insulated	-	14	-	-		-	2	17	-	17		-	-		-
31 89	Waste Disposal	17	24	-	-	49	-	27	117	117	-	113	-	-	11,136	-
31 90	Waste Disposal - Insulated	66	63	-	-	90	-	72	292	292	-	167	-	-	20,538	-
31 Totals		897	4,629	-	-	3,903	547	2,433	12,409	10,245	2,164	7,719	-	-	887,090	-
32	Erect scaffolding for systems removal	-	210	-	-	5	17	56	288	288	-	16	-	-	1,829	-
Decontamination of Site Buildings																
33 1	Reactor Building	522	340	44	22	2,867	120	1,090	5,013	5,013	-	5,938	-	-	672,211	-
33 2	Fuel Handling	190	191	2	1	58	105	173	720	720	-	188	-	-	20,478	-
33 Totals		712	532	46	22	2,925	233	1,263	5,733	5,733	-	6,124	-	-	692,689	-
34	ORISE confirmatory survey	-	-	-	-		1,064	319	1,383	1,383	-		-	-		-
35	Terminate license								Note 1							
Period 2 Additional Costs																
36	Mixed/Hazardous Waste	-	-	-	-		3,289	493	3,782	3,782	-		-	-		-
37	Seaweed Remediation & Disposal	-	-	-	-		2,250	338	2,588	2,588	-		-	-		-
38	License Termination Survey	-	-	-	-		1,669	250	1,919	1,919	-		-	-		-
Subtotal Period 2 Activity Costs		2,289	12,582	7,410	4,321	40,461	9,235	26,235	102,533	99,890	2,643	52,402	2,242	1,020	7,058,506	553

TABLE C-1
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID																	
Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft		
												A CF	B CF	C CF	pounds		
Period 2 Undistributed Costs																	
1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-	-	
2	Decon supplies	312	-	-	-	-	-	78	390	390	-	-	-	-	-	-	
3	DOC staff relocation expenses	-	1,021	-	-	-	-	153	1,174	1,174	-	-	-	-	-	-	
4	Process liquid waste	217	-	165	235	1,867	-	627	3,111	3,111	-	2,889	-	-	424,336	-	
5	Insurance	-	-	-	-	-	1,434	143	1,578	1,578	-	-	-	-	-	-	
6	Property taxes	-	-	-	-	-	1,240	124	1,364	1,227	136	-	-	-	-	-	
7	Health physics supplies	-	1,674	-	-	-	-	419	2,093	2,093	-	-	-	-	-	-	
8	Heavy equipment rental	-	9,309	-	-	-	-	1,396	10,706	9,635	1,071	-	-	-	-	-	
9	Small tool allowance	-	140	-	-	-	-	21	161	145	16	-	-	-	-	-	
10	Pipe cutting equipment	-	749	-	-	-	-	112	862	862	-	-	-	-	-	-	
11	Decon ng	974	-	-	-	-	-	146	1,120	1,120	-	-	-	-	-	-	
12	Disposal of DAW generated	-	-	66	22	3,476	-	879	4,443	4,443	-	11,288	-	-	759,731	-	
13	Decommissioning Equipment Disposition	-	-	-	-	83	278	63	424	424	-	270	-	-	30,000	-	
14	Plant energy budget	-	-	-	-	-	2,865	430	3,295	2,965	329	-	-	-	-	-	
15	NRC ISFSI Fees	-	-	-	-	-	850	85	935	935	-	-	-	-	-	-	
16	NRC Fees	-	-	-	-	-	1,530	153	1,683	1,683	-	-	-	-	-	-	
17	Emergency Planning Fees	-	-	-	-	-	303	30	334	334	-	-	-	-	-	-	
18	Site Security	-	-	-	-	-	4,315	647	4,962	4,962	-	-	-	-	-	-	
19	Fixed Overhead	-	-	-	-	-	4,353	853	5,006	5,006	-	-	-	-	-	-	
20	Radwaste Processing Skids	-	-	-	-	-	535	80	615	615	-	-	-	-	-	-	
Subtotal Undistributed Costs Period 2		1,994	12,894	232	256	5,426	17,704	6,314	44,820	43,267	1,552	11,556	2,889	-	1,214,067	-	
Staff Costs																	
DOC Staff Cost		-	-	-	-	-	24,630	3,694	28,324	28,324	-	-	-	-	-	-	
Utility Staff Cost		-	-	-	-	-	53,881	8,082	61,963	61,963	-	-	-	-	-	-	
TOTAL PERIOD 2		4,282	25,476	7,641	4,577	45,887	105,450	44,326	237,640	233,445	4,195	63,958	5,131	1,020	8,272,572	553	

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TABLE C-1
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61	
Number												A CF	B CF	C CF	pounds	GTCC Cu Ft
PERIOD 3																
Demolition of Remaining Site Buildings																
39 1	Reactor Building	-	2,595	-	-	-	-	404	3,101	465	2,636	-	-	-	-	-
39 2	Fuel Handling	-	340	-	-	-	-	51	391	39	352	-	-	-	-	-
39 3	Miscellaneous Structures	-	115	-	-	-	-	17	132	-	132	-	-	-	-	-
39 4	Sealwell	-	182	-	-	-	-	27	209	-	209	-	-	-	-	-
39 5	Turbine Building	-	314	-	-	-	-	47	361	-	361	-	-	-	-	-
39 6	Turbine Pedestal	-	258	-	-	-	-	38	294	-	294	-	-	-	-	-
39	Totals	-	3,902	-	-	-	-	585	4,488	504	3,983	-	-	-	-	-
Site Closeout Activities																
40	Grade & landscape site	-	94	-	-	-	-	14	108	-	108	-	-	-	-	-
41	Final report to NRC	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-
Period 3 Additional Costs																
42	ISFSI License Termination	-	823	11	5	220	840	389	2,288	2,288	-	1,192	-	-	-	-
43	ISFSI Demolition and Site Restoration	-	205	-	-	-	85	44	334	334	-	-	-	-	-	-
Subtotal Period 3 Activity Costs		-	5,025	11	5	220	1,082	1,055	7,397	3,306	4,091	1,192	-	-	-	-
Period 3 Undistributed Costs																
1	Insurance	-	-	-	-	-	5,014	501	5,516	5,516	-	-	-	-	-	-
2	Property taxes	-	-	-	-	-	5,355	536	5,891	-	5,891	-	-	-	-	-
3	Heavy equipment rental	-	1,563	-	-	-	-	235	1,798	-	1,798	-	-	-	-	-
4	Small tool allowance	-	28	-	-	-	-	4	33	-	33	-	-	-	-	-
5	Plant energy budget	-	-	-	-	-	59	9	68	-	68	-	-	-	-	-
6	NRC ISFSI Fees	-	-	-	-	-	3,601	360	3,961	3,961	-	-	-	-	-	-
7	Emergency Planning Fees	-	-	-	-	-	1,285	128	1,413	1,413	-	-	-	-	-	-
8	Site Security	-	-	-	-	-	5,469	820	6,289	-	6,289	-	-	-	-	-
Subtotal Undistributed Costs Period 3		-	1,592	-	-	-	20,782	2,593	24,967	10,890	14,078	-	-	-	-	-
Staff Costs																
DOC Staff Cost		-	-	-	-	-	2,185	328	2,513	-	2,513	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	5,946	892	6,838	6,154	684	-	-	-	-	-
TOTAL PERIOD 3		-	6,616	11	5	220	29,995	4,868	41,715	20,350	21,366	1,192	-	-	-	-
TOTAL COST TO DECOMMISSION		5,386	33,755	7,979	4,878	50,419	228,168	64,774	395,359	368,377	26,983	68,354	9,683	1,020	9,197,702	553

Total cost to decommission with	19.59% contingency	\$	395,359,236
Total NRC license termination cost is	93.18%	or	\$ 368,376,504
Non-nuclear demolition cost is	6.82%	or	\$ 26,982,736
Total site radwaste volume buried			79,610 cubic feet
Total site radwaste weight buried			9,197,702 pounds
Total 10CFR61 greater than class C waste buried			553 cubic feet
Total scrap metal released from site			12,064 tons
Total craft labor requirements			519,516 person hours

NOTES:

- 1) This activity is performed by the decommissioning staff following plant shutdown, the costs for this are included in this period's staff cost
- 2) This activity, while performed after final plant shutdown, is considered part of operations and therefore no decommissioning costs are included for this activity

TABLE C-2
TURKEY POINT PLANT - UNIT 1
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft
Number												A CF	B CF	C CF	pounds
PERIOD 1															
1	Prepare preliminary decommissioning c	-	-	-	-		56	8	64	64	-	-	-	-	-
2	Notification of Cessation of Operations								Note 1						
3	Remove fuel & source material								Note 2						
4	Notification of Permanent Defueling								Note 1						
5	Deactivate plant systems & process waste								Note 1						
6	Prepare and submit PSDAR	-	-	-	-		86	13	98	98	-	-	-	-	-
7	Review plant dwgs & specs	-	-	-	-		197	30	226	226	-	-	-	-	-
8	Perform detailed rad survey								Note 1						
9	Estimate by-product inventory	-	-	-	-		43	6	49	49	-	-	-	-	-
10	End product description	-	-	-	-		43	6	49	49	-	-	-	-	-
11	Detailed by-product inventory	-	-	-	-		56	8	64	64	-	-	-	-	-
12	Define major work sequence	-	-	-	-		321	48	369	369	-	-	-	-	-
13	Perform SER and EA	-	-	-	-		133	20	152	152	-	-	-	-	-
14	Perform Site-Specific Cost Study	-	-	-	-		214	32	246	246	-	-	-	-	-
15	Prepare/submit License Termination Pl	-	-	-	-		175	26	201	201	-	-	-	-	-
16	Receive NRC approval of termination plan								Note 1						
Activity Specifications															
17 1	Plant & temporary facilities	-	-	-	-		210	32	242	218	24	-	-	-	-
17 2	Plant systems	-	-	-	-		178	27	205	184	20	-	-	-	-
17 3	NSSS Decontamination Flush	-	-	-	-		21	3	25	25	-	-	-	-	-
17 4	Reactor internals	-	-	-	-		304	46	349	349	-	-	-	-	-
17 5	Reactor vessel	-	-	-	-		278	42	320	320	-	-	-	-	-
17 6	Biological shield	-	-	-	-		21	3	25	25	-	-	-	-	-
17 7	Steam generators	-	-	-	-		133	20	153	153	-	-	-	-	-
17 8	Reinforced concrete	-	-	-	-		68	10	79	39	39	-	-	-	-
17 9	Turbine & condenser	-	-	-	-		34	5	39	-	39	-	-	-	-
17 10	Plant structures & buildings	-	-	-	-		133	20	153	77	77	-	-	-	-
17 11	Waste management	-	-	-	-		197	30	226	226	-	-	-	-	-
17 12	Facility & site closeout	-	-	-	-		38	6	44	22	22	-	-	-	-
17	Total	-	-	-	-		1,617	243	1,860	1,638	222	-	-	-	-
Planning & Site Preparations															
18	Prepare dismantling sequence	-	-	-	-		103	15	118	118	-	-	-	-	-
19	Plant prep & temp svces	-	-	-	-		1,895	284	2,180	2,180	-	-	-	-	-
20	Design water clean-up system	-	-	-	-		60	9	69	69	-	-	-	-	-
21	Rigging/Cont. Cntrl Envtps/tooling/etc	-	-	-	-		1,604	241	1,845	1,845	-	-	-	-	-
22	Procure casks/liners & containers	-	-	-	-		53	8	60	60	-	-	-	-	-
Detailed Work Procedures															
23 1	Plant systems	-	-	-	-		202	30	233	209	23	-	-	-	-
23 2	NSSS Decontamination Flush	-	-	-	-		43	6	49	49	-	-	-	-	-
23 3	Reactor internals	-	-	-	-		107	16	123	123	-	-	-	-	-
23 4	Remaining buildings	-	-	-	-		58	9	66	17	50	-	-	-	-
23 5	CRD cooling assembly	-	-	-	-		43	6	49	49	-	-	-	-	-
23 6	CRD housings & ICI tubes	-	-	-	-		43	6	49	49	-	-	-	-	-
23 7	Incore instrumentation	-	-	-	-		43	6	49	49	-	-	-	-	-
23 8	Reactor vessel	-	-	-	-		155	23	179	179	-	-	-	-	-
23 9	Facility closeout	-	-	-	-		51	8	59	30	30	-	-	-	-
23 10	Missile shields	-	-	-	-		19	3	22	22	-	-	-	-	-
23 11	Biological shield	-	-	-	-		51	8	59	59	-	-	-	-	-
23 12	Steam generators	-	-	-	-		197	30	226	226	-	-	-	-	-
23 13	Reinforced concrete	-	-	-	-		43	6	49	25	25	-	-	-	-
23 14	Turbine & condensers	-	-	-	-		133	20	153	-	153	-	-	-	-
23 15	Auxiliary building	-	-	-	-		117	18	134	121	13	-	-	-	-
23 16	Reactor building	-	-	-	-		117	18	134	121	13	-	-	-	-
23	Total	-	-	-	-		1,421	213	1,635	1,327	307	-	-	-	-

TABLE C-2
TURKEY POINT PLANT - UNIT 1
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61
												A CF	B CF	C CF	
24	Decon primary loop	516	-	-	-	-	-	258	774	774	-	-	-	-	-
25	Asbestos removal program	-	217	37	1	231	7	117	610	427	184	640	-	-	-
Period 1 Additional Costs															
26	Site Characterization Survey	-	-	-	-	-	1,024	154	1,178	1,178	-	-	-	-	-
Subtotal Period 1 Activity Costs		516	217	37	1	231	9,106	1,740	11,849	11,136	713	640	-	-	-
Period 1 Undistributed Costs															
1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-
2	Decon supplies	30	-	-	-	-	-	7	37	37	-	-	-	-	-
3	DOC staff relocation expenses	-	1,021	-	-	-	-	153	1,174	1,174	-	-	-	-	-
4	Process liquid waste	67	-	273	289	3,292	-	927	4,849	4,849	-	-	4,552	-	748,128
5	Insurance	-	-	-	-	-	2,060	206	2,266	2,266	-	-	-	-	-
6	Property taxes	-	-	-	-	-	310	31	340	340	-	-	-	-	-
7	Health physics supplies	-	209	-	-	-	-	52	262	262	-	-	-	-	-
8	Heavy equipment rental	-	211	-	-	-	-	32	242	242	-	-	-	-	-
9	Small tool allowance	-	3	-	-	-	-	1	4	4	-	-	-	-	-
10	Disposal of DAW generated	-	-	17	5	790	-	200	1,011	1,011	-	2,564	-	-	177,002
11	Plant energy budget	-	-	-	-	-	635	95	730	730	-	-	-	-	-
12	Fuel storage capital expenditures	-	-	-	-	-	48,795	7,319	56,115	56,115	-	-	-	-	-
13	NRC ISFSI Fees	-	-	-	-	-	212	21	233	233	-	-	-	-	-
14	NRC Fees	-	-	-	-	-	304	30	334	334	-	-	-	-	-
15	Emergency Planning Fees	-	-	-	-	-	76	8	83	83	-	-	-	-	-
16	Site Security	-	-	-	-	-	752	113	865	865	-	-	-	-	-
17	Fixed Overhead	-	-	-	-	-	1,087	163	1,250	1,250	-	-	-	-	-
Subtotal Undistributed Costs Period 1		587	1,445	290	295	4,081	54,230	9,432	70,360	70,360	-	2,564	4,552	-	925,130
Staff Costs															
DOC Staff Cost		-	-	-	-	-	5,326	799	6,125	6,125	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	18,819	2,823	21,642	21,642	-	-	-	-	-
TOTAL PERIOD 1 COST		1,103	1,662	327	296	4,312	87,482	14,794	109,976	109,263	713	3,204	4,552	-	925,130

TABLE C-2
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			pounds	10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF		
PERIOD 2																
Nuclear Steam Supply System Removal																
27 1	Reactor Coolant Piping	30	45	4	5	131	-	60	275	275	-	319	-	-	29,769	-
27 2	Pressurizer Relief Tank	13	65	3	3	87	-	45	217	217	-	300	-	-	19,699	-
27 3	Reactor Coolant Pumps & Motors	24	34	21	27	2,789	-	724	3,618	3,618	-	2,253	-	-	633,930	-
27 4	Pressurizer	18	27	4	9	943	-	253	1,253	1,253	-	1,771	-	-	214,343	-
27 5	Steam Generators	129	920	2,067	1,977	4,530	-	1,930	11,554	11,554	-	18,876	-	-	2,339,184	-
27 6	Old Steam Generator Lower Shell Units	-	-	1,650	1,578	1,896	-	876	6,000	6,000	-	7,899	-	-	1,134,000	-
27 7	CRDMs/ICIs/Service Structure Remov	73	46	41	10	185	-	100	456	456	-	2,253	-	-	64,288	-
27 8	Reactor Vessel Internals	55	1,599	3,397	427	4,789	-	4,577	14,844	14,844	-	655	539	1,020	223,866	-
27 9	Vessel & Internals GTCC Disposal	-	-	-	-	12,355	-	6,178	18,533	18,533	-	-	-	-	-	553
27 10	Reactor Vessel	110	4,037	176	263	5,835	-	6,110	16,530	16,530	-	3,930	1,703	-	786,229	-
27 Totals		451	6,774	7,364	4,299	33,540	-	20,853	73,280	73,280	-	38,255	2,242	1,020	5,445,308	553
28	Remove spent fuel racks	229	22	-	-	88	166	167	672	672	-	285	-	-	31,590	-
Removal of Major Equipment																
29	Main Turbine/Generator	-	46	-	-	-	-	7	53	-	53	-	-	-	-	-
30	Main Condensers	-	371	-	-	-	-	56	426	-	426	-	-	-	-	-
Disposal of Plant Systems																
31 1	Amerlap	-	40	-	-	-	-	6	46	-	46	-	-	-	-	-
31 2	Auxiliary Bldg HVAC	-	197	-	-	42	129	79	447	447	-	83	-	-	9,533	-
31 3	Auxiliary Feedwater	-	8	-	-	-	-	1	9	-	9	-	-	-	-	-
31 4	Auxiliary Feedwater - Insulated	-	14	-	-	-	-	2	16	-	16	-	-	-	-	-
31 5	Auxiliary Feedwater - Insulated - RCA	24	20	-	-	-	-	15	59	59	-	-	-	-	-	-
31 6	Auxiliary Feedwater - RCA	5	5	-	-	-	-	3	14	14	-	-	-	-	-	-
31 7	Auxiliary Steam	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
31 8	Auxiliary Steam - Insulated	-	23	-	-	-	-	3	26	-	26	-	-	-	-	-
31 9	Auxiliary Steam - Insulated - RCA	1	1	-	-	-	-	1	3	3	-	-	-	-	-	-
31 10	Auxiliary Steam - RCA	0	0	-	-	-	-	0	0	0	-	-	-	-	-	-
31 11	Breathing Air - Insulated - RCA	1	1	-	-	-	-	0	2	2	-	-	-	-	-	-
31 12	Breathing Air - RCA	11	9	-	-	-	-	7	27	27	-	-	-	-	-	-
31 13	Chemical & Volume Control	282	271	-	-	1,660	-	624	2,836	2,836	-	5,495	-	-	377,166	-
31 14	Chemical & Volume Control - Insulated	308	346	-	-	427	-	347	1,428	1,428	-	803	-	-	96,999	-
31 15	Circulating Water	-	59	-	-	-	-	9	68	-	68	-	-	-	-	-
31 16	Component Cooling Water	-	105	-	-	-	-	16	121	-	121	-	-	-	-	-
31 17	Component Cooling Water - RCA	75	62	-	-	-	-	47	185	185	-	-	-	-	-	-
31 18	Condensate	-	105	-	-	-	-	16	120	-	120	-	-	-	-	-
31 19	Condensate - Insulated	-	41	-	-	-	-	6	47	-	47	-	-	-	-	-
31 20	Condensate Polishing	-	18	-	-	-	-	3	20	-	20	-	-	-	-	-
31 21	Condensate Polishing - Ins	-	53	-	-	-	-	8	61	-	61	-	-	-	-	-
31 22	Condensate Recovery	-	12	-	-	-	-	2	14	-	14	-	-	-	-	-
31 23	Condensate Recovery - Insulated	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
31 24	Condensate Recovery - Insulated - RC	1	1	-	-	-	-	1	3	3	-	-	-	-	-	-
31 25	Condensate Recovery - RCA	4	4	-	-	-	-	3	11	11	-	-	-	-	-	-
31 26	Condensate Storage	-	38	-	-	-	-	6	44	-	44	-	-	-	-	-
31 27	Condenser	-	14	-	-	-	-	2	16	-	16	-	-	-	-	-
31 28	Containment Emergency Filter	-	3	-	-	0	2	1	6	6	-	1	-	-	105	-

TABLE C-2
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
Disposal of Plant Systems (continued)																
31 29	Containment Normal & Emerg Cooling	-	484	-	-	93	273	185	1,036	1,036	-	179	-	-	21,249	-
31 30	Containment Normal & Emerg Cooling -	-	6	-	-	7	-	3	16	16	-	12	-	-	1,653	-
31 31	Containment Post Accident Eval	-	9	-	-	4	0	3	16	16	-	7	-	-	826	-
31 32	Containment Post Accident Eval - Ins	-	19	-	-	23	-	11	53	53	-	42	-	-	5,328	-
31 33	Containment Purge	-	33	-	-	47	0	20	101	101	-	89	-	-	10,743	-
31 34	Containment Spray	-	60	-	-	161	-	55	276	276	-	307	-	-	36,569	-
31 35	Containment Spray - Insulated	-	53	-	-	91	-	35	179	179	-	167	-	-	20,642	-
31 36	Control Building HVAC	-	16	-	-	-	-	2	19	-	19	-	-	-	-	-
31 37	EDG Building HVAC	-	2	-	-	-	-	0	3	-	3	-	-	-	-	-
31 38	Electrical - Clean	-	1,085	-	-	-	-	163	1,248	-	1,248	-	-	-	-	-
31 39	Electrical - Contaminated	-	608	-	-	23	94	172	897	897	-	46	-	-	5,279	-
31 40	Electrical - Decontaminated	88	466	-	-	-	-	114	668	668	-	-	-	-	-	-
31 41	Emergency Diesel Engine & Oil	-	39	-	-	-	-	6	44	-	44	-	-	-	-	-
31 42	Emergency Diesel Engine & Oil - Ins	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
31 43	Extraction Steam	-	7	-	-	-	-	1	8	-	8	-	-	-	-	-
31 44	Extraction Steam - Insulated	-	41	-	-	-	-	6	47	-	47	-	-	-	-	-
31 45	Feedwater	-	73	-	-	-	-	11	84	-	84	-	-	-	-	-
31 46	Feedwater - Insulated	-	122	-	-	-	-	18	140	-	140	-	-	-	-	-
31 47	Feedwater - Insulated - RCA	15	14	-	-	-	-	10	39	39	-	-	-	-	-	-
31 48	Feedwater - RCA	2	1	-	-	-	-	1	4	4	-	-	-	-	-	-
31 49	Feedwater Heater Drains & Vents	-	26	-	-	-	-	4	30	-	30	-	-	-	-	-
31 50	Feedwater Heater Drains & Vents - Ins	-	195	-	-	-	-	29	224	-	224	-	-	-	-	-
31 51	Fire Protection	-	178	-	-	-	-	27	204	-	204	-	-	-	-	-
31 52	Fire Protection - RCA	147	121	-	-	-	-	92	359	359	-	-	-	-	-	-
31 53	Fuel Handling HVAC	-	43	-	-	7	27	17	94	94	-	13	-	-	1,541	-
31 54	Generator	-	3	-	-	-	-	0	3	-	3	-	-	-	-	-
31 55	Generator - Insulated	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
31 56	HVAC - Clean	-	165	-	-	-	-	25	190	-	190	-	-	-	-	-
31 57	HVAC - Contaminated	-	44	-	-	6	26	17	93	93	-	13	-	-	1,459	-
31 58	Instrument Air	-	11	-	-	-	-	2	13	-	13	-	-	-	-	-
31 59	Instrument Air - Insulated	-	10	-	-	-	-	1	11	-	11	-	-	-	-	-
31 60	Instrument Air - Insulated - RCA	16	14	-	-	-	-	10	41	41	-	-	-	-	-	-
31 61	Instrument Air - RCA	11	10	-	-	-	-	7	27	27	-	-	-	-	-	-
31 62	Intake Cooling Water	-	108	-	-	-	-	16	124	-	124	-	-	-	-	-
31 63	Main Steam - Insulated	-	105	-	-	-	-	16	120	-	120	-	-	-	-	-
31 64	Main Steam - Insulated - RCA	8	7	-	-	-	-	5	21	21	-	-	-	-	-	-
31 65	Miscellaneous - RCA	1	1	-	-	-	-	1	3	3	-	-	-	-	-	-
31 66	Nitrogen & Hydrogen	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
31 67	Nitrogen & Hydrogen - RCA	0	0	-	-	-	-	0	0	0	-	-	-	-	-	-
31 68	Primary Water Makeup	-	38	-	-	-	-	6	44	-	44	-	-	-	-	-
31 69	Radwaste Building HVAC	-	96	-	-	14	56	36	202	202	-	28	-	-	3,160	-
31 70	Reactor Coolant - Insulated	48	59	-	-	75	-	58	240	240	-	143	-	-	17,098	-
31 71	Refueling Equipment	-	100	-	-	368	-	117	584	584	-	724	-	-	83,568	-
31 72	Residual Heat Removal	76	56	-	-	1,172	-	345	1,648	1,648	-	2,192	-	-	266,278	-
31 73	Residual Heat Removal - Insulated	211	292	-	-	793	-	377	1,672	1,672	-	1,524	-	-	180,132	-
31 74	Safety Injection	-	121	-	-	43	145	63	373	373	-	141	-	-	9,862	-

TABLE C-2
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 pounds	10 CFR 61 GTCC Cu Ft
Number												A CF	B CF	C CF		
Disposal of Plant Systems (continued)																
31 75	Safety Injection - Insulated	-	131	-	-	313	-	111	555	555	-	603	-	-	71,183	-
31 76	Safety Injection Accumulator	-	209	-	-	164	28	97	498	498	-	332	-	-	37,187	-
31 77	Sample - NSSS	-	29	-	-	14	1	11	55	55	-	23	-	-	3,089	-
31 78	Sample - NSSS - Ins	-	37	-	-	18	-	14	68	68	-	30	-	-	4,088	-
31 79	Screen Wash	-	17	-	-	-	-	3	20	-	20	-	-	-	-	-
31 80	Secondary Sample	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
31 81	Secondary Sample - RCA	0	0	-	-	-	-	0	1	1	-	-	-	-	-	-
31 82	Secondary Wet Layup	-	12	-	-	-	-	2	14	-	14	-	-	-	-	-
31 83	Secondary Wet Layup - RCA	3	3	-	-	-	-	2	7	7	-	-	-	-	-	-
31 84	Service Water	-	11	-	-	-	-	2	13	-	13	-	-	-	-	-
31 85	Service Water - Insulated	-	5	-	-	-	-	1	5	-	5	-	-	-	-	-
31 86	Service Water - Insulated - RCA	8	9	-	-	-	-	5	22	22	-	-	-	-	-	-
31 87	Service Water - RCA	19	20	-	-	-	-	12	51	51	-	-	-	-	-	-
31 88	Spent Fuel Pool Cooling	73	84	-	-	232	-	116	504	504	-	463	-	-	52,708	-
31 89	Spent Fuel Pool Cooling - Insulated	45	48	-	-	92	-	58	243	243	-	174	-	-	20,987	-
31 90	Steam Generator Wet Layup	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
31 91	Steam Generator Wet Layup - RCA	0	0	-	-	-	-	0	0	0	-	-	-	-	-	-
31 92	Turbine Building HVAC	-	11	-	-	-	-	2	13	-	13	-	-	-	-	-
31 93	Turbine Lube Oil	-	27	-	-	-	-	4	31	-	31	-	-	-	-	-
31 94	Turbine Plant Chemical Addition	-	3	-	-	-	-	0	3	-	3	-	-	-	-	-
31 95	Turbine Plant Cooling Water	-	53	-	-	-	-	8	61	-	61	-	-	-	-	-
31 96	Turbine Plant Cooling Water - Insulated	-	31	-	-	-	-	5	36	-	36	-	-	-	-	-
31 97	Turbine Steam	-	47	-	-	-	-	7	54	-	54	-	-	-	-	-
31 98	Turbine Steam - Insulated	-	22	-	-	-	-	3	25	-	25	-	-	-	-	-
31 99	Waste Disposal	251	248	-	-	1,050	-	450	1,998	1,998	-	3,190	-	-	238,605	-
31 100	Waste Disposal - Insulated	445	383	-	-	523	-	449	1,801	1,801	-	956	-	-	118,930	-
31 101	Water Treatment Plant	-	69	-	-	-	-	10	79	-	79	-	-	-	-	-
31 102	Water Treatment Plant - Insulated	-	52	-	-	-	-	8	59	-	59	-	-	-	-	-
31 Totals		2,179	7,958	-	-	7,462	781	4,673	23,053	19,466	3,587	17,780	-	-	1,695,965	-
32	Erect scaffolding for systems removal	-	495	-	-	14	47	134	690	690	-	46	-	-	5,086	-
Decontamination of Site Buildings																
33 1	Reactor Building	522	340	44	22	2,867	128	1,090	5,013	5,013	-	5,936	-	-	672,211	-
33 2	Auxiliary Building	216	25	10	5	402	32	221	910	910	-	1,304	-	-	135,745	-
33 3	Fuel Handling	190	191	2	1	58	105	173	720	720	-	188	-	-	20,478	-
33 4	Miscellaneous Structures - Contaminat	7	0	0	0	13	0	7	27	27	-	43	-	-	4,541	-
33.5	Radwaste Solidification Building	81	14	3	2	138	9	80	328	328	-	449	-	-	47,077	-
33 Totals		1,016	570	59	29	3,478	275	1,571	6,998	6,998	-	7,921	-	-	880,051	-
34	ORISE confirmatory survey	-	-	-	-	-	1,064	319	1,383	1,383	-	-	-	-	-	-
35	Terminate license	-	-	-	-	-	-	-	Note 1	-	-	-	-	-	-	-

TABLE C-2
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
Period 2 Additional Costs																
36	Mixed/Hazardous Waste	-	-	-	-		3,289	493	3,782	3,782	-	-	-	-	-	-
37	Seaweed Remediation & Disposal	-	-	-	-		2,250	338	2,588	2,588	-	-	-	-	-	-
38	License Termination Survey	-	-	-	-		5,447	817	6,264	6,264	-	-	-	-	-	-
Subtotal Period 2 Activity Costs		3,875	16,234	7,423	4,327	44,582	13,319	29,428	119,190	115,124	4,066	64,287	2,242	1,020	8,058,000	553
Period 2 Undistributed Costs																
1	Decon equipment	491	-	-	-		-	74	564	564	-	-	-	-	-	-
2	Decon supplies	448	-	-	-		-	112	560	560	-	-	-	-	-	-
3	DOC staff relocation expenses	-	1,021	-	-		-	153	1,174	1,174	-	-	-	-	-	-
4	Process liquid waste	431	-	279	418	3,106	-	1,083	5,317	5,317	-	4,927	-	-	705,931	-
5	Insurance	-	-	-	-		1,340	134	1,474	1,474	-	-	-	-	-	-
6	Property taxes	-	-	-	-		1,090	109	1,199	1,079	120	-	-	-	-	-
7	Health physics supplies	-	2,252	-	-		-	563	2,815	2,815	-	-	-	-	-	-
8	Heavy equipment rental	-	8,185	-	-		-	1,228	9,413	8,472	941	-	-	-	-	-
9	Small tool allowance	-	211	-	-		-	32	242	218	24	-	-	-	-	-
10	Pipe cutting equipment	-	749	-	-		-	112	862	862	-	-	-	-	-	-
11	Decon ng	974	-	-	-		-	146	1,120	1,120	-	-	-	-	-	-
12	Disposal of DAW generated	-	-	58	20	3,245	-	820	4,144	4,144	-	10,537	-	-	698,671	-
13	Decommissioning Equipment Dispositi	-	-	-	-	83	278	63	424	424	-	270	-	-	30,000	-
14	Plant energy budget	-	-	-	-		2,817	423	3,239	2,915	324	-	-	-	-	-
15	NRC ISFSI Fees	-	-	-	-		747	75	822	822	-	-	-	-	-	-
16	NRC Fees	-	-	-	-		1,345	135	1,480	1,480	-	-	-	-	-	-
17	Emergency Planning Fees	-	-	-	-		267	27	293	293	-	-	-	-	-	-
18	Site Security	-	-	-	-		6,184	928	7,112	7,112	-	-	-	-	-	-
19	Fixed Overhead	-	-	-	-		3,828	574	4,402	4,402	-	-	-	-	-	-
20	Radwaste Processing Skids	-	-	-	-		409	61	470	470	-	-	-	-	-	-
Subtotal Undistribnted Costs Period 2		2,344	12,419	337	438	6,435	18,305	8,850	47,127	45,718	1,409	10,807	4,927	-	1,434,603	-
Staff Costs																
DOC Staff Cost		-	-	-	-		29,620	4,443	34,062	34,062	-	-	-	-	-	-
Utility Staff Cost		-	-	-	-		62,866	9,430	72,296	72,296	-	-	-	-	-	-
TOTAL PERIOD 2		6,219	28,653	7,760	4,765	51,017	124,110	50,150	272,675	267,200	5,475	75,094	7,169	1,020	9,492,602	553

091000

TABLE C-2
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft
Number												A CF	B CF	C CF	pounds
PERIOD 3															
Demolition of Remaining Site Buildings															
39 1	Reactor Building	-	2,696	-	-	-	-	404	3,101	465	2,636	-	-	-	-
39 2	Auxiliary Building	-	831	-	-	-	-	125	955	96	860	-	-	-	-
39 3	Control Building	-	81	-	-	-	-	12	93	-	93	-	-	-	-
39 4	Fuel Handling	-	340	-	-	-	-	51	391	39	352	-	-	-	-
39 5	Intake	-	186	-	-	-	-	28	214	-	214	-	-	-	-
39 6	Miscellaneous Structures - Clean	-	1,721	-	-	-	-	258	1,979	-	1,979	-	-	-	-
39 7	Miscellaneous Structures - Contaminat	-	69	-	-	-	-	10	79	4	75	-	-	-	-
39 8	Radwaste Solidification Building	-	532	-	-	-	-	80	612	61	551	-	-	-	-
39 9	Sealwell	-	182	-	-	-	-	27	209	-	209	-	-	-	-
39 10	Turbine Building	-	297	-	-	-	-	44	341	-	341	-	-	-	-
39 11	Turbine Pedestal	-	256	-	-	-	-	38	294	-	294	-	-	-	-
39	Totals	-	7,190	-	-	-	-	1,078	8,268	665	7,604	-	-	-	-
Site Closeout Activities															
40	Remove Rubble	-	619	-	-	-	-	93	712	-	712	-	-	-	-
41	Grade & landscape site	-	94	-	-	-	-	14	108	-	108	-	-	-	-
42	Final report to NRC	-	-	-	-	-	67	10	77	77	-	-	-	-	-
Period 3 Additional Costs															
43	ISFSI License Termination	-	881	12	6	235	899	416	2,449	2,449	-	1,275	-	-	-
44	ISFSI Demolition and Site Restoration	-	220	-	-	-	91	47	358	358	-	-	-	-	-
Subtotal Period 3 Activity Costs		-	9,004	12	6	235	1,057	1,658	11,971	3,548	8,423	1,275	-	-	-
Period 3 Undistributed Costs															
1	Insurance	-	-	-	-	-	5,014	501	5,516	5,516	-	-	-	-	-
2	Property taxes	-	-	-	-	-	5,355	536	5,891	-	5,891	-	-	-	-
3	Heavy equipment rental	-	1,563	-	-	-	-	235	1,798	-	1,798	-	-	-	-
4	Small tool allowance	-	55	-	-	-	-	8	63	-	63	-	-	-	-
5	Plant energy budget	-	-	-	-	-	68	10	78	-	78	-	-	-	-
6	NRC ISFSI Fees	-	-	-	-	-	3,601	360	3,961	3,961	-	-	-	-	-
7	Emergency Planning Fees	-	-	-	-	-	1,285	128	1,413	1,413	-	-	-	-	-
8	Site Security	-	-	-	-	-	5,692	654	6,345	-	6,345	-	-	-	-
Subtotal Undistributed Costs Period 3		-	1,618	-	-	-	21,014	2,632	25,265	10,890	14,375	-	-	-	-
Staff Costs															
DOC Staff Cost		-	-	-	-	-	4,392	659	5,050	-	5,050	-	-	-	-
Utility Staff Cost		-	-	-	-	-	24,002	3,600	27,602	24,842	2,760	-	-	-	-
TOTAL PERIOD 3		-	10,622	12	6	235	50,465	8,549	69,889	39,280	30,609	1,275	-	-	-

191000
000161

TABLE C-2
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
	TOTAL COST TO DECOMMISSION	7,322	40,937	8,099	5,067	55,564	262,057	73,493	452,540	415,743	36,797	79,574	11,721	1,020	10,417,732	553
	Total cost to decommission with 19.39% contingency					\$ 452,540,306										
	Total NRC license termination cost is 91.87% or					\$ 415,742,989										
	Non-nuclear demolition cost is 8.13% or					\$ 36,797,318										
	Total site radwaste volume buried					92,868 cubic feet										
	Total site radwaste weight buried					10,545,276 pounds										
	Total TOC/ROH greater than Class C waste buried					55.3 cubic feet										
	Total scrap metal released from site					16,090 tons										
	Total craft labor requirements					887,357 person hours										

NOTES:

- 1) This activity is performed by the decommissioning staff following plant shutdown, the costs for this are included in this period's staff cost
- 2) This activity, while performed after final plant shutdown, is considered part of operations and therefore no decommissioning costs are included for this activity

000162

TABLE C-3
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF	pounds
PERIOD 1. Mothballing Activities															
1	Prepare preliminary decommissioning cost	-	-	-	-			130	20	150	150	-	-	-	-
2	Notification of Cessation of Operations									Note 1					
3	Remove fuel & source material									Note 2					
4	Notification of Permanent Defueling									Note 1					
5	Deactivate plant systems & process waste									Note 1					
6	Prepare and submit PSDAR	-	-	-	-		200	30	230	230	-	-	-	-	-
7	Review plant dwgs & specs	-	-	-	-		130	20	150	150	-	-	-	-	-
8	Perform detailed rad survey									Note 1					
9	Estimate by-product inventory	-	-	-	-		100	15	115	115	-	-	-	-	-
10	End product description	-	-	-	-		100	15	115	115	-	-	-	-	-
11	Detailed by-product inventory	-	-	-	-		150	23	173	173	-	-	-	-	-
12	Define major work sequence	-	-	-	-		100	15	115	115	-	-	-	-	-
13	Perform SER and EA	-	-	-	-		310	47	357	357	-	-	-	-	-
14	Perform Site-Specific Cost Study	-	-	-	-		500	75	575	575	-	-	-	-	-
15	Prepare/submit License Termination Plan	-	-	-	-		410	61	471	471	-	-	-	-	-
16	Receive NRC approval of termination plan									Note 1					
Activity Specifications															
17.1	Prepare plant and facilities for SAFSTOR	-	-	-	-		492	74	566	566	-	-	-	-	-
17.2	Plant systems	-	-	-	-		417	63	479	479	-	-	-	-	-
17.3	Plant structures and buildings	-	-	-	-		312	47	359	359	-	-	-	-	-
17.4	Waste management	-	-	-	-		200	30	230	230	-	-	-	-	-
17.5	Facility and site dormancy	-	-	-	-		200	30	230	230	-	-	-	-	-
17	Total	-	-	-	-		1,621	243	1,864	1,864	-	-	-	-	-
Detailed Work Procedures															
18.1	Plant systems	-	-	-	-		473	71	544	544	-	-	-	-	-
18.2	Facility closeout & dormancy	-	-	-	-		120	18	138	138	-	-	-	-	-
18	Total	-	-	-	-		593	89	682	682	-	-	-	-	-
19	Procure vacuum drying system	-	-	-	-		10	2	12	12	-	-	-	-	-
20	Drain/de-energize non-cont. systems	-	-	-	-		-	-	Note 1	-	-	-	-	-	-
21	Drain & dry NSSS	-	-	-	-		-	-	Note 1	-	-	-	-	-	-
22	Drain/de-energize contaminated systems	-	-	-	-		-	-	Note 1	-	-	-	-	-	-
23	Decon/secure contaminated systems	-	-	-	-		-	-	Note 1	-	-	-	-	-	-
Decontamination of Site Buildings															
24.1	Reactor Building	462	-	-	-		-	231	694	694	-	-	-	-	-
24.2	Fuel Handling	181	-	-	-		-	91	272	272	-	-	-	-	-
24	Totals	644	-	-	-		-	322	966	966	-	-	-	-	-
25	Prepare support equipment for storage	-	278	-	-		-	42	320	320	-	-	-	-	-
26	Install containment pressure equal. lines	-	19	-	-		-	3	22	22	-	-	-	-	-
27	Interim survey prior to dormancy	-	-	-	-		320	48	369	369	-	-	-	-	-
28	Secure building accesses	-	-	-	-		-	-	Note 1	-	-	-	-	-	-
29	Prepare & submit interim report	-	-	-	-		58	9	67	67	-	-	-	-	-

000163

TABLE C-3
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft
Number												A CF	B CF	C CF	pounds
Period 1 Additional Costs															
30	Mixed/Hazardous Waste	-	-	-	-	-	3,289	493	3,782	3,782	-	-	-	-	-
31	Seaweed Remediation & Disposal	-	-	-	-	-	2,250	338	2,588	2,588	-	-	-	-	-
Subtotal Period 1 Activity Costs		644	297	-	-	-	10,271	1,907	13,119	13,119	-	-	-	-	-
Period 1 Undistributed Costs															
1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-
2	Decon supplies	223	-	-	-	-	-	56	279	279	-	-	-	-	-
3	Process liquid waste	169	-	62	117	637	-	268	1,254	1,254	-	-	1,149	-	144,884
4	Insurance	-	-	-	-	-	2,061	206	2,267	2,267	-	-	-	-	-
5	Property taxes	-	-	-	-	-	310	31	341	341	-	-	-	-	-
6	Health physics supplies	-	250	-	-	-	-	63	313	313	-	-	-	-	-
7	Small tool allowance	-	10	-	-	-	-	2	12	12	-	-	-	-	-
8	Disposal of DAW generated	-	-	17	5	790	-	200	1,011	1,011	-	2,564	-	-	177,002
9	Plant energy budget	-	-	-	-	-	733	110	842	842	-	-	-	-	-
10	Fuel storage capital expenditures	-	-	-	-	-	48,045	7,207	55,252	55,252	-	-	-	-	-
11	NRC ISFSI Fees	-	-	-	-	-	212	21	234	234	-	-	-	-	-
12	NRC Fees	-	-	-	-	-	304	30	334	334	-	-	-	-	-
13	Emergency Planning Fees	-	-	-	-	-	76	8	83	83	-	-	-	-	-
14	Site Security	-	-	-	-	-	1,004	151	1,155	1,155	-	-	-	-	-
15	Fixed Overhead	-	-	-	-	-	1,088	163	1,251	1,251	-	-	-	-	-
Subtotal Undistributed Costs Period 1		883	260	78	122	1,427	53,832	8,588	65,191	65,191	-	2,564	1,149	-	321,886
Staff Costs															
DOC Staff Cost		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	17,993	2,699	20,692	20,692	-	-	-	-	-
TOTAL COST TO SAFSTOR		1,527	557	78	122	1,427	82,096	13,194	99,002	99,002	-	2,564	1,149	-	321,886
Total cost to SAFSTOR with 15.38% contingency		99,002,120													
Total site radwaste volume buried		3,713 cubic feet													
Total craft labor requirements		28,753 person hours													

TLG Services, Inc.

TABLE C-3
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restora.	Burial Site			10 CFR 61
												A CF	B CF	C CF	GTCC Cu Ft
PERIOD 3															
1	Review plant dwgs & specs	-	-	-	-		480	69	529	529	-	-	-	-	-
2	Perform detailed rad survey								Note 1						
3	End product description	-	-	-	-		100	15	115	115	-	-	-	-	-
4	Detailed by-product inventory	-	-	-	-		130	20	150	150	-	-	-	-	-
5	Define major work sequence	-	-	-	-		750	113	863	863	-	-	-	-	-
6	Perform SER and EA	-	-	-	-		310	47	357	357	-	-	-	-	-
7	Perform Site-Specific Cost Study	-	-	-	-		500	75	575	575	-	-	-	-	-
8	Prepare/submit License Termination Plan	-	-	-	-		410	61	471	471	-	-	-	-	-
9	Receive NRC approval of termination plan								Note 1						
Activity Specifications															
10 1	Re-activate plant & temporary facilities	-	-	-	-		737	111	848	763	85	-	-	-	-
10 2	Plant systems	-	-	-	-		417	63	479	431	48	-	-	-	-
10 3	Reactor internals	-	-	-	-		710	107	817	817	-	-	-	-	-
10 4	Reactor vessel	-	-	-	-		650	98	748	748	-	-	-	-	-
10 5	Biological shield	-	-	-	-		50	8	58	58	-	-	-	-	-
10 6	Steam generators	-	-	-	-		312	47	359	359	-	-	-	-	-
10 7	Reinforced concrete	-	-	-	-		160	24	184	92	92	-	-	-	-
10 8	Turbine & condenser	-	-	-	-		80	12	92	-	92	-	-	-	-
10 9	Plant structures & buildings	-	-	-	-		312	47	359	179	179	-	-	-	-
10 10	Waste management	-	-	-	-		480	69	529	529	-	-	-	-	-
10 11	Facility & site closeout	-	-	-	-		90	14	104	52	52	-	-	-	-
10	Total	-	-	-	-		3,978	597	4,574	4,026	548	-	-	-	-
Planning & Site Preparations															
11	Prepare dismantling sequence	-	-	-	-		240	38	278	278	-	-	-	-	-
12	Plant prep & temp svces	-	-	-	-		1,895	284	2,180	2,180	-	-	-	-	-
13	Design water clean-up system	-	-	-	-		140	21	161	161	-	-	-	-	-
14	Rigging/Cont Cntrl Envlps/tooling/etc	-	-	-	-		1,604	241	1,845	1,845	-	-	-	-	-
15	Procure casks/liners & containers	-	-	-	-		123	18	141	141	-	-	-	-	-
Detailed Work Procedures															
16 1	Plant systems	-	-	-	-		473	71	544	490	54	-	-	-	-
16 2	Reactor internals	-	-	-	-		250	38	288	288	-	-	-	-	-
16 3	Remaining buildings	-	-	-	-		135	20	155	39	116	-	-	-	-
16 4	CRD cooling assembly	-	-	-	-		100	15	115	115	-	-	-	-	-
16 5	CRD housings & ICI tubes	-	-	-	-		100	15	115	115	-	-	-	-	-
16 6	Incore instrumentation	-	-	-	-		100	15	115	115	-	-	-	-	-
16 7	Reactor vessel	-	-	-	-		363	54	417	417	-	-	-	-	-
16 8	Facility closeout	-	-	-	-		120	18	138	69	69	-	-	-	-
16 9	Missile shields	-	-	-	-		45	7	52	52	-	-	-	-	-
16 10	Biological shield	-	-	-	-		120	18	138	138	-	-	-	-	-
16 11	Steam generators	-	-	-	-		460	69	529	529	-	-	-	-	-
16 12	Reinforced concrete	-	-	-	-		100	15	115	58	58	-	-	-	-
16 13	Turbine & condensers	-	-	-	-		312	47	359	-	359	-	-	-	-
16 14	Auxiliary building	-	-	-	-		273	41	314	283	31	-	-	-	-
16 15	Reactor building	-	-	-	-		273	41	314	283	31	-	-	-	-
16	Total	-	-	-	-		3,224	484	3,708	2,989	719	-	-	-	-
17	Asbestos removal program	-	217	37	1	231	7	117	610	427	184	640	-	-	-

991000

TABLE C-3
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft	
												A CF	B CF	C CF	pounds	
Period 3 Additional Costs																
18	Site Characterization Survey	-	-	-	-		683	102	785	785	-		-	-		-
Subtotal Period 3 Activity Costs		-	217	37	1	231	14,554	2,299	17,340	15,889	1,450	640	-	-		-
Period 3 Undistributed Costs																
1	DOC staff relocation expenses	-	1,021	-	-			153	1,174	1,174	-		-	-		-
2	Insurance	-	-	-	-		290	29	319	319	-		-	-		-
3	Property taxes	-	-	-	-		309	31	340	340	-		-	-		-
4	Health physics supplies	-	207	-	-		-	52	259	259	-		-	-		-
5	Heavy equipment rental	-	446	-	-		-	67	513	513	-		-	-		-
6	Disposal of DAW generated	-	-	17	5	788	-	199	1,009	1,009	-	2,580	-	-	176,707	-
7	Plant energy budget	-	-	-	-		759	114	872	872	-		-	-		-
8	NRC Fees	-	-	-	-		303	30	333	333	-		-	-		-
9	Site Security	-	-	-	-		714	107	821	821	-		-	-		-
10	Fixed Overhead	-	-	-	-		1,086	163	1,248	1,248	-		-	-		-
Subtotal Undistributed Costs Period 3		-	1,674	17	5	788	3,461	945	6,890	6,890	-	2,580	-	-	176,707	-
Staff Costs																
DOC Staff Cost		-	-	-	-		5,331	800	6,130	6,130	-		-	-		-
Utility Staff Cost		-	-	-	-		16,565	2,485	19,049	19,049	-		-	-		-
TOTAL PERIOD 3 COST		-	1,891	54	7	1,019	39,910	6,529	49,410	47,959	1,450	3,200	-	-	176,707	-

000167

TABLE C-3
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF	pounds
PERIOD 4															
Nuclear Steam Supply System Removal															
19 1	Reactor Coolant Piping	26	40	4	5	131	-	57	263	263	-	319	-	-	29,769
19 2	Pressurizer Relief Tank	11	58	3	3	87	-	43	205	205	-	300	-	-	19,889
19 3	Reactor Coolant Pumps & Motors	21	30	21	27	2,789	-	721	3,809	3,809	-	2,258	-	-	833,830
19 4	Pressurizer	16	27	4	9	943	-	252	1,250	1,250	-	1,771	-	-	214,343
19 5	Steam Generators	113	920	2,087	1,977	4,530	-	1,922	11,530	11,530	-	18,876	-	-	2,339,184
19 6	Old Steam Generator Lower Shell Units	-	-	1,850	1,578	1,896	-	876	6,000	6,000	-	7,899	-	-	1,134,000
19 7	CRDMs/ICIs/Service Structure Removal	64	44	41	10	185	-	95	439	439	-	2,253	-	-	84,288
19 8	Reactor Vessel Internals	45	1,218	3,363	349	3,688	-	3,708	12,389	12,389	-	786	393	1,020	223,389
19 9	Vessel & Internals GTCC Disposal	-	-	-	-	12,355	-	8,178	18,533	18,533	-	-	-	-	-
19 10	Reactor Vessel	98	3,071	176	263	3,865	-	4,394	11,865	11,865	-	3,830	1,703	-	786,229
19 Totals		392	5,408	7,330	4,220	30,469	-	18,245	68,063	68,063	-	38,389	2,096	1,020	5,444,831
20	Remove spent fuel racks	204	22	-	-	88	186	154	634	634	-	285	-	-	31,590
Removal of Major Equipment															
21	Main Turbine/Generator	-	46	-	-	-	-	7	53	-	53	-	-	-	-
22	Main Condensers	-	371	-	-	-	-	56	426	-	426	-	-	-	-
Disposal of Plant Systems															
23 1	Amerlap	-	37	-	-	-	-	6	43	-	43	-	-	-	-
23 2	Auxiliary Feedwater	-	2	-	-	-	-	0	2	-	2	-	-	-	-
23 3	Auxiliary Feedwater - Insulated	-	9	-	-	-	-	1	10	-	10	-	-	-	-
23 4	Auxiliary Feedwater - Insulated - RCA	-	13	-	-	-	-	2	15	15	-	-	-	-	-
23 5	Auxiliary Feedwater - RCA	-	3	-	-	-	-	0	4	4	-	-	-	-	-
23 6	Auxiliary Steam	-	0	-	-	-	-	0	0	-	0	-	-	-	-
23 7	Auxiliary Steam - Insulated	-	18	-	-	-	-	2	19	-	19	-	-	-	-
23 8	Auxiliary Steam - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-
23 9	Auxiliary Steam - RCA	-	0	-	-	-	-	0	0	-	-	-	-	-	-
23 10	Breathing Air - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-
23 11	Breathing Air - RCA	-	2	-	-	-	-	0	2	2	-	-	-	-	-
23 12	Chemical & Volume Control	-	50	-	-	280	-	83	413	413	-	748	-	-	63,668
23 13	Chemical & Volume Control - Insulated	-	173	-	-	245	-	105	523	523	-	456	-	-	55,760
23 14	Circulating Water	-	49	-	-	-	-	7	56	-	56	-	-	-	-
23 15	Component Cooling Water	-	78	-	-	-	-	12	90	-	90	-	-	-	-
23 16	Component Cooling Water - RCA	-	44	-	-	-	-	7	51	51	-	-	-	-	-
23 17	Condensate	-	89	-	-	-	-	13	102	-	102	-	-	-	-
23 18	Condensate - Insulated	-	28	-	-	-	-	4	32	-	32	-	-	-	-
23 19	Condensate Polishing	-	17	-	-	-	-	2	19	-	19	-	-	-	-
23 20	Condensate Polishing - Ins	-	43	-	-	-	-	8	50	-	50	-	-	-	-
23 21	Condensate Recovery	-	8	-	-	-	-	1	10	-	10	-	-	-	-
23 22	Condensate Recovery - Insulated	-	1	-	-	-	-	0	2	-	2	-	-	-	-
23 23	Condensate Recovery - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-
23 24	Condensate Recovery - RCA	-	3	-	-	-	-	0	3	3	-	-	-	-	-
23 25	Condensate Storage	-	36	-	-	-	-	5	42	-	42	-	-	-	-
23 26	Condenser	-	12	-	-	-	-	2	14	-	14	-	-	-	-
23 27	Containment Emergency Filter	-	3	-	-	0	2	1	6	6	-	1	-	-	105
23 28	Containment Normal & Emerg Cooling	-	426	-	-	88	277	170	961	961	-	170	-	-	20,009
23 29	Containment Normal & Emerg Cooling - Ins	-	4	-	-	5	-	2	11	11	-	9	-	-	1,238
23 30	Containment Post Accident Eval	-	0	-	-	0	0	0	1	1	-	0	-	-	35
23 31	Containment Purge	-	29	-	-	47	0	19	96	96	-	89	-	-	10,743
23 32	Containment Spray	-	50	-	-	154	-	51	255	255	-	293	-	-	34,998
23 33	Containment Spray - Insulated	-	43	-	-	84	-	32	159	159	-	154	-	-	19,070
23 34	EDG Building HVAC	-	1	-	-	-	-	0	2	-	2	-	-	-	-
23 35	Electrical - Clean	-	712	-	-	-	-	107	819	-	819	-	-	-	-
23 36	Electrical - Contaminated	-	335	-	-	16	65	97	513	513	-	32	-	-	3,864
23 37	Electrical - Decontaminated	-	305	-	-	-	-	46	351	351	-	-	-	-	-
23 38	Emergency Diesel Engine & Oil	-	35	-	-	-	-	5	40	-	40	-	-	-	-

TABLE C-3
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
Disposal of Plant Systems (continued)																
23 39	Emergency Diesel Engine & Oil - Ins	-	1	-	-	-	-	0	2	-	2	-	-	-	-	-
23 40	Extraction Steam	-	5	-	-	-	-	1	6	-	6	-	-	-	-	-
23 41	Extraction Steam - Insulated	-	26	-	-	-	-	4	29	-	29	-	-	-	-	-
23 42	Feedwater	-	25	-	-	-	-	4	29	-	29	-	-	-	-	-
23 43	Feedwater - Insulated	-	72	-	-	-	-	11	83	-	83	-	-	-	-	-
23 44	Feedwater - Insulated - RCA	-	8	-	-	-	-	1	9	9	-	-	-	-	-	-
23 45	Feedwater - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-	-
23 46	Feedwater Heater Drains & Vents	-	23	-	-	-	-	3	27	-	27	-	-	-	-	-
23 47	Feedwater Heater Drains & Vents - Ins	-	156	-	-	-	-	23	180	-	180	-	-	-	-	-
23 48	Fire Protection	-	9	-	-	-	-	1	10	-	10	-	-	-	-	-
23 49	Fire Protection - RCA	-	13	-	-	-	-	2	15	15	-	-	-	-	-	-
23 50	Fuel Handling HVAC	-	38	-	-	7	27	15	88	88	-	13	-	-	1,541	-
23 51	Generator	-	3	-	-	-	-	0	3	-	3	-	-	-	-	-
23 52	Generator - Insulated	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
23 53	Instrument Air	-	7	-	-	-	-	1	7	-	7	-	-	-	-	-
23 54	Instrument Air - Insulated	-	5	-	-	-	-	1	6	-	6	-	-	-	-	-
23 55	Instrument Air - Insulated - RCA	-	8	-	-	-	-	1	9	9	-	-	-	-	-	-
23 56	Instrument Air - RCA	-	5	-	-	-	-	1	6	6	-	-	-	-	-	-
23 57	Intake Cooling Water	-	77	-	-	-	-	12	89	-	89	-	-	-	-	-
23 58	Main Steam - Insulated	-	86	-	-	-	-	13	99	-	99	-	-	-	-	-
23 59	Main Steam - Insulated - RCA	-	5	-	-	-	-	1	6	6	-	-	-	-	-	-
23 60	Miscellaneous - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-	-
23 61	Primary Water Makeup	-	38	-	-	-	-	6	44	-	44	-	-	-	-	-
23 62	Reactor Coolant - Insulated	-	47	-	-	69	-	29	146	146	-	132	-	-	15,773	-
23 63	Refueling Equipment	-	73	-	-	290	-	91	454	454	-	569	-	-	65,804	-
23 64	Residual Heat Removal	-	45	-	-	1,155	-	300	1,499	1,499	-	2,159	-	-	262,460	-
23 65	Residual Heat Removal - Insulated	-	198	-	-	617	-	204	1,018	1,018	-	1,176	-	-	140,165	-
23 66	Safety Injection	-	107	-	-	43	145	59	355	355	-	140	-	-	9,813	-
23 67	Safety Injection - Insulated	-	83	-	-	215	-	75	373	373	-	412	-	-	48,960	-
23 68	Safety Injection Accumulator	-	154	-	-	137	29	77	397	397	-	279	-	-	31,098	-
23 69	Sample - NSSS	-	12	-	-	7	1	5	26	26	-	12	-	-	1,602	-
23 70	Sample - NSSS - Ins	-	12	-	-	8	-	5	26	26	-	14	-	-	1,858	-
23 71	Screen Wash	-	12	-	-	-	-	2	14	-	14	-	-	-	-	-
23 72	Secondary Sample	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
23 73	Secondary Sample - RCA	-	0	-	-	-	-	0	0	0	-	-	-	-	-	-
23 74	Secondary Wet Layup	-	11	-	-	-	-	2	13	-	13	-	-	-	-	-
23 75	Secondary Wet Layup - RCA	-	2	-	-	-	-	0	3	3	-	-	-	-	-	-
23 76	Service Water	-	0	-	-	-	-	0	0	-	0	-	-	-	-	-
23 77	Service Water - RCA	-	0	-	-	-	-	0	1	1	-	-	-	-	-	-
23 78	Spent Fuel Pool Cooling	-	68	-	-	216	-	71	355	355	-	431	-	-	49,000	-
23 79	Spent Fuel Pool Cooling - Insulated	-	37	-	-	79	-	29	146	146	-	149	-	-	18,053	-
23 80	Steam Generator Wet Layup	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
23 81	Steam Generator Wet Layup - RCA	-	0	-	-	-	-	0	0	0	-	-	-	-	-	-
23 82	Turbine Building HVAC	-	10	-	-	-	-	1	11	-	11	-	-	-	-	-
23 83	Turbine Lube Oil	-	20	-	-	-	-	3	23	-	23	-	-	-	-	-
23 84	Turbine Plant Chemical Addition	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
23 85	Turbine Plant Cooling Water	-	43	-	-	-	-	8	50	-	50	-	-	-	-	-
23 86	Turbine Plant Cooling Water - Insulated	-	24	-	-	-	-	4	27	-	27	-	-	-	-	-
23 87	Turbine Steam	-	32	-	-	-	-	5	37	-	37	-	-	-	-	-
23 88	Turbine Steam - Insulated	-	14	-	-	-	-	2	17	-	17	-	-	-	-	-
23 89	Waste Disposal	-	21	-	-	49	-	18	88	88	-	113	-	-	11,135	-
23 90	Waste Disposal - Insulated	-	56	-	-	90	-	37	183	183	-	167	-	-	20,538	-
23 Totals		-	4,365	-	-	3,903	547	1,919	10,734	8,570	2,164	7,719	-	-	887,090	-
24	Erect scaffolding for systems removal	-	191	-	-	5	17	51	264	264	-	16	-	-	1,829	-

TABLE C-3
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial Site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
Decontamination of Site Buildings																
25 1	Reactor Building	462	300	44	22	2,867	128	1,050	4,873	4,873	-	5,936	-	-	672,211	-
25 2	Fuel Handling	167	169	2	1	58	105	156	658	658	-	188	-	-	20,478	-
25	Totals	629	469	46	22	2,925	233	1,206	5,531	5,531	-	6,124	-	-	692,689	-
26	ORISE confirmatory survey	-	-	-	-	-	1,064	319	1,383	1,383	-	-	-	-	-	-
27	Terminate license	-	-	-	-	-	-	-	Note 1	-	-	-	-	-	-	-
Period 4 Additional Costs																
28	License Termination Survey	-	-	-	-	-	1,689	250	1,919	1,919	-	-	-	-	-	-
29	ISFSI License Termination	-	823	11	5	220	840	389	2,288	2,288	-	1,234	-	-	-	-
		-	-	-	-	220	-	-	-	-	-	-	-	-	-	-
Subtotal Period 4 Activity Costs		1,225	11,694	7,388	4,248	37,809	4,537	22,598	89,295	89,853	2,843	53,766	2,098	1,020	7,058,029	553
Period 4 Undistributed Costs																
1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-	-
2	Decon supplies	286	-	-	-	-	-	72	358	358	-	-	-	-	-	-
3	DOC staff relocation expenses	-	1,021	-	-	-	-	153	1,174	1,174	-	-	-	-	-	-
4	Process liquid waste	191	-	70	133	721	-	303	1,417	1,417	-	-	1,300	-	163,824	-
5	Insurance	-	-	-	-	-	748	75	822	822	-	-	-	-	-	-
6	Property taxes	-	-	-	-	-	968	97	1,065	958	108	-	-	-	-	-
7	Health physics supplies	-	1,454	-	-	-	-	364	1,818	1,818	-	-	-	-	-	-
8	Heavy equipment rental	-	7,348	-	-	-	-	1,102	8,450	7,605	845	-	-	-	-	-
9	Small tool allowance	-	121	-	-	-	-	18	140	126	14	-	-	-	-	-
10	Pipe cutting equipment	-	749	-	-	-	-	112	862	862	-	-	-	-	-	-
11	Disposal of DAW generated	-	-	52	16	2,469	-	625	3,161	3,161	-	8,016	-	-	553,426	-
12	Decommissioning Equipment Disposition	-	-	-	-	83	278	63	424	424	-	270	-	-	30,000	-
13	Plant energy budget	-	-	-	-	-	2,041	306	2,348	2,113	235	-	-	-	-	-
14	NRC Fees	-	-	-	-	-	1,077	108	1,185	1,185	-	-	-	-	-	-
15	Site Security	-	-	-	-	-	3,485	523	4,008	4,008	-	-	-	-	-	-
16	Fixed Overhead	-	-	-	-	-	3,400	510	3,909	3,909	-	-	-	-	-	-
17	Radwaste Processing Skids	-	-	-	-	-	554	83	637	637	-	-	-	-	-	-
Subtotal Undistributed Costs Period 4		968	10,694	122	149	3,273	12,551	4,586	32,343	31,142	1,200	8,287	1,300	-	747,251	-
Staff Costs																
DOC Staff Cost		-	-	-	-	-	19,917	2,988	22,905	22,905	-	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	30,506	4,576	35,082	35,082	-	-	-	-	-	-
TOTAL PERIOD 4		2,193	22,388	7,508	4,397	40,883	67,511	34,746	179,625	175,782	3,843	62,053	3,396	1,020	7,805,279	553

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TABLE C-3
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft					
																A CF	B CF	C CF	pounds	
PERIOD 5																				
Demolition of Remaining Site Buildings																				
30 1	Reactor Building	-	2,698	-	-	-	-	404	3,101	485	2,636	-	-	-	-					
30 2	Fuel Handling	-	340	-	-	-	-	51	391	39	352	-	-	-	-					
30 3	Miscellaneous Structures	-	115	-	-	-	-	17	132	-	132	-	-	-	-					
30 4	Seawall	-	182	-	-	-	-	27	209	-	209	-	-	-	-					
30 5	Turbine Building	-	314	-	-	-	-	47	361	-	361	-	-	-	-					
30 6	Turbine Pedestal	-	256	-	-	-	-	38	294	-	294	-	-	-	-					
30	Totals	-	3,902	-	-	-	-	585	4,488	504	3,983	-	-	-	-					
Site Closeout Activities																				
31	Grade & landscape site	-	94	-	-	-	-	14	108	-	108	-	-	-	-					
32	Final report to NRC	-	-	-	-	-	156	23	179	179	-	-	-	-	-					
Period 5 Additional Costs																				
33	ISFSI Demolition and Site Restoration	-	205	-	-	-	85	44	334	334	-	-	-	-	-					
Subtotal Period 5 Activity Costs		-	4,201	-	-	-	241	668	5,109	1,018	4,091	-	-	-	-					
Period 5 Undistributed Costs																				
1	Insurance	-	-	-	-	-	120	12	132	132	-	-	-	-	-					
2	Property taxes	-	-	-	-	-	227	23	249	-	249	-	-	-	-					
3	Heavy equipment rental	-	1,577	-	-	-	-	237	1,813	-	1,813	-	-	-	-					
4	Small tool allowance	-	28	-	-	-	-	4	33	-	33	-	-	-	-					
5	Plant energy budget	-	-	-	-	-	59	9	67	-	67	-	-	-	-					
6	Site Security	-	-	-	-	-	151	23	174	-	174	-	-	-	-					
Subtotal Undistributed Costs Period 5		-	1,605	-	-	-	556	307	2,468	132	2,336	-	-	-	-					
Staff Costs																				
DOC Staff Cost		-	-	-	-	-	2,179	327	2,506	-	2,506	-	-	-	-					
Utility Staff Cost		-	-	-	-	-	751	113	863	777	86	-	-	-	-					
		-	-	-	-	-	-	-	-	-	-	-	-	-	-					
TOTAL PERIOD 5		-	5,807	-	-	-	3,728	1,413	10,947	1,927	9,020	-	-	-	-					
TOTAL COST TO DECOMMISSION		3,720	30,643	7,675	4,536	44,870	347,930	78,568	517,942	503,629	14,313	73,148	4,545	1,020	8,303,873					
															553					

Total cost to decommission with 17.88% contingency \$ 517,942,171

Total NRC license termination cost is 97.24% or \$ 503,828,755

Non-nuclear demolition cost is 2.76% or \$ 14,313,407

Total site radwaste volume buried 79,286 cubic feet

Total site radwaste weight buried 8,303,873 pounds

Total 10CFR61 greater than class C waste buried 553 cubic feet

Total scrap metal released from site 12,064 tons

Total craft labor requirements 501,962 person hours

NOTES:

- 1) This activity is performed by the decommissioning staff following plant shutdown, the costs for this are included in this period's staff cost
- 2) This activity while performed after final plant shutdown, is considered part of operations and therefore no decommissioning costs are included for this activity

TABLE C-4
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF	pounds
PERIOD 1. Mothballing Activities															
1	Prepare preliminary decommissioning cost	-	-	-	-		56	8	64	64	-	-	-	-	-
2	Notification of Cessation of Operations								Note 1						
3	Remove fuel & source material								Note 2						
4	Notification of Permanent Defueling								Note 1						
5	Deactivate plant systems & process waste								Note 1						
6	Prepare and submit PSDAR	-			-		86	13	98	98	-		-	-	-
7	Review plant dwgs & specs	-		-	-		56	8	64	64	-		-	-	-
8	Perform detailed rad survey								Note 1						
9	Estimate by-product inventory	-	-	-	-		43	6	49	49	-		-	-	-
10	End product description	-	-	-	-		43	6	49	49	-		-	-	-
11	Detailed by-product inventory	-	-	-	-		64	10	74	74	-		-	-	-
12	Define major work sequence	-	-	-	-		43	6	49	49	-		-	-	-
13	Perform SER and EA	-	-	-	-		133	20	152	152	-		-	-	-
14	Perform Site-Specific Cost Study	-	-	-	-		214	32	246	246	-		-	-	-
15	Prepare/submit License Termination Plan	-	-	-	-		175	26	201	201	-		-	-	-
16	Receive NRC approval of termination plan								Note 1						
Activity Specifications															
17.1	Prepare plant and facilities for SAFSTOR	-	-	-	-		210	32	242	242	-		-	-	-
17.2	Plant systems	-	-	-	-		178	27	205	205	-		-	-	-
17.3	Plant structures and buildings	-	-	-	-		133	20	153	153	-		-	-	-
17.4	Waste management	-	-	-	-		86	13	98	98	-		-	-	-
17.5	Facility and site dormancy	-	-	-	-		86	13	98	98	-		-	-	-
17	Total	-	-	-	-		693	104	797	797	-		-	-	-
Detailed Work Procedures															
18.1	Plant systems	-	-	-	-		202	30	233	233	-		-	-	-
18.2	Facility closeout & dormancy	-	-	-	-		51	8	59	59	-		-	-	-
18	Total	-	-	-	-		254	38	292	292	-		-	-	-
19	Procure vacuum drying system	-	-	-	-		4	1	5	5	-		-	-	-
20	Drain/de-energize non-cont. systems	-	-	-	-		-	-	Note 1	-	-		-	-	-
21	Drain & dry NSSS	-	-	-	-		-	-	Note 1	-	-		-	-	-
22	Drain/de-energize contaminated systems	-	-	-	-		-	-	Note 1	-	-		-	-	-
23	Decon/secure contaminated systems	-	-	-	-		-	-	Note 1	-	-		-	-	-
Decontamination of Site Buildings															
24.1	Reactor Building	462	-	-	-		-	231	694	694	-		-	-	-
24.2	Auxiliary Building	173	-	-	-		-	87	260	260	-		-	-	-
24.3	Fuel Handling	181	-	-	-		-	91	272	272	-		-	-	-
24.4	Miscellaneous Structures - Contaminated	5	-	-	-		-	3	8	8	-		-	-	-
24.5	Radwaste Solidification Building	66	-	-	-		-	33	99	99	-		-	-	-
24	Totals	888	-	-	-		-	444	1,332	1,332	-		-	-	-
25	Prepare support equipment for storage	-	278	-	-		-	42	320	320	-		-	-	-
26	Install containment pressure equal lines	-	19	-	-		-	3	22	22	-		-	-	-
27	Interim survey prior to dormancy	-	-	-	-		320	48	368	368	-		-	-	-
28	Secure building accesses	-	-	-	-		-	-	Note 1	-	-		-	-	-
29	Prepare & submit interim report	-	-	-	-		25	4	29	29	-		-	-	-

TABLE C-4
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
Period 1 Additional Costs																
30	Mixed/Hazardous Waste	-	-	-	-		3,289	493	3,782	3,782	-		-	-	-	-
31	Seaweed Remediation & Disposal	-	-	-	-		2,250	338	2,588	2,588	-		-	-	-	-
Subtotal Period 1 Activity Costs		888	297	-	-	-	7,746	1,651	10,582	10,582	-		-	-	-	-
Period 1 Undistributed Costs																
1	Decon equipment	491	-	-	-		-	74	564	564	-		-	-	-	-
2	Decon supplies	373	-	-	-		-	93	466	466	-		-	-	-	-
3	Process liquid waste	175	-	64	122	661	-	278	1,301	1,301	-		-	1,193	-	150,329
4	Insurance	-	-	-	-		2,061	206	2,267	2,267	-		-	-	-	-
5	Property taxes	-	-	-	-		310	31	341	341	-		-	-	-	-
6	Health physics supplies	-	273	-	-		-	68	341	341	-		-	-	-	-
7	Small tool allowance	-	13	-	-		-	2	15	15	-		-	-	-	-
8	Disposal of DAW generated	-	-	17	5	790	-	200	1,011	1,011	-		2,564	-	-	177,002
9	Plant energy budget	-	-	-	-		617	93	710	710	-		-	-	-	-
10	Fuel storage capital expenditures	-	-	-	-		48,795	7,319	56,115	56,115	-		-	-	-	-
11	NRC ISFSI Fees	-	-	-	-		212	21	234	234	-		-	-	-	-
12	NRC Fees	-	-	-	-		304	30	334	334	-		-	-	-	-
13	Emergency Planning Fees	-	-	-	-		76	8	83	83	-		-	-	-	-
14	Site Security	-	-	-	-		716	107	823	823	-		-	-	-	-
15	Fixed Overhead	-	-	-	-		1,088	163	1,251	1,251	-		-	-	-	-
Subtotal Undistributed Costs Period 1		1,039	286	81	127	1,451	54,178	8,693	65,856	65,856	-		2,564	1,193	-	327,331
Staff Costs																
DOC Staff Cost		-	-	-	-		-	-	-	-	-		-	-	-	-
Utility Staff Cost		-	-	-	-		17,993	2,699	20,692	20,692	-		-	-	-	-
TOTAL COST TO SAFSTOR		1,927	583	81	127	1,451	79,917	13,043	97,129	97,129	-		2,564	1,193	-	327,331
Total cost to SAFSTOR with 15.51% contingency		97,129,174														
Total site radwaste volume buried		3,756 cubic feet														
Total craft labor requirements		38,454 person hours														

TABLE C-4
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61			
Number												A CF	B CF	C CF	pounds	GTCC Cu Ft		
PERIOD 2. SAFSTOR Dormancy Activities																		
1	Quarterly inspection								Note 1									
2	Semi-annual environmental survey								Note 1									
3	Prepare reports								Note 1									
4	Health physics supplies	-	-	-	-		46	11	57	57	-		-	-	-	-		
5	Insurance	-	-	-	-		140	14	154	154	-		-	-	-	-		
6	Property taxes	-	-	-	-		205	21	227	227	-		-	-	-	-		
7	Disposal of contaminated solid waste	-	-	1	0	29	-	7	38	38	-	102	-	-	-	-		
8	Bituminous roof replacement	-	-	-	-		33	5	38	38	-		-	-	-	-		
9	Maintenance supplies	-	-	-	-		99	25	123	123	-		-	-	-	-		
10	Plant energy budget	-	-	-	-		127	19	146	146	-		-	-	-	-		
11	NRC ISFSI Fees	-	-	-	-		82	8	90	90	-		-	-	-	-		
12	NRC Fees	-	-	-	-		170	17	187	187	-		-	-	-	-		
13	Emergency Planning Fees	-	-	-	-		29	3	32	32	-		-	-	-	-		
14	Site Security	-	-	-	-		73	11	83	83	-		-	-	-	-		
15	Fixed Overhead	-	-	-	-		72	11	83	83	-		-	-	-	-		
16	Site maintenance staff	-	-	-	-		821	123	945	945	-		-	-	-	-		
PERIOD 2 ANNUAL MAINTENANCE TOTALS		-	-	1	0	29	1,898	275	2,204	2,204	-	102	-	-	-	-		
Total cost SAFSTOR dormancy with		52 9267	years equals	116,634,190														
Total site radwaste volume buried					5,393 cubic feet													

TABLE C-1
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
PERIOD 3																
1	Review plant dwgs & specs	-	-	-	-		197	30	226	226	-	-	-	-	-	-
2	Perform detailed rad survey								Note 1							
3	End product description	-	-	-	-		43	6	49	49	-	-	-	-	-	-
4	Detailed by-product inventory	-	-	-	-		56	8	64	64	-	-	-	-	-	-
5	Define major work sequence	-	-	-	-		321	48	369	369	-	-	-	-	-	-
6	Perform SER and EA	-	-	-	-		133	20	152	152	-	-	-	-	-	-
7	Perform Site-Specific Cost Study	-	-	-	-		214	32	246	246	-	-	-	-	-	-
8	Prepare/submit License Termination Plan	-	-	-	-		175	26	201	201	-	-	-	-	-	-
9	Receive NRC approval of termination plan								Note 1							
Activity Specifications																
10 1	Re-activate plant & temporary facilities	-	-	-	-		315	47	362	326	36	-	-	-	-	-
10 2	Plant systems	-	-	-	-		178	27	205	184	20	-	-	-	-	-
10 3	Reactor internals	-	-	-	-		304	46	349	349	-	-	-	-	-	-
10 4	Reactor vessel	-	-	-	-		278	42	320	320	-	-	-	-	-	-
10 5	Biological shield	-	-	-	-		21	3	25	25	-	-	-	-	-	-
10 6	Steam generators	-	-	-	-		133	20	153	153	-	-	-	-	-	-
10 7	Reinforced concrete	-	-	-	-		68	10	79	39	39	-	-	-	-	-
10 8	Turbine & condenser	-	-	-	-		34	5	39	-	39	-	-	-	-	-
10 9	Plant structures & buildings	-	-	-	-		133	20	153	77	77	-	-	-	-	-
10 10	Waste management	-	-	-	-		197	30	226	226	-	-	-	-	-	-
10 11	Facility & site closeout	-	-	-	-		38	6	44	22	22	-	-	-	-	-
10	Total	-	-	-	-		1,701	255	1,956	1,722	234	-	-	-	-	-
Planning & Site Preparations																
11	Prepare dismantling sequence	-	-	-	-		103	15	118	118	-	-	-	-	-	-
12	Plant prep & temp. svces	-	-	-	-		1,895	284	2,180	2,180	-	-	-	-	-	-
13	Design water clean-up system	-	-	-	-		60	9	69	69	-	-	-	-	-	-
14	Rigging/Cont Cntrl Envlp/s/ooling/etc	-	-	-	-		1,604	241	1,845	1,845	-	-	-	-	-	-
15	Procure casks/liners & containers	-	-	-	-		53	8	60	60	-	-	-	-	-	-
Detailed Work Procedures																
16 1	Plant systems	-	-	-	-		202	30	233	209	23	-	-	-	-	-
16 2	Reactor internals	-	-	-	-		107	16	123	123	-	-	-	-	-	-
16 3	Remaining buildings	-	-	-	-		58	9	66	17	50	-	-	-	-	-
16 4	CRD cooling assembly	-	-	-	-		43	6	49	49	-	-	-	-	-	-
16 5	CRD housings & ICI tubes	-	-	-	-		43	6	49	49	-	-	-	-	-	-
16 6	Incore instrumentation	-	-	-	-		43	6	49	49	-	-	-	-	-	-
16 7	Reactor vessel	-	-	-	-		155	23	179	179	-	-	-	-	-	-
16 8	Facility closeout	-	-	-	-		51	8	59	30	30	-	-	-	-	-
16 9	Missile shields	-	-	-	-		19	3	22	22	-	-	-	-	-	-
16 10	Biological shield	-	-	-	-		51	8	59	59	-	-	-	-	-	-
16 11	Steam generators	-	-	-	-		197	30	226	226	-	-	-	-	-	-
16 12	Reinforced concrete	-	-	-	-		43	6	49	25	25	-	-	-	-	-
16 13	Turbine & condensers	-	-	-	-		133	20	153	-	153	-	-	-	-	-
16 14	Auxiliary building	-	-	-	-		117	18	134	121	13	-	-	-	-	-
16 15	Reactor building	-	-	-	-		117	18	134	121	13	-	-	-	-	-
16	Total	-	-	-	-		1,379	207	1,586	1,278	307	-	-	-	-	-
17	Asbestos removal program	-	217	37	1	231	7	117	610	427	184	640	-	-	-	-

TABLE C-4
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			pounds	10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF		
Period 3 Additional Costs																
18	Site Characterization Survey	-	-	-	-		1,024	154	1,178	1,178	-		-	-		-
Subtotal Period 3 Activity Costs		-	217	37	1	231	8,963	1,460	10,910	10,185	725	640	-	-		-
Period 3 Undistributed Costs																
1	DOC staff relocation expenses	-	1,021	-	-		-	153	1,174	1,174	-		-	-		-
2	Insurance	-	-	-	-		291	29	320	320	-		-	-		-
3	Property taxes	-	-	-	-		310	31	341	341	-		-	-		-
4	Health physics supplies	-	208	-	-		-	52	260	260	-		-	-		-
5	Heavy equipment rental	-	448	-	-		-	67	515	515	-		-	-		-
6	Disposal of DAW generated	-	-	17	5	791	-	200	1,013	1,013	-	2,570	-	-	177,395	-
7	Plant energy budget	-	-	-	-		646	97	743	743	-		-	-		-
8	NRC Fees	-	-	-	-		304	30	335	335	-		-	-		-
9	Site Security	-	-	-	-		427	64	491	491	-		-	-		-
10	Fixed Overhead	-	-	-	-		1,090	163	1,253	1,253	-		-	-		-
Subtotal Undistributed Costs Period 3		-	1,677	17	5	791	3,069	888	6,446	6,446	-	2,570	-	-	177,395	-
Staff Costs																
	DOC Staff Cost	-	-	-	-		3,516	527	4,043	4,043	-		-	-		-
	Utility Staff Cost	-	-	-	-		7,848	1,177	9,025	9,025	-		-	-		-
TOTAL PERIOD 3 COST		-	1,894	54	7	1,022	23,395	4,053	30,424	29,699	725	3,210	-	-	177,395	-

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TABLE C-4
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61
												A CF	B CF	C CF	GTCC Cu Ft
PERIOD 4															
Nuclear Steam Supply System Removal															
19 1	Reactor Coolant Piping	26	40	4	5	131	-	57	263	263	-	319	-	-	29,769
19 2	Pressurizer Relief Tank	11	58	3	3	87	-	43	205	205	-	300	-	-	19,699
19 3	Reactor Coolant Pumps & Motors	21	30	21	27	2,789	-	721	3,609	3,609	-	2,253	-	-	633,930
19 4	Pressurizer	16	27	4	9	943	-	252	1,250	1,250	-	1,771	-	-	214,343
19 5	Steam Generators	113	920	2,057	1,977	4,530	-	1,922	11,530	11,530	-	18,876	-	-	2,339,184
19 6	Old Steam Generator Lower Shell Units	-	-	1,650	1,578	1,896	-	876	6,000	6,000	-	7,899	-	-	1,134,000
19 7	CRDMs/CIs/Service Structure Removal	64	44	41	10	185	-	95	439	439	-	2,253	-	-	64,288
19 8	Reactor Vessel Internals	45	1,218	3,363	349	3,688	-	3,708	12,370	12,370	-	786	393	1,020	223,389
19 9	Vessel & Internals GTCC Disposal	-	-	-	-	12,355	-	0,178	18,533	18,533	-	-	-	-	553
19 10	Reactor Vessel	96	3,071	176	263	3,865	-	4,394	11,865	11,865	-	3,930	1,703	-	786,229
19 Totals		392	5,408	7,330	4,220	30,469	-	18,245	66,063	66,063	-	38,386	2,096	1,020	5,444,831
20	Remove spent fuel racks	204	22	-	-	88	166	154	634	634	-	285	-	-	31,590
Removal of Major Equipment															
21	Main Turbine/Generator	-	46	-	-	-	-	7	53	-	53	-	-	-	-
22	Main Condensers	-	371	-	-	-	-	56	426	-	426	-	-	-	-
Disposal of Plant Systems															
23 1	Amerlap	-	40	-	-	-	-	6	46	-	46	-	-	-	-
23 2	Auxiliary Bldg HVAC	-	176	-	-	42	129	74	420	420	-	83	-	-	9,533
23 3	Auxiliary Feedwater	-	8	-	-	-	-	1	9	-	9	-	-	-	-
23 4	Auxiliary Feedwater - Insulated	-	14	-	-	-	-	2	16	-	16	-	-	-	-
23 5	Auxiliary Feedwater - Insulated - RCA	-	20	-	-	-	-	3	23	23	-	-	-	-	-
23 6	Auxiliary Feedwater - RCA	-	5	-	-	-	-	1	5	5	-	-	-	-	-
23 7	Auxiliary Steam	-	1	-	-	-	-	0	1	-	1	-	-	-	-
23 8	Auxiliary Steam - Insulated	-	23	-	-	-	-	3	26	-	26	-	-	-	-
23 9	Auxiliary Steam - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-
23 10	Auxiliary Steam - RCA	-	0	-	-	-	-	0	0	0	-	-	-	-	-
23 11	Breathing Air - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-
23 12	Breathing Air - RCA	-	9	-	-	-	-	1	11	11	-	-	-	-	-
23 13	Chemical & Volume Control	-	239	-	-	1,660	-	475	2,373	2,373	-	5,495	-	-	377,166
23 14	Chemical & Volume Control - Insulated	-	304	-	-	427	-	183	913	913	-	803	-	-	96,999
23 15	Circulating Water	-	59	-	-	-	-	9	68	-	68	-	-	-	-
23 16	Component Cooling Water	-	105	-	-	-	-	16	121	-	121	-	-	-	-
23 17	Component Cooling Water - RCA	-	62	-	-	-	-	9	72	72	-	-	-	-	-
23 18	Condensate	-	105	-	-	-	-	16	120	-	120	-	-	-	-
23 19	Condensate - Insulated	-	41	-	-	-	-	6	47	-	47	-	-	-	-
23 20	Condensate Polishing	-	18	-	-	-	-	3	20	-	20	-	-	-	-
23 21	Condensate Polishing - Ins	-	53	-	-	-	-	8	61	-	61	-	-	-	-
23 22	Condensate Recovery	-	12	-	-	-	-	2	14	-	14	-	-	-	-
23 23	Condensate Recovery - Insulated	-	2	-	-	-	-	0	2	-	2	-	-	-	-
23 24	Condensate Recovery - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-
23 25	Condensate Recovery - RCA	-	4	-	-	-	-	1	4	4	-	-	-	-	-
23 26	Condensate Storage	-	38	-	-	-	-	6	44	-	44	-	-	-	-
23 27	Condenser	-	14	-	-	-	-	2	16	-	16	-	-	-	-
23 28	Containment Emergency Filter	-	3	-	-	0	2	1	6	6	-	1	-	-	105
23 29	Containment Normal & Emerg Cooling	-	431	-	-	93	273	172	970	970	-	179	-	-	21,249
23 30	Containment Normal & Emerg Cooling - Ins	-	5	-	-	7	-	3	15	15	-	12	-	-	1,653
23 31	Containment Post Accident Eval	-	8	-	-	4	0	3	14	14	-	7	-	-	826
23 32	Containment Post Accident Eval - Ins	-	16	-	-	23	-	10	50	50	-	42	-	-	5,328
23 33	Containment Purge	-	29	-	-	47	0	19	96	96	-	89	-	-	10,743
23 34	Containment Spray	-	54	-	-	161	-	54	268	268	-	307	-	-	36,569
23 35	Containment Spray - Insulated	-	47	-	-	91	-	34	172	172	-	167	-	-	20,642
23 36	Control Building HVAC	-	16	-	-	-	-	2	19	-	19	-	-	-	-
23 37	EDG Building HVAC	-	2	-	-	-	-	0	3	-	3	-	-	-	-
23 38	Electrical - Clean	-	1,085	-	-	-	-	163	1,248	-	1,248	-	-	-	-

TABLE C-4
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	A CF	B CF	C CF	pounds	10 CFR 61 GTCC Cu Ft
Disposal of Plant Systems (continued)																
23 39	Electrical - Contaminated	-	542	-	-	23	94	155	814	814	-	46	-	-	5,279	-
23 40	Electrical - Decontaminated	-	468	-	-	-	-	70	536	536	-	-	-	-	-	-
23 41	Emergency Diesel Engine & Oil	-	39	-	-	-	-	6	44	-	44	-	-	-	-	-
23 42	Emergency Diesel Engine & Oil - Ins	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
23 43	Extraction Steam	-	7	-	-	-	-	1	8	-	8	-	-	-	-	-
23 44	Extraction Steam - Insulated	-	41	-	-	-	-	6	47	-	47	-	-	-	-	-
23 45	Feedwater	-	73	-	-	-	-	11	84	-	84	-	-	-	-	-
23 46	Feedwater - Insulated	-	122	-	-	-	-	18	140	-	140	-	-	-	-	-
23 47	Feedwater - Insulated - RCA	-	14	-	-	-	-	2	16	16	-	-	-	-	-	-
23 48	Feedwater - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-	-
23 49	Feedwater Heater Drains & Vents	-	26	-	-	-	-	4	30	-	30	-	-	-	-	-
23 50	Feedwater Heater Drains & Vents - Ins	-	195	-	-	-	-	29	224	-	224	-	-	-	-	-
23 51	Fire Protection	-	178	-	-	-	-	27	204	-	204	-	-	-	-	-
23 52	Fire Protection - RCA	-	121	-	-	-	-	18	139	139	-	-	-	-	-	-
23 53	Fuel Handling HVAC	-	38	-	-	7	27	15	88	88	-	13	-	-	1,541	-
23 54	Generator	-	3	-	-	-	-	0	3	-	3	-	-	-	-	-
23 55	Generator - Insulated	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
23 56	HVAC - Clean	-	185	-	-	-	-	25	190	-	190	-	-	-	-	-
23 57	HVAC - Contaminated	-	39	-	-	6	26	15	87	87	-	13	-	-	1,459	-
23 58	Instrument Air	-	11	-	-	-	-	2	13	-	13	-	-	-	-	-
23 59	Instrument Air - Insulated	-	10	-	-	-	-	1	11	-	11	-	-	-	-	-
23 60	Instrument Air - Insulated - RCA	-	14	-	-	-	-	2	17	17	-	-	-	-	-	-
23 61	Instrument Air - RCA	-	10	-	-	-	-	1	11	11	-	-	-	-	-	-
23 62	Intake Cooling Water	-	108	-	-	-	-	16	124	-	124	-	-	-	-	-
23 63	Main Steam - Insulated	-	105	-	-	-	-	16	120	-	120	-	-	-	-	-
23 64	Main Steam - Insulated - RCA	-	7	-	-	-	-	1	9	9	-	-	-	-	-	-
23 65	Miscellaneous - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-	-
23 66	Nitrogen & Hydrogen	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
23 67	Nitrogen & Hydrogen - RCA	-	0	-	-	-	-	0	0	0	-	-	-	-	-	-
23 68	Primary Water Makeup	-	38	-	-	-	-	6	44	-	44	-	-	-	-	-
23 69	Radwaste Building HVAC	-	85	-	-	14	56	33	189	189	-	28	-	-	3,160	-
23 70	Reactor Coolant - Insulated	-	52	-	-	75	-	32	158	158	-	143	-	-	17,098	-
23 71	Refueling Equipment	-	88	-	-	368	-	114	570	570	-	724	-	-	83,568	-
23 72	Residual Heat Removal	-	49	-	-	1,172	-	305	1,526	1,526	-	2,192	-	-	266,278	-
23 73	Residual Heat Removal - Insulated	-	260	-	-	793	-	263	1,315	1,315	-	1,524	-	-	180,132	-
23 74	Safety Injection	-	107	-	-	43	145	59	355	355	-	141	-	-	9,862	-
23 75	Safety Injection - Insulated	-	115	-	-	313	-	107	536	536	-	603	-	-	71,183	-
23 76	Safety Injection Accumulator	-	185	-	-	164	28	91	468	468	-	332	-	-	37,187	-
23 77	Sample - NSSS	-	26	-	-	14	1	10	51	51	-	23	-	-	3,089	-
23 78	Sample - NSSS - Ins	-	33	-	-	18	-	13	64	64	-	30	-	-	4,088	-
23 79	Screen Wash	-	17	-	-	-	-	3	20	-	20	-	-	-	-	-
23 80	Secondary Sample	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
23 81	Secondary Sample - RCA	-	0	-	-	-	-	0	0	0	-	-	-	-	-	-
23 82	Secondary Wet Layup	-	12	-	-	-	-	2	14	-	14	-	-	-	-	-
23 83	Secondary Wet Layup - RCA	-	3	-	-	-	-	0	3	3	-	-	-	-	-	-
23 84	Service Water	-	11	-	-	-	-	2	13	-	13	-	-	-	-	-
23 85	Service Water - Insulated	-	5	-	-	-	-	1	5	-	5	-	-	-	-	-
23 86	Service Water - Insulated - RCA	-	9	-	-	-	-	1	10	10	-	-	-	-	-	-
23 87	Service Water - RCA	-	20	-	-	-	-	3	23	23	-	-	-	-	-	-
23 88	Spent Fuel Pool Cooling	-	74	-	-	232	-	77	383	383	-	463	-	-	52,708	-
23 89	Spent Fuel Pool Cooling - Insulated	-	43	-	-	92	-	34	169	169	-	174	-	-	20,987	-
23 90	Steam Generator Wet Layup	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
23 91	Steam Generator Wet Layup - RCA	-	0	-	-	-	-	0	0	0	-	-	-	-	-	-
23 92	Turbine Building HVAC	-	11	-	-	-	-	2	13	-	13	-	-	-	-	-
23 93	Turbine Lube Oil	-	27	-	-	-	-	4	31	-	31	-	-	-	-	-
23 94	Turbine Plant Chemical Addition	-	3	-	-	-	-	0	3	-	3	-	-	-	-	-
23 95	Turbine Plant Cooling Water	-	53	-	-	-	-	8	61	-	61	-	-	-	-	-
23 96	Turbine Plant Cooling Water - Insulated	-	31	-	-	-	-	5	36	-	36	-	-	-	-	-
23 97	Turbine Steam	-	47	-	-	-	-	7	54	-	54	-	-	-	-	-

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TABLE C-4
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF	pounds
Disposal of Plant Systems (continued)															
23 98	Turbine Steam - Insulated	-	22	-	-	-	-	3	25	-	25	-	-	-	-
23 99	Waste Disposal	-	219	-	-	1,050	-	317	1,586	1,586	-	3,190	-	-	238,605
23 100	Waste Disposal - Insulated	-	338	-	-	523	-	215	1,077	1,077	-	956	-	-	118,930
23 101	Water Treatment Plant	-	69	-	-	-	-	10	79	-	79	-	-	-	-
23 102	Water Treatment Plant - Insulated	-	52	-	-	-	-	8	59	-	59	-	-	-	-
23 Totals		-	7,494	-	-	7,462	781	3,467	19,205	15,618	3,587	17,780	-	-	1,695,965
24	Erect scaffolding for systems removal	-	441	-	-	14	47	121	624	624	-	46	-	-	5 086
Decontamination of Site Buildings															
25 1	Reactor Building	462	300	44	22	2 867	128	1,050	4 873	4,873	-	5,936	-	-	672,211
25 2	Auxiliary Building	192	21	10	5	402	32	208	870	870	-	1,304	-	-	135,745
25 3	Fuel Handling	167	169	2	1	58	105	156	658	658	-	188	-	-	20,478
25 4	Miscellaneous Structures - Contaminated	6	0	0	0	13	0	6	26	26	-	43	-	-	4,541
25 5	Radwaste Solidification Building	72	12	3	2	138	9	75	312	312	-	449	-	-	47,077
25 Totals		899	503	59	29	3,478	275	1,496	6,739	6,739	-	7,921	-	-	880,051
26	ORISE confirmatory survey	-	-	-	-	-	1,064	319	1,383	1,383	-	-	-	-	-
27	Terminate license	-	-	-	-	-	-	-	Note 1	-	-	-	-	-	-
Period 4 Additional Costs															
28	License Termination Survey	-	-	-	-	-	5,447	817	6,264	6,264	-	-	-	-	-
29	ISFSI License Termination	-	881	12	6	235	899	416	2,449	2,449	-	1,266	-	-	-
Subtotal Period 4 Activity Costs		1,495	15,166	7,400	4,255	41,747	8,680	25,098	103,841	99,775	4,066	65,683	2,096	1,020	8,057,523
Period 4 Undistributed Costs															
1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-
2	Decon supplies	410	-	-	-	-	-	102	512	512	-	-	-	-	-
3	DOC staff relocation expenses	-	1,021	-	-	-	-	153	1,174	1,174	-	-	-	-	-
4	Process liquid waste	212	-	78	147	799	-	338	1,572	1,572	-	1,441	-	-	181,650
5	Insurance	-	-	-	-	-	629	63	692	692	-	-	-	-	-
6	Property taxes	-	-	-	-	-	691	69	760	684	76	-	-	-	-
7	Health physics supplies	-	1,819	-	-	-	-	455	2,273	2,273	-	-	-	-	-
8	Heavy equipment rental	-	5,242	-	-	-	-	786	6,028	5,425	603	-	-	-	-
9	Small tool allowance	-	171	-	-	-	-	26	197	177	20	-	-	-	-
10	Pipe cutting equipment	-	749	-	-	-	-	112	862	862	-	-	-	-	-
11	Disposal of DAW generated	-	-	37	11	1,761	-	446	2,255	2,255	-	5,719	-	-	394,813
12	Decommissioning Equipment Disposition	-	-	-	-	83	278	63	424	424	-	270	-	-	30,000
13	Plant energy budget	-	-	-	-	-	1,215	182	1,398	1,258	140	-	-	-	-
14	NRC Fees	-	-	-	-	-	852	85	938	938	-	-	-	-	-
15	Site Security	-	-	-	-	-	3,234	485	3,719	3,719	-	-	-	-	-
16	Fixed Overhead	-	-	-	-	-	2,425	364	2,789	2,789	-	-	-	-	-
17	Radwaste Processing Skids	-	-	-	-	-	932	140	1,072	1,072	-	-	-	-	-
Subtotal Undistributed Costs Period 4		1,112	9,002	115	159	2,644	10,258	3,940	27,230	26,391	838	5,989	1,441	-	606,463
Staff Costs															
DOC Staff Cost		-	-	-	-	-	18,847	2,827	21,674	21,674	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	35,893	5,384	41,277	41,277	-	-	-	-	-
TOTAL PERIOD 4		2,607	24,168	7,515	4,413	44,390	73,677	37,250	194,021	189,117	4,904	71,672	3,537	1,020	8,663,986

TABLE C-1
TURKEY POINT PLANT - UNIT 1
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

(1) Number		Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61	
PERIOD 5													A CF	B CF	C CF	pounds	GTCC Cu Ft
Demolition of Remaining Site Buildings																	
30 1		Reactor Building	-	2,696	-	-	-	-	404	3,101	465	2,636	-	-	-	-	-
30 2		Auxiliary Building	-	831	-	-	-	-	125	955	96	860	-	-	-	-	-
30 3		Control Building	-	81	-	-	-	-	12	93	-	93	-	-	-	-	-
30 4		Fuel Handling	-	340	-	-	-	-	51	391	39	352	-	-	-	-	-
30 5		Intake	-	186	-	-	-	-	28	214	-	214	-	-	-	-	-
30 6		Miscellaneous Structures - Clean	-	1,721	-	-	-	-	258	1,979	-	1,979	-	-	-	-	-
30 7		Miscellaneous Structures - Contaminated	-	69	-	-	-	-	10	79	4	75	-	-	-	-	-
30 8		Radwaste Solidification Building	-	532	-	-	-	-	80	612	61	551	-	-	-	-	-
30 9		Seawall	-	182	-	-	-	-	27	209	-	209	-	-	-	-	-
30 1		Turbine Building	-	297	-	-	-	-	44	341	-	341	-	-	-	-	-
30 11		Turbine Pedestal	-	256	-	-	-	-	38	294	-	294	-	-	-	-	-
30 Totals			-	7,190	-	-	-	-	1,078	8,268	665	7,604	-	-	-	-	-
Site Closeout Activities																	
31		Remove Rubble	-	619	-	-	-	-	93	712	-	712	-	-	-	-	-
32		Grade & landscape site	-	94	-	-	-	-	14	108	-	108	-	-	-	-	-
33		Final report to NRC	-	-	-	-	-	67	10	77	77	-	-	-	-	-	-
Period 5 Additional Costs																	
34		ISFSI Demolition and Site Restoration	-	220	-	-	-	91	47	358	358	-	-	-	-	-	-
Subtotal Period 5 Activity Costs																	
			-	8,122	-	-	-	158	1,242	9,522	1,099	8,423	-	-	-	-	-
Period 5 Undistributed Costs																	
1		Insurance	-	-	-	-	-	120	12	132	132	-	-	-	-	-	-
2		Property taxes	-	-	-	-	-	227	23	249	-	249	-	-	-	-	-
3		Heavy equipment rental	-	1,577	-	-	-	-	237	1,813	-	1,813	-	-	-	-	-
4		Small tool allowance	-	55	-	-	-	-	8	63	-	63	-	-	-	-	-
5		Plant energy budget	-	-	-	-	-	68	10	78	-	78	-	-	-	-	-
6		Site Security	-	-	-	-	-	362	54	417	-	417	-	-	-	-	-
Subtotal Undistributed Costs Period 5			-	1,632	-	-	-	777	344	2,753	132	2,621	-	-	-	-	-
Staff Costs																	
		DOC Staff Cost	-	-	-	-	-	4,380	657	5,038	-	5,038	-	-	-	-	-
		Utility Staff Cost	-	-	-	-	-	2,672	401	3,073	2,766	307	-	-	-	-	-
TOTAL PERIOD 5																	
			-	9,754	-	-	-	7,988	2,644	20,386	3,997	16,389	-	-	-	-	-
TOTAL COST TO DECOMMISSION																	
			4,534	36,400	7,685	4,557	48,423	285,439	71,556	458,594	436,576	22,018	82,840	4,730	1,020	9,168,712	553
Total cost to decommission with 18.49% contingency: \$ 458,594,188																	
Total NRC license termination cost is 95.20% or \$ 436,576,444																	
Non-nuclear demolition cost is 4.80% or \$ 22,017,744																	
Total site radwaste volume buried 89,142 cubic feet																	
Total site radwaste weight buried 9,168,712 pounds																	
Total 10CFR61 greater than class C waste buried 553 cubic feet																	
Total scrap metal released from site 16,090 tons																	
Total craft labor requirements 815,964 person hours																	

NOTES:

- 1) This activity is performed by the decommissioning staff following plant shutdown, the costs for this are included in this period's staff cost
- 2) This activity, while performed after final plant shutdown, is considered part of operations and therefore no decommissioning costs are included for this activity

APPENDIX D

DECOMMISSIONING COSTS: DECON AND SAFSTOR ALTERNATIVES No On-Site ISFSI Fuel Storage

SUMMARY:

The results for the base case DECON and SAFSTOR alternatives, provided in Appendix C, assume that spent fuel will be stored in an on-site dry Independent Spent Fuel Storage Facility (ISFSI) to accommodate the anticipated DOE fuel acceptance schedule. The costs associated with designing, licensing, constructing, maintaining, and decommissioning an ISFSI are substantial. This appendix provides cost information based on a revised assumption (alternate scenarios) that the DOE will have removed all fuel from the plant within a 5 year, 2 month period from plant shutdown, thereby eliminating the requirement to maintain an on-site ISFSI.

The results of these alternate scenarios are summarized in Table D-1, "Estimated Impact of Spent Fuel Related Costs." Tables D-2 and D-3 provide cost results for the DECON alternative (no on-site ISFSI) for decommissioning Turkey Point Units 3 and 4, respectively. Tables D-4 and D-5 provide cost results for the SAFSTOR alternative (no on-site ISFSI) for decommissioning Turkey Point Units 3 and 4, respectively. In these scenarios it is assumed that the DOE will have accepted and removed all spent fuel no later than 5 years and 2 months after plant shutdown. This five-year acceptance period is based on nominal fuel assembly cool down requirements associated with transportation cask design limitations. Spent fuel assemblies are assumed to be stored during this 5-year period in the existing Fuel Handling Building's storage pool.

"Avoided" costs associated with the elimination of a requirement for on-site fuel storage include:

- ISFSI capital, including engineering, licensing, and construction costs
- Fuel storage cask costs
- Costs associated with personnel required to support ISFSI operation
- ISFSI license fees
- ISFSI decontamination costs
- ISFSI demolition costs

TABLE D-1

**TURKEY POINT PLANT
ESTIMATED IMPACT OF SPENT FUEL RELATED COSTS
(Thousands of 1998 Dollars)**

DECON

	Unit 3	Unit 4
With Long-Term Dry Fuel Storage	395,359	452,540
Without Long-Term Dry Fuel Storage	<u>307,123</u>	<u>345,012</u>
Impact of Long-Term Dry Fuel Storage	88,236	107,528
Major Cost Components		
Capital Costs/Construction	55,252	56,115
ISFSI Operations	30,362	48,606
ISFSI Decommissioning	<u>2,622</u>	<u>2,807</u>
TOTAL	88,236	107,528

SAFSTOR

	Unit 3	Unit 4
With Long Term Dry Fuel Storage	517,942	458,594
Without Long Term Dry Fuel Storage	<u>422,541</u>	<u>371,093</u>
Impact of Long Term Dry Fuel Storage	95,401	87,501
Major Cost Components		
Capital Costs/Construction	55,252	56,115
ISFSI Operations	37,527	28,579
ISFSI Decommissioning	<u>2,622</u>	<u>2,807</u>
TOTAL	95,401	87,501

TABLE D-2
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft
Number												A CF	B CF	C CF	pounds
PERIOD 1															
1	Prepare preliminary decommissioning c	-	-	-	-	-	130	20	150	150	-	-	-	-	-
2	Notification of Cessation of Operations	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Remove fuel & source material	-	-	-	-	-	-	-	Note 1	-	-	-	-	-	-
4	Notification of Permanent Defueling	-	-	-	-	-	-	-	Note 2	-	-	-	-	-	-
5	Deactivate plant systems & process waste	-	-	-	-	-	-	-	Note 1	-	-	-	-	-	-
6	Prepare and submit PSDAR	-	-	-	-	-	-	-	Note 1	-	-	-	-	-	-
7	Review plant dwgs & specs	-	-	-	-	-	200	30	230	230	-	-	-	-	-
8	Perform detailed rad survey	-	-	-	-	-	460	69	529	529	-	-	-	-	-
9	Estimate by-product inventory	-	-	-	-	-	-	-	Note 1	-	-	-	-	-	-
10	End product description	-	-	-	-	-	100	15	115	115	-	-	-	-	-
11	Detailed by-product inventory	-	-	-	-	-	100	15	115	115	-	-	-	-	-
12	Define major work sequence	-	-	-	-	-	130	20	150	150	-	-	-	-	-
13	Perform SER and EA	-	-	-	-	-	750	113	863	863	-	-	-	-	-
14	Perform Site-Specific Cost Study	-	-	-	-	-	310	47	357	357	-	-	-	-	-
15	Prepare/submit License Termination PI	-	-	-	-	-	500	75	575	575	-	-	-	-	-
16	Receive NRC approval of termination plan	-	-	-	-	-	410	61	471	471	-	-	-	-	-
									Note 1						
Activity Specifications															
17.1	Plant & temporary facilities	-	-	-	-	-	492	74	566	509	57	-	-	-	-
17.2	Plant systems	-	-	-	-	-	417	63	479	431	48	-	-	-	-
17.3	NSSS Decontamination Flush	-	-	-	-	-	50	8	58	58	-	-	-	-	-
17.4	Reactor internals	-	-	-	-	-	710	107	817	817	-	-	-	-	-
17.5	Reactor vessel	-	-	-	-	-	650	98	748	748	-	-	-	-	-
17.6	Biological shield	-	-	-	-	-	50	8	58	58	-	-	-	-	-
17.7	Steam generators	-	-	-	-	-	312	47	359	359	-	-	-	-	-
17.8	Reinforced concrete	-	-	-	-	-	160	24	184	92	92	-	-	-	-
17.9	Turbine & condenser	-	-	-	-	-	80	12	92	-	92	-	-	-	-
17.10	Plant structures & buildings	-	-	-	-	-	312	47	359	179	179	-	-	-	-
17.11	Waste management	-	-	-	-	-	460	69	529	529	-	-	-	-	-
17.12	Facility & site closeout	-	-	-	-	-	90	14	104	52	52	-	-	-	-
17	Total	-	-	-	-	-	3,783	567	4,350	3,830	520	-	-	-	-
Planning & Site Preparations															
18	Prepare dismantling sequence	-	-	-	-	-	240	36	276	276	-	-	-	-	-
19	Plant prep & temp svces	-	-	-	-	-	1,895	284	2,180	2,180	-	-	-	-	-
20	Design water clean-up system	-	-	-	-	-	140	21	161	161	-	-	-	-	-
21	Rigging/Cont. Cntrl Envlps/tooling/etc	-	-	-	-	-	1,604	241	1,845	1,845	-	-	-	-	-
22	Procure casks/liners & containers	-	-	-	-	-	123	18	141	141	-	-	-	-	-
Detailed Work Procedures															
23.1	Plant systems	-	-	-	-	-	473	71	544	490	54	-	-	-	-
23.2	NSSS Decontamination Flush	-	-	-	-	-	100	15	115	115	-	-	-	-	-
23.3	Reactor internals	-	-	-	-	-	250	38	288	288	-	-	-	-	-
23.4	Remaining buildings	-	-	-	-	-	135	20	155	39	116	-	-	-	-
23.5	CRD cooling assembly	-	-	-	-	-	100	15	115	115	-	-	-	-	-
23.6	CRD housings & ICI tubes	-	-	-	-	-	100	15	115	115	-	-	-	-	-
23.7	Incore instrumentation	-	-	-	-	-	100	15	115	115	-	-	-	-	-
23.8	Reactor vessel	-	-	-	-	-	363	54	417	417	-	-	-	-	-
23.9	Facility closeout	-	-	-	-	-	120	18	138	69	69	-	-	-	-
23.10	Missile shields	-	-	-	-	-	45	7	52	52	-	-	-	-	-
23.11	Biological shield	-	-	-	-	-	120	18	138	138	-	-	-	-	-
23.12	Steam generators	-	-	-	-	-	460	69	529	529	-	-	-	-	-
23.13	Reinforced concrete	-	-	-	-	-	100	15	115	58	58	-	-	-	-
23.14	Turbine & condensers	-	-	-	-	-	312	47	359	-	359	-	-	-	-
23.15	Auxiliary building	-	-	-	-	-	273	41	314	283	31	-	-	-	-
23.16	Reactor building	-	-	-	-	-	273	41	314	283	31	-	-	-	-
23	Total	-	-	-	-	-	3,324	499	3,823	3,104	719	-	-	-	-

TABLE D-2
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Shlp	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61
												A CF	B CF	C CF	pounds
24	Decon primary loop	518	-	-	-	-	-	258	774	774	-	-	-	-	-
25	Asbestos removal program	-	217	37	1	231	7	117	610	427	184	640	-	-	-
Period 1 Additional Costs															
26	Site Characterization Survey	-	-	-	-	-	683	102	785	785	-	-	-	-	-
Subtotal Period 1 Activity Costs		518	217	37	1	231	14,880	2,007	18,499	17,077	1,422	640	-	-	-
Period 1 Undistributed Costs															
1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-
2	Decon supplies	30	-	-	-	-	-	7	37	37	-	-	-	-	-
3	DOC staff relocation expenses	-	1,021	-	-	-	-	153	1,174	1,174	-	-	-	-	-
4	Process liquid waste	67	-	273	289	3,292	-	927	4,849	4,849	-	-	4,552	-	748,128
5	Insurance	-	-	-	-	-	2,060	206	2,266	2,266	-	-	-	-	-
6	Property taxes	-	-	-	-	-	310	31	341	341	-	-	-	-	-
7	Health physics supplies	-	209	-	-	-	-	52	262	262	-	-	-	-	-
8	Heavy equipment rental	-	211	-	-	-	-	32	242	242	-	-	-	-	-
9	Small tool allowance	-	3	-	-	-	-	1	4	4	-	-	-	-	-
10	Disposal of DAW generated	-	-	17	5	790	-	200	1,011	1,011	-	2,564	-	-	177,002
11	Plant energy budget	-	-	-	-	-	540	81	621	621	-	-	-	-	-
12	NRC Fees	-	-	-	-	-	304	30	334	334	-	-	-	-	-
13	Emergency Planning Fees	-	-	-	-	-	76	8	83	83	-	-	-	-	-
14	Site Security Cost	-	-	-	-	-	1,056	158	1,214	1,214	-	-	-	-	-
15	Fixed Overhead	-	-	-	-	-	1,087	163	1,250	1,250	-	-	-	-	-
Subtotal Undistribted Costs Period 1		587	1,445	290	295	4,081	5,432	2,123	14,253	14,253	-	2,564	4,552	-	925,130
Staff Costs															
DOC Staff Cost		-	-	-	-	-	5,326	799	6,125	6,125	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	18,819	2,823	21,642	21,642	-	-	-	-	-
TOTAL PERIOD 1 COST		1,103	1,662	327	296	4,312	44,467	8,352	60,519	59,097	1,422	3,204	4,552	-	925,130

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TABLE D-2
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF	pounds
PERIOD 2															
Nuclear Steam Supply System Removal															
27 1	Reactor Coolant Piping	30	45	4	5	131	-	60	275	275	-	319	-	-	29,769
27 2	Pressurizer Relief Tank	13	65	3	3	87	-	45	217	217	-	300	-	-	19,699
27 3	Reactor Coolant Pumps & Motors	24	34	21	27	2,789	-	724	3,618	3,618	-	2,258	-	-	633,930
27 4	Pressurizer	18	27	4	9	943	-	253	1,253	1,253	-	1,771	-	-	214,343
27 5	Steam Generators	129	920	2,067	1,977	4,530	-	1,930	11,554	11,554	-	18,876	-	-	2,339,184
27 6	Old Steam Generator Lower Shell Units	-	-	1,650	1,578	1,896	-	876	6,000	6,000	-	7,899	-	-	1,134,000
27 7	CRDMs/Clas/Service Structure Remov	73	46	41	10	185	-	100	458	458	-	2,253	-	-	64,288
27 8	Reactor Vessel Internals	55	1,599	3,397	427	4,789	-	4,577	14,844	14,844	-	655	539	1,020	223,866
27 9	Vessel & Internals GTCC Disposal	-	-	-	-	12,355	-	6,178	18,533	18,533	-	-	-	-	-
27 10	Reactor Vessel	110	4,037	176	263	5,835	-	6,110	16,530	16,530	-	3,930	1,703	-	786,229
27 Totals		451	6,774	7,364	4,299	33,540	-	20,853	73,280	73,280	-	38,258	2,242	1,020	5,445,308
28	Remove spent fuel racks	229	22	-	-	88	166	167	672	672	-	285	-	-	31,590
Removal of Major Equipment															
29	Main Turbine/Generator	-	46	-	-	-	-	7	53	-	53	-	-	-	-
30	Main Condensers	-	371	-	-	-	-	56	426	-	426	-	-	-	-
Disposal of Plant Systems															
31 1	Amertap	-	37	-	-	-	-	6	43	-	43	-	-	-	-
31 2	Auxiliary Feedwater	-	2	-	-	-	-	0	2	-	2	-	-	-	-
31 3	Auxiliary Feedwater - Insulated	-	9	-	-	-	-	1	10	-	10	-	-	-	-
31 4	Auxiliary Feedwater - Insulated - RCA	15	13	-	-	-	-	10	39	39	-	-	-	-	-
31 5	Auxiliary Feedwater - RCA	4	3	-	-	-	-	2	9	9	-	-	-	-	-
31 6	Auxiliary Steam	-	0	-	-	-	-	0	0	-	0	-	-	-	-
31 7	Auxiliary Steam - Insulated	-	16	-	-	-	-	2	19	-	19	-	-	-	-
31 8	Auxiliary Steam - Insulated - RCA	1	1	-	-	-	-	1	2	2	-	-	-	-	-
31 9	Auxiliary Steam - RCA	0	0	-	-	-	-	0	0	0	-	-	-	-	-
31 10	Breathing Air - Insulated - RCA	1	1	-	-	-	-	0	1	1	-	-	-	-	-
31 11	Breathing Air - RCA	2	2	-	-	-	-	1	6	6	-	-	-	-	-
31 12	Chemical & Volume Control	38	57	-	-	280	-	103	478	478	-	748	-	-	63,666
31 13	Chemical & Volume Control - Insulated	192	197	-	-	245	-	207	842	842	-	456	-	-	55,760
31 14	Circulating Water	-	49	-	-	-	-	7	56	-	56	-	-	-	-
31 15	Component Cooling Water	-	78	-	-	-	-	12	90	-	90	-	-	-	-
31 16	Component Cooling Water - RCA	53	44	-	-	-	-	33	130	130	-	-	-	-	-
31 17	Condensate	-	89	-	-	-	-	13	102	-	102	-	-	-	-
31 18	Condensate - Insulated	-	28	-	-	-	-	4	32	-	32	-	-	-	-
31 19	Condensate Polishing	-	17	-	-	-	-	2	19	-	19	-	-	-	-
31 20	Condensate Polishing - Ins	-	43	-	-	-	-	6	50	-	50	-	-	-	-
31 21	Condensate Recovery	-	8	-	-	-	-	1	10	-	10	-	-	-	-
31 22	Condensate Recovery - Insulated	-	1	-	-	-	-	0	2	-	2	-	-	-	-
31 23	Condensate Recovery - Insulated - RC	1	1	-	-	-	-	0	2	2	-	-	-	-	-
31 24	Condensate Recovery - RCA	3	3	-	-	-	-	2	7	7	-	-	-	-	-
31 25	Condensate Storage	-	36	-	-	-	-	5	42	-	42	-	-	-	-
31 26	Condenser	-	12	-	-	-	-	2	14	-	14	-	-	-	-
31 27	Containment Emergency Filter	-	3	-	-	0	2	1	6	6	-	1	-	-	105
31 28	Containment Normal & Emerg Cooling	-	479	-	-	88	277	183	1,027	1,027	-	170	-	-	20,009
31 29	Containment Normal & Emerg Cooling -	-	4	-	-	5	-	2	12	12	-	9	-	-	1,238
31 30	Containment Post Accident Eval	-	0	-	-	0	0	0	1	1	-	0	-	-	35
31 31	Containment Purge	-	33	-	-	47	0	20	101	101	-	89	-	-	10,743
31 32	Containment Spray	-	56	-	-	154	-	53	263	263	-	293	-	-	34,998
31 33	Containment Spray - Insulated	-	49	-	-	84	-	33	166	166	-	154	-	-	19,070
31 34	EDG Building HVAC	-	1	-	-	-	-	0	2	-	2	-	-	-	-
31 35	Electrical - Clean	-	712	-	-	-	-	107	819	-	819	-	-	-	-
31 36	Electrical - Contaminated	-	375	-	-	16	65	108	564	564	-	32	-	-	3,664
31 37	Electrical - Decontaminated	68	305	-	-	-	-	80	452	452	-	-	-	-	-

TABLE D-2
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft
Number												A CF	B CF	C CF	pounds
Disposal of Plant Systems (continued)															
31.38	Emergency Diesel Engine & Oil	-	35	-	-	-	-	5	40	-	40	-	-	-	-
31.39	Emergency Diesel Engine & Oil - Ins	-	1	-	-	-	-	0	2	-	2	-	-	-	-
31.40	Extraction Steam	-	5	-	-	-	-	1	6	-	6	-	-	-	-
31.41	Extraction Steam - Insulated	-	28	-	-	-	-	4	29	-	29	-	-	-	-
31.42	Feedwater	-	25	-	-	-	-	4	29	-	29	-	-	-	-
31.43	Feedwater - Insulated	-	72	-	-	-	-	11	83	-	83	-	-	-	-
31.44	Feedwater - Insulated - RCA	9	8	-	-	-	-	6	23	23	-	-	-	-	-
31.45	Feedwater - RCA	1	1	-	-	-	-	1	2	2	-	-	-	-	-
31.46	Feedwater Heater Drains & Vents	-	23	-	-	-	-	3	27	-	27	-	-	-	-
31.47	Feedwater Heater Drains & Vents - Ins	-	158	-	-	-	-	23	180	-	180	-	-	-	-
31.48	Fire Protection	-	9	-	-	-	-	1	10	-	10	-	-	-	-
31.49	Fire Protection - RCA	11	13	-	-	-	-	7	31	31	-	-	-	-	-
31.50	Fuel Handling HVAC	-	43	-	-	7	27	17	94	94	-	13	-	-	1,541
31.51	Generator	-	3	-	-	-	-	0	3	-	3	-	-	-	-
31.52	Generator - Insulated	-	1	-	-	-	-	0	1	-	1	-	-	-	-
31.53	Instrument Air	-	7	-	-	-	-	1	7	-	7	-	-	-	-
31.54	Instrument Air - Insulated	-	5	-	-	-	-	1	6	-	6	-	-	-	-
31.55	Instrument Air - Insulated - RCA	9	8	-	-	-	-	5	22	22	-	-	-	-	-
31.56	Instrument Air - RCA	6	5	-	-	-	-	4	14	-	14	-	-	-	-
31.57	Intake Cooling Water	-	77	-	-	-	-	12	89	-	89	-	-	-	-
31.58	Main Steam - Insulated	-	86	-	-	-	-	13	99	-	99	-	-	-	-
31.59	Main Steam - Insulated - RCA	6	5	-	-	-	-	4	15	15	-	-	-	-	-
31.60	Miscellaneous - RCA	1	1	-	-	-	-	1	3	3	-	-	-	-	-
31.61	Primary Water Makeup	-	38	-	-	-	-	6	44	-	44	-	-	-	-
31.62	Reactor Coolant - Insulated	44	54	-	-	69	-	53	221	221	-	132	-	-	15,773
31.63	Refueling Equipment	-	83	-	-	290	-	93	466	466	-	569	-	-	65,804
31.64	Residual Heat Removal	74	51	-	-	1,155	-	338	1,517	1,517	-	2,159	-	-	262,460
31.65	Residual Heat Removal - Insulated	164	223	-	-	617	-	292	1,295	1,295	-	1,176	-	-	140,165
31.66	Safety Injection	-	121	-	-	43	145	63	373	373	-	140	-	-	9,813
31.67	Safety Injection - Insulated	-	93	-	-	215	-	77	386	386	-	412	-	-	48,960
31.68	Safety Injection Accumulator	-	175	-	-	137	29	82	423	423	-	279	-	-	31,098
31.69	Sample - NSSS	-	14	-	-	7	1	5	28	28	-	12	-	-	1,602
31.70	Sample - NSSS - Ins	-	14	-	-	8	-	6	28	28	-	14	-	-	1,858
31.71	Screen Wash	-	12	-	-	-	-	2	14	-	14	-	-	-	-
31.72	Secondary Sample	-	2	-	-	-	-	0	2	-	2	-	-	-	-
31.73	Secondary Sample - RCA	1	0	-	-	-	-	0	2	-	2	-	-	-	-
31.74	Secondary Wet Layup	-	11	-	-	-	-	0	2	2	-	-	-	-	-
31.75	Secondary Wet Layup - RCA	2	2	-	-	-	-	2	13	-	13	-	-	-	-
31.76	Service Water	-	0	-	-	-	-	0	0	-	0	-	-	-	-
31.77	Service Water - RCA	1	0	-	-	-	-	0	1	1	-	-	-	-	-
31.78	Spent Fuel Pool Cooling	68	77	-	-	216	-	107	467	467	-	431	-	-	49,000
31.79	Spent Fuel Pool Cooling - Insulated	40	42	-	-	79	-	50	212	212	-	149	-	-	18,053
31.80	Steam Generator Wet Layup	-	1	-	-	-	-	0	1	-	1	-	-	-	-
31.81	Steam Generator Wet Layup - RCA	0	0	-	-	-	-	0	0	0	-	-	-	-	-
31.82	Turbine Building HVAC	-	10	-	-	-	-	1	11	-	11	-	-	-	-
31.83	Turbine Lube Oil	-	20	-	-	-	-	3	23	-	23	-	-	-	-
31.84	Turbine Plant Chemical Addition	-	2	-	-	-	-	0	2	-	2	-	-	-	-
31.85	Turbine Plant Cooling Water	-	43	-	-	-	-	6	50	-	50	-	-	-	-
31.86	Turbine Plant Cooling Water - Insulated	-	24	-	-	-	-	4	27	-	27	-	-	-	-
31.87	Turbine Steam	-	32	-	-	-	-	5	37	-	37	-	-	-	-
31.88	Turbine Steam - Insulated	-	14	-	-	-	-	2	17	-	17	-	-	-	-
31.89	Waste Disposal	17	24	-	-	49	-	27	117	117	-	113	-	-	11,136
31.90	Waste Disposal - Insulated	66	63	-	-	90	-	72	292	292	-	167	-	-	20,538
31	Totals	897	4,629	-	-	3,903	547	2,433	12,409	10,245	2,164	7,719	-	-	887,090
32	Erect scaffolding for systems removal	-	210	-	-	5	17	56	288	288	-	16	-	-	1,829

TABLE D-2
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site				10 CFR 61
													A CF	B CF	C CF	pounds	GTCC Cu Ft
Decontamination of Site Buildings																	
	33 1	Reactor Building*	522	340	44	22	2,867	128	1,090	5,013	5,013	-	5,936	-	-	672,211	-
	33 2	Fuel Handling	190	181	2	1	58	105	173	720	720	-	188	-	-	20,478	-
	33	Totals	712	532	46	22	2,925	233	1,263	5,733	5,733	-	6,124	-	-	692,689	-
	34	ORISE confirmatory survey	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	35	Terminate license	-	-	-	-	-	1,064	319	1,383	1,383	-	-	-	-	-	-
									Note 1								-
Period 2 Additional Costs																	
	36	Mixed/Hazardous Waste	-	-	-	-	-	3,289	493	3,782	3,782	-	-	-	-	-	-
	37	Seaweed Remediation & Disposal	-	-	-	-	-	2,250	338	2,588	2,588	-	-	-	-	-	-
	38	License Termination Survey	-	-	-	-	-	1,669	250	1,919	1,919	-	-	-	-	-	-
Subtotal Period 2 Activity Costs			2,289	12,582	7,410	4,321	40,461	9,235	26,235	102,533	99,890	2,643	52,402	2,242	1,020	7,058,506	553
Period 2 Undistributed Costs																	
	1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-	-
	2	Decon supplies	312	-	-	-	-	-	78	390	390	-	-	-	-	-	-
	3	DOC staff relocation expenses	-	1,021	-	-	-	-	-	390	390	-	-	-	-	-	-
	4	Process liquid waste	217	-	-	-	-	-	153	1,174	1,174	-	-	-	-	-	-
	5	Insurance	-	-	165	235	1,867	-	627	3,111	3,111	-	-	2,889	-	424,336	-
	6	Property taxes	-	-	-	-	-	1,133	113	1,246	1,246	-	-	-	-	-	-
	7	Health physics supplies	-	1,674	-	-	-	1,240	124	1,364	1,227	136	-	-	-	-	-
	8	Heavy equipment rental	-	9,309	-	-	-	-	419	2,093	2,093	-	-	-	-	-	-
	9	Small tool allowance	-	140	-	-	-	-	1,396	10,706	9,635	1,071	-	-	-	-	-
	10	Pipe cutting equipment	-	749	-	-	-	-	21	161	145	16	-	-	-	-	-
	11	Decon ng	974	-	-	-	-	-	112	862	862	-	-	-	-	-	-
	12	Disposal of DAW generated	-	-	-	-	-	-	146	1,120	1,120	-	-	-	-	-	-
	13	Decommissioning Equipment Dispositi	-	-	66	22	3,476	-	879	4,443	4,443	-	11,286	-	-	759,731	-
	14	Plant energy budget	-	-	-	-	83	-	63	424	424	-	270	-	-	30,000	-
	15	NRC Fees	-	-	-	-	-	2,865	430	3,295	2,965	329	-	-	-	-	-
	16	Emergency Planning Fees	-	-	-	-	-	1,530	153	1,683	1,683	-	-	-	-	-	-
	17	Site Security Cost	-	-	-	-	-	146	15	161	161	-	-	-	-	-	-
	18	Fixed Overhead	-	-	-	-	-	4,315	647	4,962	4,962	-	-	-	-	-	-
	19	Radwaste Processing Skids	-	-	-	-	-	4,353	853	5,006	5,006	-	-	-	-	-	-
								535	80	615	615	-	-	-	-	-	-
Subtotal Undistributed Costs Period 2			1,994	12,894	232	256	5,426	16,395	6,183	43,380	41,828	1,552	11,556	2,889	-	1,214,067	-
Staff Costs																	
		DOC Staff Cost	-	-	-	-	-	24,630	3,694	28,324	28,324	-	-	-	-	-	-
		Utility Staff Cost	-	-	-	-	-	53,881	8,082	61,963	61,963	-	-	-	-	-	-
TOTAL PERIOD 2			4,282	25,476	7,641	4,577	45,887	104,141	44,195	236,200	232,005	4,195	63,958	5,131	1,020	8,272,572	553

TABLE D-2
TURKEY POINT PLANT - UNIT 3
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61
												A CF	B CF	C CF	pounds GTCC Cu Ft
PERIOD 3															
Demolition of Remaining Site Buildings															
39 1	Reactor Building	-	2,696	-	-	-	-	404	3,101	465	2,636	-	-	-	-
39 2	Fuel Handling	-	340	-	-	-	-	51	391	39	352	-	-	-	-
39 3	Miscellaneous Structures	-	115	-	-	-	-	17	132	-	132	-	-	-	-
39 4	Seawall	-	182	-	-	-	-	27	209	-	209	-	-	-	-
39 5	Turbine Building	-	314	-	-	-	-	47	361	-	361	-	-	-	-
39 6	Turbine Pedestal	-	256	-	-	-	-	38	294	-	294	-	-	-	-
39	Totals	-	3,902	-	-	-	-	585	4,488	504	3,983	-	-	-	-
Site Closeout Activities															
40	Grade & landscape site	-	94	-	-	-	-	14	108	-	108	-	-	-	-
41	Final report to NRC	-	-	-	-	-	156	23	179	179	-	-	-	-	-
Subtotal Period 3 Activity Costs		-	3,996	-	-	-	156	623	4,775	684	4,091	-	-	-	-
Period 3 Undistributed Costs															
1	Insurance	-	-	-	-	-	120	12	132	132	-	-	-	-	-
2	Property taxes	-	-	-	-	-	227	23	250	-	250	-	-	-	-
3	Heavy equipment rental	-	1,563	-	-	-	-	235	1,798	-	1,798	-	-	-	-
4	Small tool allowance	-	28	-	-	-	-	4	33	-	33	-	-	-	-
5	Plant energy budget	-	-	-	-	-	59	9	68	-	68	-	-	-	-
6	Site Security Cost	-	-	-	-	-	159	24	183	-	183	-	-	-	-
Subtotal Undistributed Costs Period 3		-	1,592	-	-	-	565	306	2,463	132	2,331	-	-	-	-
Staff Costs															
DOC Staff Cost		-	-	-	-	-	2,185	328	2,513	-	2,513	-	-	-	-
Utility Staff Cost		-	-	-	-	-	567	85	652	587	65	-	-	-	-
TOTAL PERIOD 3		-	5,588	-	-	-	3,474	1,342	10,403	1,403	9,000	-	-	-	-
TOTAL COST TO DECOMMISSION		5,386	32,726	7,969	4,873	50,199	152,081	53,889	307,123	292,505	14,618	67,163	9,683	1,020	9,197,702 553

Total cost to decommission with 21.28% contingency: \$ 307,122,848

Total NRC license termination cost is 95.24% or \$ 292,505,202

Non-nuclear demolition cost is 4.76% or \$ 14,617,648

Total site radwaste volume buried 77,866 cubic feet

Total site radwaste weight buried 9,197,702 pounds

Total 10CFR61 greater than class C waste buried 553 cubic feet

Total scrap metal released from site 12,064 tons

Total craft labor requirements 494,699 person hours

NOTES:

- 1) This activity is performed by the decommissioning staff following plant shutdown, the costs for this are included in this period's staff cost
- 2) This activity, while performed after final plant shutdown, is considered part of operations and therefore no decommissioning costs are included for this activity

TABLE D-3
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft
Number												A CF	B CF	C CF	pounds
PERIOD 1															
1	Prepare preliminary decommissioning c	-	-	-	-		56	8	64	64	-		-	-	-
2	Notification of Cessation of Operations								Note 1						
3	Remove fuel & source material								Note 2						
4	Notification of Permanent Defueling								Note 1						
5	Deactivate plant systems & process waste								Note 1						
6	Prepare and submit PSDAR	-	-	-	-		86	13	98	98	-		-	-	-
7	Review plant dwgs & specs.	-	-	-	-		197	30	226	226	-		-	-	-
8	Perform detailed rad survey								Note 1						
9	Estimate by-product inventory	-	-	-	-		43	6	49	49	-		-	-	-
10	End product description	-	-	-	-		43	6	49	49	-		-	-	-
11	Detailed by-product inventory	-	-	-	-		56	8	64	64	-		-	-	-
12	Define major work sequence	-	-	-	-		321	48	369	369	-		-	-	-
13	Perform SER and EA	-	-	-	-		133	20	152	152	-		-	-	-
14	Perform Site-Specific Cost Study	-	-	-	-		214	32	246	246	-		-	-	-
15	Prepare/submit License Termination Pl	-	-	-	-		175	26	201	201	-		-	-	-
16	Receive NRC approval of termination plan								Note 1						
Activity Specifications															
17.1	Plant & temporary facilities	-	-	-	-		210	32	242	218	24		-	-	-
17.2	Plant systems	-	-	-	-		178	27	205	184	20		-	-	-
17.3	NSSS Decontamination Flush	-	-	-	-		21	3	25	25	-		-	-	-
17.4	Reactor internals	-	-	-	-		304	46	349	349	-		-	-	-
17.5	Reactor vessel	-	-	-	-		278	42	320	320	-		-	-	-
17.6	Biological shield	-	-	-	-		21	3	25	25	-		-	-	-
17.7	Steam generators	-	-	-	-		133	20	153	153	-		-	-	-
17.8	Reinforced concrete	-	-	-	-		68	10	79	39	39		-	-	-
17.9	Turbine & condenser	-	-	-	-		34	5	39	-	39		-	-	-
17.10	Plant structures & buildings	-	-	-	-		133	20	153	77	77		-	-	-
17.11	Waste management	-	-	-	-		197	30	226	226	-		-	-	-
17.12	Facility & site closeout	-	-	-	-		38	6	44	22	22		-	-	-
17	Total	-	-	-	-		1,617	243	1,860	1,638	222		-	-	-
Planning & Site Preparations															
18	Prepare dismantling sequence	-	-	-	-		103	15	118	118	-		-	-	-
19	Plant prep & temp svces	-	-	-	-		1,895	284	2,180	2,180	-		-	-	-
20	Design water clean-up system	-	-	-	-		60	9	69	69	-		-	-	-
21	Rigging/Cont Cntrl Envtps/tooling/etc	-	-	-	-		1,604	241	1,845	1,845	-		-	-	-
22	Procure casks/liners & containers	-	-	-	-		53	8	60	60	-		-	-	-
Detailed Work Procedures															
23.1	Plant systems	-	-	-	-		202	30	233	209	23		-	-	-
23.2	NSSS Decontamination Flush	-	-	-	-		43	6	49	49	-		-	-	-
23.3	Reactor internals	-	-	-	-		107	16	123	123	-		-	-	-
23.4	Remaining buildings	-	-	-	-		58	9	66	17	50		-	-	-
23.5	CRD cooling assembly	-	-	-	-		43	6	49	49	-		-	-	-
23.6	CRD housings & ICI tubes	-	-	-	-		43	6	49	49	-		-	-	-
23.7	Incore instrumentation	-	-	-	-		43	6	49	49	-		-	-	-
23.8	Reactor vessel	-	-	-	-		155	23	179	179	-		-	-	-
23.9	Facility closeout	-	-	-	-		51	8	59	30	30		-	-	-
23.10	Missile shields	-	-	-	-		19	3	22	22	-		-	-	-
23.11	Biological shield	-	-	-	-		51	8	59	59	-		-	-	-
23.12	Steam generators	-	-	-	-		197	30	226	226	-		-	-	-
23.13	Reinforced concrete	-	-	-	-		43	6	49	25	25		-	-	-
23.14	Turbine & condensers	-	-	-	-		133	20	153	-	153		-	-	-
23.15	Auxiliary building	-	-	-	-		117	18	134	121	13		-	-	-
23.16	Reactor building	-	-	-	-		117	18	134	121	13		-	-	-
23	Total	-	-	-	-		1,421	213	1,635	1,327	307		-	-	-

TABLE D-3
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft	
												A CF	B CF	C CF	pounds	
24	Decon primary loop	516	-	-	-	-	-	258	774	774	-	-	-	-	-	-
25	Asbestos removal program	-	217	37	1	231	7	117	610	427	184	640	-	-	-	-
Period 1 Additional Costs																
26	Site Characterization Survey	-	-	-	-	-	1,024	154	1,178	1,178	-	-	-	-	-	-
Subtotal Period 1 Activity Costs		516	217	37	1	231	9,106	1,740	11,849	11,136	713	640	-	-	-	-
Period 1 Undistributed Costs																
1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-	-
2	Decon supplies	30	-	-	-	-	-	7	37	37	-	-	-	-	-	-
3	DOC staff relocation expenses	-	1,021	-	-	-	-	153	1,174	1,174	-	-	-	-	-	-
4	Process liquid waste	67	-	273	289	3,292	-	927	4,849	4,849	-	-	4,552	-	-	748,128
5	Insurance	-	-	-	-	-	2,060	206	2,266	2,266	-	-	-	-	-	-
6	Property taxes	-	-	-	-	-	310	31	341	341	-	-	-	-	-	-
7	Health physics supplies	-	209	-	-	-	-	52	262	262	-	-	-	-	-	-
8	Heavy equipment rental	-	211	-	-	-	-	32	242	242	-	-	-	-	-	-
9	Small tool allowance	-	3	-	-	-	-	1	4	4	-	-	-	-	-	-
10	Disposal of DAW generated	-	-	17	5	790	-	200	1,011	1,011	-	2,564	-	-	-	177,002
11	Plant energy budget	-	-	-	-	-	635	95	730	730	-	-	-	-	-	-
12	NRC Fees	-	-	-	-	-	304	30	334	334	-	-	-	-	-	-
13	Emergency Planning Fees	-	-	-	-	-	76	8	83	83	-	-	-	-	-	-
14	Site Security Cost	-	-	-	-	-	752	113	865	865	-	-	-	-	-	-
15	Fixed Overhead	-	-	-	-	-	1,087	163	1,250	1,250	-	-	-	-	-	-
Subtotal Undistributed Costs Period 1		587	1,445	290	295	4,081	5,223	2,092	14,013	14,013	-	2,564	4,552	-	-	925,130
Staff Costs																
DOC Staff Cost		-	-	-	-	-	5,326	799	6,125	6,125	-	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	18,819	2,823	21,642	21,642	-	-	-	-	-	-
TOTAL PERIOD 1 COST		1,103	1,662	327	296	4,312	38,475	7,453	53,629	52,916	713	3,204	4,552	-	-	925,130

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TABLE D-3
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Deron	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft	
Number												A CF	B CF	C CF	pounds	
PERIOD 2																
Nuclear Steam Supply System Removal																
27 1	Reactor Coolant Piping	30	45	4	5	131	-	60	275	275	-	319	-	-	29,769	-
27 2	Pressurizer Relief Tank	13	65	3	3	87	-	45	217	217	-	300	-	-	19,699	-
27 3	Reactor Coolant Pumps & Motors	24	34	21	27	2,789	-	724	3,618	3,618	-	2,253	-	-	633,930	-
27 4	Pressurizer	18	27	4	9	943	-	253	1,253	1,253	-	1,771	-	-	214,343	-
27 5	Steam Generators	129	920	2,067	1,977	4,530	-	1,930	11,554	11,554	-	18,876	-	-	2,339,184	-
27 6	Old Steam Generator Lower Shell Units	-	-	1,650	1,578	1,896	-	876	6,000	6,000	-	7,899	-	-	1,134,000	-
27 7	CRDMs/ICIs/Service Structure Remov	73	46	41	10	185	-	100	456	456	-	2,253	-	-	84,288	-
27 8	Reactor Vessel Internals	55	1,599	3,397	427	4,789	-	4,577	14,844	14,844	-	655	539	1,020	223,866	-
27 9	Vessel & Internals GTCC Disposal	-	-	-	-	12,355	-	6,178	18,533	18,533	-	-	-	-	-	553
27 1	Reactor Vessel	110	4,037	176	263	5,835	-	6,110	16,530	16,530	-	3,930	1,703	-	786,229	-
27 Totals		451	6,774	7,364	4,299	33,540	-	20,853	73,280	73,280	-	38,255	2,242	1,020	5,445,308	553
28	Remove spent fuel racks	229	22	-	-	88	166	167	672	672	-	285	-	-	31,590	-
Removal of Major Equipment																
29	Main Turbine/Generator	-	46	-	-	-	-	7	53	-	53	-	-	-	-	-
30	Main Condensers	-	371	-	-	-	-	56	426	-	426	-	-	-	-	-
Disposal of Plant Systems																
31 1	Amertap	-	40	-	-	-	-	6	46	-	46	-	-	-	-	-
31 2	Auxiliary Bldg HVAC	-	197	-	-	42	129	79	447	447	-	83	-	-	9,533	-
31 3	Auxiliary Feedwater	-	8	-	-	-	-	1	9	-	9	-	-	-	-	-
31 4	Auxiliary Feedwater - Insulated	-	14	-	-	-	-	2	16	-	16	-	-	-	-	-
31 5	Auxiliary Feedwater - Insulated - RCA	24	20	-	-	-	-	15	59	59	-	-	-	-	-	-
31 6	Auxiliary Feedwater - RCA	5	5	-	-	-	-	3	14	14	-	-	-	-	-	-
31 7	Auxiliary Steam	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
31 8	Auxiliary Steam - Insulated	-	23	-	-	-	-	3	26	-	26	-	-	-	-	-
31 9	Auxiliary Steam - Insulated - RCA	1	1	-	-	-	-	1	3	3	-	-	-	-	-	-
31 10	Auxiliary Steam - RCA	0	0	-	-	-	-	0	0	0	-	-	-	-	-	-
31 11	Breathing Air - Insulated - RCA	1	1	-	-	-	-	0	2	2	-	-	-	-	-	-
31 12	Breathing Air - RCA	11	9	-	-	-	-	7	27	27	-	-	-	-	-	-
31 13	Chemical & Volume Control	282	271	-	-	1,660	-	624	2,836	2,836	-	5,495	-	-	377,166	-
31 14	Chemical & Volume Control - Insulated	308	346	-	-	427	-	347	1,428	1,428	-	803	-	-	96,999	-
31 15	Circulating Water	-	59	-	-	-	-	9	68	-	68	-	-	-	-	-
31 16	Component Cooling Water	-	105	-	-	-	-	16	121	-	121	-	-	-	-	-
31 17	Component Cooling Water - RCA	75	62	-	-	-	-	47	185	185	-	-	-	-	-	-
31 18	Condensate	-	105	-	-	-	-	16	120	-	120	-	-	-	-	-
31 19	Condensate - Insulated	-	41	-	-	-	-	6	47	-	47	-	-	-	-	-
31 20	Condensate Polishing	-	18	-	-	-	-	3	20	-	20	-	-	-	-	-
31 21	Condensate Polishing - Ins	-	53	-	-	-	-	8	61	-	61	-	-	-	-	-
31 22	Condensate Recovery	-	12	-	-	-	-	2	14	-	14	-	-	-	-	-
31 23	Condensate Recovery - Insulated	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
31 24	Condensate Recovery - Insulated - RC	1	1	-	-	-	-	1	3	3	-	-	-	-	-	-
31 25	Condensate Recovery - RCA	4	4	-	-	-	-	3	11	11	-	-	-	-	-	-
31 26	Condensate Storage	-	38	-	-	-	-	6	44	-	44	-	-	-	-	-
31 27	Condenser	-	14	-	-	-	-	2	16	-	16	-	-	-	-	-
31 28	Containment Emergency Filter	-	3	-	-	0	2	1	6	6	-	1	-	-	105	-
31 29	Containment Normal & Emerg Cooling	-	484	-	-	93	273	185	1,036	1,036	-	179	-	-	21,249	-
31 30	Containment Normal & Emerg Cooling -	-	6	-	-	7	-	3	16	16	-	12	-	-	1,653	-
31 31	Containment Post Accident Eval	-	9	-	-	4	0	3	16	16	-	7	-	-	826	-
31 32	Containment Post Accident Eval - Ins	-	19	-	-	23	-	11	53	53	-	42	-	-	5,328	-
31 33	Containment Purge	-	33	-	-	47	0	20	101	101	-	89	-	-	10,743	-
31 34	Containment Spray	-	60	-	-	161	-	55	276	276	-	307	-	-	36,569	-
31 35	Containment Spray - Insulated	-	53	-	-	91	-	36	179	179	-	167	-	-	20,642	-
31 36	Control Building HVAC	-	16	-	-	-	-	2	19	-	19	-	-	-	-	-
31 37	EDG Building HVAC	-	2	-	-	-	-	0	3	-	3	-	-	-	-	-

TABLE D-3
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft
Number												A CF	B CF	C CF	pounds
Disposal of Plant Systems (continued)															
31 38	Electrical - Clean	-	1,085	-	-	-	-	163	1,248	-	1,248	-	-	-	-
31 39	Electrical - Contaminated	-	608	-	-	23	94	172	807	897	-	40	-	-	5,279
31 40	Electrical - Decontaminated	88	486	-	-	-	-	114	688	688	-	-	-	-	-
31 41	Emergency Diesel Engine & Oil	-	39	-	-	-	-	6	44	-	44	-	-	-	-
31 42	Emergency Diesel Engine & Oil - Ins	-	2	-	-	-	-	0	2	-	2	-	-	-	-
31 43	Extraction Steam	-	7	-	-	-	-	1	8	-	8	-	-	-	-
31 44	Extraction Steam - Insulated	-	41	-	-	-	-	6	47	-	47	-	-	-	-
31 45	Feedwater	-	73	-	-	-	-	11	84	-	84	-	-	-	-
31 46	Feedwater - Insulated	-	122	-	-	-	-	18	140	-	140	-	-	-	-
31 47	Feedwater - Insulated - RCA	15	14	-	-	-	-	10	39	39	-	-	-	-	-
31 48	Feedwater - RCA	2	1	-	-	-	-	1	4	4	-	-	-	-	-
31 49	Feedwater Heater Drains & Vents	-	26	-	-	-	-	4	30	-	30	-	-	-	-
31 50	Feedwater Heater Drains & Vents - Ins	-	195	-	-	-	-	29	224	-	224	-	-	-	-
31 51	Fire Protection	-	178	-	-	-	-	27	204	-	204	-	-	-	-
31 52	Fire Protection - RCA	147	121	-	-	-	-	92	359	359	-	-	-	-	-
31 53	Fuel Handling HVAC	-	43	-	-	7	27	17	94	94	-	13	-	-	1,541
31 54	Generator	-	3	-	-	-	-	0	3	-	3	-	-	-	-
31 55	Generator - Insulated	-	1	-	-	-	-	0	1	-	1	-	-	-	-
31 56	HVAC - Clean	-	165	-	-	-	-	25	190	-	190	-	-	-	-
31 57	HVAC - Contaminated	-	44	-	-	6	26	17	93	93	-	13	-	-	1,459
31 58	Instrument Air	-	11	-	-	-	-	2	13	-	13	-	-	-	-
31 59	Instrument Air - Insulated	-	10	-	-	-	-	1	11	-	11	-	-	-	-
31 60	Instrument Air - Insulated - RCA	16	14	-	-	-	-	10	41	41	-	-	-	-	-
31 61	Instrument Air - RCA	11	10	-	-	-	-	7	27	27	-	-	-	-	-
31 62	Intake Cooling Water	-	108	-	-	-	-	16	124	-	124	-	-	-	-
31 63	Main Steam - Insulated	-	105	-	-	-	-	16	120	-	120	-	-	-	-
31 64	Main Steam - Insulated - RCA	8	7	-	-	-	-	5	21	21	-	-	-	-	-
31 65	Miscellaneous - RCA	1	1	-	-	-	-	1	3	3	-	-	-	-	-
31 66	Nitrogen & Hydrogen	-	1	-	-	-	-	0	1	-	1	-	-	-	-
31 67	Nitrogen & Hydrogen - RCA	0	0	-	-	-	-	0	0	0	-	-	-	-	-
31 68	Primary Water Makeup	-	38	-	-	-	-	6	44	-	44	-	-	-	-
31 69	Radwaste Building HVAC	-	96	-	-	14	56	36	202	202	-	28	-	-	3,160
31 70	Reactor Coolant - Insulated	48	59	-	-	75	-	58	240	240	-	143	-	-	17,098
31 71	Refueling Equipment	-	100	-	-	368	-	117	584	584	-	724	-	-	83,568
31 72	Residual Heat Removal	76	56	-	-	1,172	-	345	1,648	1,648	-	2,192	-	-	266,278
31 73	Residual Heat Removal - Insulated	211	292	-	-	793	-	377	1,672	1,672	-	1,524	-	-	180,132
31 74	Safety Injection	-	121	-	-	43	145	63	373	373	-	141	-	-	9,862
31 75	Safety Injection - Insulated	-	131	-	-	313	-	111	555	555	-	603	-	-	71,183
31 76	Safety Injection Accumulator	-	209	-	-	164	28	97	498	498	-	332	-	-	37,187
31 77	Sample - NSSS	-	29	-	-	14	1	11	55	55	-	23	-	-	3,089
31 78	Sample - NSSS - Ins	-	37	-	-	18	-	14	68	68	-	30	-	-	4,088
31 79	Screen Wash	-	17	-	-	-	-	3	20	-	20	-	-	-	-
31 80	Secondary Sample	-	2	-	-	-	-	0	2	-	2	-	-	-	-
31 81	Secondary Sample - RCA	0	0	-	-	-	-	0	1	1	-	-	-	-	-
31 82	Secondary Wet Layout	-	12	-	-	-	-	2	14	-	14	-	-	-	-
31 83	Secondary Wet Layout - RCA	3	3	-	-	-	-	2	7	7	-	-	-	-	-
31 84	Service Water	-	11	-	-	-	-	2	13	-	13	-	-	-	-
31 85	Service Water - Insulated	-	5	-	-	-	-	1	5	-	5	-	-	-	-
31 86	Service Water - Insulated - RCA	8	9	-	-	-	-	5	22	22	-	-	-	-	-
31 87	Service Water - RCA	19	20	-	-	-	-	12	51	51	-	-	-	-	-
31 88	Spent Fuel Pool Cooling	73	84	-	-	232	-	116	504	504	-	463	-	-	52,708
31 89	Spent Fuel Pool Cooling - Insulated	45	48	-	-	92	-	58	243	243	-	174	-	-	20,987
31 90	Steam Generator Wet Layout	-	1	-	-	-	-	0	1	-	1	-	-	-	-
31 91	Steam Generator Wet Layout - RCA	0	0	-	-	-	-	0	0	0	-	-	-	-	-
31 92	Turbine Building HVAC	-	11	-	-	-	-	2	13	-	13	-	-	-	-
31 93	Turbine Lube Oil	-	27	-	-	-	-	4	31	-	31	-	-	-	-
31 94	Turbine Plant Chemical Addition	-	3	-	-	-	-	0	3	-	3	-	-	-	-
31 95	Turbine Plant Cooling Water	-	53	-	-	-	-	8	61	-	61	-	-	-	-
31 96	Turbine Plant Cooling Water - Insulated	-	31	-	-	-	-	5	36	-	36	-	-	-	-

TABLE D-3
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	A CF	B CF	C CF	pounds	10 CFR 61 GTCC Cu Ft
Disposal of Plant Systems (continued)																
31 97	Turbine Steam	-	47	-	-	-	-	7	54	-	54	-	-	-	-	-
31 98	Turbine Steam - Insulated	-	22	-	-	-	-	3	25	-	25	-	-	-	-	-
31 99	Waste Disposal	251	248	-	-	1,050	-	450	1,998	1,998	-	3,190	-	-	238,805	-
31 100	Waste Disposal - Insulated	445	383	-	-	523	-	449	1,801	1,801	-	856	-	-	118,930	-
31 101	Water Treatment Plant	-	69	-	-	-	-	10	79	-	79	-	-	-	-	-
31 102	Water Treatment Plant - Insulated	-	52	-	-	-	-	8	59	-	59	-	-	-	-	-
31 Totals		2,179	7,958	-	-	7,462	781	4,673	23,053	19,466	3,587	17,780	-	-	1,695,965	-
32	Erect scaffolding for systems removal	-	495	-	-	14	47	134	690	690	-	46	-	-	5,086	-
Decontamination of Site Buildings																
33 1	Reactor Building	522	340	44	22	2,867	128	1,090	5,013	5,013	-	5,936	-	-	672,211	-
33 2	Auxiliary Building	216	25	10	5	402	32	221	910	910	-	1,304	-	-	135,745	-
33 3	Fuel Handling	190	191	2	1	58	105	173	720	720	-	188	-	-	20,478	-
33 4	Miscellaneous Structures - Contaminat	7	0	0	0	13	0	7	27	27	-	43	-	-	4,541	-
33 5	Radwaste Solidification Building	81	14	3	2	138	9	80	328	328	-	449	-	-	47,077	-
33 Totals		1,016	570	59	29	3,478	275	1,571	6,998	6,998	-	7,921	-	-	880,051	-
34	ORISE confirmatory survey	-	-	-	-	-	1,064	319	1,383	1,383	-	-	-	-	-	-
35	Terminate license	-	-	-	-	-	-	-	Note 1	-	-	-	-	-	-	-
Period 2 Additional Costs																
36	Mixed/Hazardous Waste	-	-	-	-	-	3,289	493	3,782	3,782	-	-	-	-	-	-
37	Seaweed Remediation & Disposal	-	-	-	-	-	2,250	338	2,588	2,588	-	-	-	-	-	-
38	License Termination Survey	-	-	-	-	-	5,447	817	6,264	6,264	-	-	-	-	-	-
Subtotal Period 2 Activity Costs		3,875	16,234	7,423	4,327	44,582	13,319	29,428	119,190	115,124	4,066	64,287	2,242	1,020	8,058,000	553
Period 2 Undistributed Costs																
1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-	-
2	Decon supplies	448	-	-	-	-	-	112	560	560	-	-	-	-	-	-
3	DOC staff relocation expenses	-	1,021	-	-	-	-	153	1,174	1,174	-	-	-	-	-	-
4	Process liquid waste	431	-	279	418	3,106	-	1,083	5,317	5,317	-	4,927	-	-	705,931	-
5	Insurance	-	-	-	-	-	1,157	116	1,273	1,273	-	-	-	-	-	-
6	Property taxes	-	-	-	-	-	1,090	109	1,199	1,079	120	-	-	-	-	-
7	Health physics supplies	-	2,252	-	-	-	-	563	2,815	2,815	-	-	-	-	-	-
8	Heavy equipment rental	-	8,185	-	-	-	-	1,228	9,413	8,472	941	-	-	-	-	-
9	Small tool allowance	-	211	-	-	-	-	32	242	218	24	-	-	-	-	-
10	Pipe cutting equipment	-	749	-	-	-	-	112	862	862	-	-	-	-	-	-
11	Decon rig	974	-	-	-	-	-	146	1,120	1,120	-	-	-	-	-	-
12	Disposal of DAW generated	-	-	58	20	3,245	-	820	4,144	4,144	-	10,537	-	-	698,571	-
13	Decommissioning Equipment Dispositi	-	-	-	-	83	278	63	424	424	-	270	-	-	30,000	-
14	Plant energy budget	-	-	-	-	-	2,817	423	3,239	2,915	324	-	-	-	-	-
15	NRC Fees	-	-	-	-	-	1,345	135	1,480	1,480	-	-	-	-	-	-
16	Emergency Planning Fees	-	-	-	-	-	148	15	162	162	-	-	-	-	-	-
17	Site Security Cost	-	-	-	-	-	6,184	928	7,112	7,112	-	-	-	-	-	-
18	Fixed Overhead	-	-	-	-	-	3,828	574	4,402	4,402	-	-	-	-	-	-
19	Radwaste Processing Skids	-	-	-	-	-	409	61	470	470	-	-	-	-	-	-
Subtotal Undistributed Costs Period 2		2,344	12,419	337	438	6,435	17,256	6,745	45,973	44,563	1,409	10,807	4,927	-	1,434,603	-
Staff Costs																
DOC Staff Cost		-	-	-	-	-	29,620	4,443	34,062	34,062	-	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	62,856	9,430	72,296	72,296	-	-	-	-	-	-
TOTAL PERIOD 2		6,219	28,653	7,760	4,765	51,017	123,061	50,045	271,521	266,046	5,475	75,094	7,169	1,020	9,492,602	553

TABLE D-3
TURKEY POINT PLANT - UNIT 4
DECON DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial site			10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF	pounds
PERIOD 3															
Demolition of Remaining Site Buildings															
39 1	Reactor Building	-	2,696	-	-	-	-	404	3,101	465	2,636	-	-	-	-
39 2	Auxiliary Building	-	831	-	-	-	-	125	955	96	860	-	-	-	-
39 3	Control Building	-	81	-	-	-	-	12	93	-	93	-	-	-	-
39 4	Fuel Handling	-	340	-	-	-	-	51	391	39	352	-	-	-	-
39 5	Intake	-	186	-	-	-	-	28	214	-	214	-	-	-	-
39 6	Miscellaneous Structures - Clean	-	1,721	-	-	-	-	258	1,979	-	1,979	-	-	-	-
39 7	Miscellaneous Structures - Contaminat	-	69	-	-	-	-	10	79	4	75	-	-	-	-
39 8	Radwaste Solidification Building	-	532	-	-	-	-	80	612	61	551	-	-	-	-
39 9	Sealwell	-	182	-	-	-	-	27	209	-	209	-	-	-	-
39 10	Turbine Building	-	297	-	-	-	-	44	341	-	341	-	-	-	-
39 11	Turbine Pedestal	-	256	-	-	-	-	38	294	-	294	-	-	-	-
39	Totals	-	7,190	-	-	-	-	1,078	8,268	665	7,604	-	-	-	-
Site Closeout Activities															
40	Remove Rubble	-	619	-	-	-	-	93	712	-	712	-	-	-	-
41	Grade & landscape site	-	94	-	-	-	-	14	108	-	108	-	-	-	-
42	Final report to NRC	-	-	-	-	-	67	10	77	77	-	-	-	-	-
Subtotal Period 3 Activity Costs															
Period 3 Undistributed Costs															
1	Insurance	-	-	-	-	-	120	12	132	132	-	-	-	-	-
2	Property taxes	-	-	-	-	-	227	23	250	-	250	-	-	-	-
3	Heavy equipment rental	-	1,563	-	-	-	-	235	1,798	-	1,798	-	-	-	-
4	Small tool allowance	-	55	-	-	-	-	8	63	-	63	-	-	-	-
5	Plant energy budget	-	-	-	-	-	68	10	78	-	78	-	-	-	-
6	Site Security Cost	-	-	-	-	-	382	57	440	-	440	-	-	-	-
Subtotal Undisributed Costs Period 3															
Staff Costs															
DOC Staff Cost															
Utility Staff Cost															
TOTAL PERIOD 3															
TOTAL COST TO DECOMMISSION															

Total cost to decommission with 21.08% contingency \$ 345,012,206

Total NRC license termination cost is 93.48% or \$ 322,432,959

Non-nuclear demolition cost is 6.54% or \$ 22,579,248

Total site radwaste volume buried 91,039 cubic feet

Total site radwaste weight buried 10,417,732 pounds

Total 10CFR61 greater than class C waste buried 553 cubic feet

Total scrap metal released from site 16,090 tons

Total craft labor requirements 860,794 person hours

NOTES:

- 1) This activity is performed by the decommissioning staff following plant shutdown; the costs for this are included in this period's staff cost
- 2) This activity, while performed after final plant shutdown, is considered part of operations and therefore no decommissioning costs are included for this activity

TABLE D-4
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

III) Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF	pounds
PERIOD 1: Mothballing Activities															
1	Prepare preliminary decommissioning cost	-	-	-	-		130	20	150	150	-	-	-	-	-
2	Notification of Cessation of Operations								Note 1						
3	Remove fuel & source material								Note 2						
4	Notification of Permanent Defueling								Note 1						
5	Deactivate plant systems & process waste								Note 1						
6	Prepare and submit PSDAR	-	-	-	-		200	30	230	230	-	-	-	-	-
7	Review plant dwgs & specs	-	-	-	-		130	20	150	150	-	-	-	-	-
8	Perform detailed rad survey								Note 1						
9	Estimate by-product inventory	-	-	-	-		100	15	115	115	-	-	-	-	-
10	End product description	-	-	-	-		100	15	115	115	-	-	-	-	-
11	Detailed by-product inventory	-	-	-	-		150	23	173	173	-	-	-	-	-
12	Define major work sequence	-	-	-	-		100	15	115	115	-	-	-	-	-
13	Perform SER and EA	-	-	-	-		310	47	357	357	-	-	-	-	-
14	Perform Site-Specific Cost Study	-	-	-	-		500	75	575	575	-	-	-	-	-
15	Prepare/submit License Termination Plan	-	-	-	-		410	61	471	471	-	-	-	-	-
16	Receive NRC approval of termination plan								Note 1						
Activity Specifications															
17.1	Prepare plant and facilities for SAFSTOR	-	-	-	-		492	74	566	566	-	-	-	-	-
17.2	Plant systems	-	-	-	-		417	63	479	479	-	-	-	-	-
17.3	Plant structures and buildings	-	-	-	-		312	47	359	359	-	-	-	-	-
17.4	Waste management	-	-	-	-		200	30	230	230	-	-	-	-	-
17.5	Facility and site dormancy	-	-	-	-		200	30	230	230	-	-	-	-	-
17	Total	-	-	-	-		1,621	243	1,864	1,864	-	-	-	-	-
Detailed Work Procedures															
18.1	Plant systems	-	-	-	-		473	71	544	544	-	-	-	-	-
18.2	Facility closeout & dormancy	-	-	-	-		120	18	138	138	-	-	-	-	-
18	Total	-	-	-	-		593	89	682	682	-	-	-	-	-
19	Procure vacuum drying system	-	-	-	-		10	2	12	12	-	-	-	-	-
20	Drain/de-energize non-cont systems	-	-	-	-		-	-	Note 1	-	-	-	-	-	-
21	Drain & dry NSSS	-	-	-	-		-	-	Note 1	-	-	-	-	-	-
22	Drain/de-energize contaminated systems	-	-	-	-		-	-	Note 1	-	-	-	-	-	-
23	Decon/secure contaminated systems	-	-	-	-		-	-	Note 1	-	-	-	-	-	-
Decontamination of Site Buildings															
24.1	Reactor Building	462	-	-	-		-	231	694	694	-	-	-	-	-
24.2	Fuel Handling	181	-	-	-		-	91	272	272	-	-	-	-	-
24	Totals	644	-	-	-		-	322	966	966	-	-	-	-	-
25	Prepare support equipment for storage	-	278	-	-		-	42	320	320	-	-	-	-	-
26	Install containment pressure equal. lines	-	19	-	-		-	3	22	22	-	-	-	-	-
27	Interim survey prior to dormancy	-	-	-	-		320	48	368	368	-	-	-	-	-
28	Secure building accesses	-	-	-	-		-	-	Note 1	-	-	-	-	-	-
29	Prepare & submit interim report	-	-	-	-		58	9	67	67	-	-	-	-	-

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TABLE D-4
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site				10 CFR 61
												A CF	B CF	C CF	pounds	GTCC Cu Ft
Period 1 Additional Costs																
30	Mixed/Hazardous Waste	-	-	-	-		3,289	493	3,782	3,782	-		-	-	-	
31	Seaweed Remediation & Disposal	-	-	-	-		2,250	338	2,588	2,588	-		-	-	-	
Subtotal Period 1 Activity Costs		644	297	-	-	-	10,271	1,907	13,119	13,119	-	-	-	-	-	
Period 1 Undistributed Costs																
1	Decon equipment	491	-	-	-		-	74	564	564	-		-	-	-	
2	Decon supplies	223	-	-	-		-	56	279	279	-		-	-	-	
3	Process liquid waste	169	-	82	117	837	-	268	1,254	1,254	-	-	1,149	-	144,884	
4	Insurance	-	-	-	-		2,080	208	2,288	2,288	-		-	-	-	
5	Property taxes	-	-	-	-		310	31	341	341	-		-	-	-	
6	Health physics supplies	-	250	-	-		-	63	313	313	-		-	-	-	
7	Small tool allowance	-	10	-	-		-	2	12	12	-		-	-	-	
8	Disposal of DAW generated	-	-	17	5	790	-	200	1,011	1,011	-	2,564	-	-	177,002	
9	Plant energy budget	-	-	-	-		733	110	842	842	-		-	-	-	
10	NRC Fees	-	-	-	-		304	30	334	334	-		-	-	-	
11	Emergency Planning Fees	-	-	-	-		76	8	83	83	-		-	-	-	
12	Site Security Cost	-	-	-	-		1,004	151	1,155	1,155	-		-	-	-	
13	Fixed Overhead	-	-	-	-		1,088	163	1,251	1,251	-		-	-	-	
Subtotal Undistributed Costs Period 1		883	260	78	122	1,427	5,574	1,360	9,705	9,705	-	2,564	1,149	-	321,886	
Staff Costs																
DOC Staff Cost		-	-	-	-		-	-	-	-	-		-	-	-	
Utility Staff Cost		-	-	-	-		17,993	2,699	20,692	20,692	-		-	-	-	
TOTAL COST TO SAFSTOR		1,527	557	78	122	1,427	33,838	5,966	43,516	43,516	-	2,564	1,149	-	321,886	

Total cost to SAFSTOR with 15.89% contingency	43,515,883
Total site radwaste volume buried	3,713 cubic feet
Total craft labor requirements	28,753 person hours

TABLE D-4
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC Lic Term	Site Restore.	Burial Site				10 CFR 61 GTCC Cu Ft	
												A CF	B CF	C CF	pounds		
PERIOD 2: SAFSTOR Dormancy Activities																	
1	Quarterly inspection								Note 1								
2	Semi-annual environmental survey								Note 1								
3	Prepare reports								Note 1								
4	Health physics supplies	-	-	-	-		46	11	57	57	-		-	-		-	
5	Insurance	-	-	-	-		67	7	74	74	-		-	-		-	
6	Property taxes	-	-	-	-		206	21	227	227	-		-	-		-	
7	Disposal of contaminated solid waste	-	-	1	0	29	-	7	38	38	-	102	-	-		-	
8	Bituminous roof replacement	-	-	-	-		-	-	-	-	-	-	-	-		-	
9	Maintenance supplies	-	-	-	-		99	25	123	123	-		-	-		-	
10	Plant energy budget	-	-	-	-		136	20	156	156	-		-	-		-	
11	NRC Fees	-	-	-	-		162	16	178	178	-		-	-		-	
12	Emergency Planning Fees	-	-	-	-		4	0	4	4	-		-	-		-	
13	Site Security Cost	-	-	-	-		220	33	253	253	-		-	-		-	
14	Fixed Overhead	-	-	-	-		72	11	83	83	-		-	-		-	
15	Site maintenance staff	-	-	-	-		1,319	198	1,517	1,517	-		-	-		-	
PERIOD 2 ANNUAL MAINTENANCE TOTALS		-	-	1	0	29	2,330	349	2,710	2,710	-	102	-	-	-	-	
Total cost SAFSTOR dormancy with		52,313	years equals	141,755,845													
Total site radwaste volume buried					5,331 cubic feet												

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TABLE D-4
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

III Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF	pounds
PERIOD 3															
1	Review plant dwgs & specs.	-	-	-	-		460	69	529	529	-	-	-	-	-
2	Perform detailed rad survey	-	-	-	-				Note 1						
3	End product description	-	-	-	-		100	15	115	115	-	-	-	-	-
4	Detailed by-product inventory	-	-	-	-		130	20	150	150	-	-	-	-	-
5	Define major work sequence	-	-	-	-		750	113	863	863	-	-	-	-	-
6	Perform SER and EA	-	-	-	-		310	47	357	357	-	-	-	-	-
7	Perform Site-Specific Cost Study	-	-	-	-		500	75	575	575	-	-	-	-	-
8	Prepare/submit License Termination Plan	-	-	-	-		410	61	471	471	-	-	-	-	-
9	Receive NRC approval of termination plan								Note 1						
Activity Specifications															
10.1	Re-activate plant & temporary facilities	-	-	-	-		737	111	848	763	85	-	-	-	-
10.2	Plant systems	-	-	-	-		417	63	479	431	48	-	-	-	-
10.3	Reactor internals	-	-	-	-		710	107	817	817	-	-	-	-	-
10.4	Reactor vessel	-	-	-	-		650	98	748	748	-	-	-	-	-
10.5	Biological shield	-	-	-	-		50	8	58	58	-	-	-	-	-
10.6	Steam generators	-	-	-	-		312	47	359	359	-	-	-	-	-
10.7	Reinforced concrete	-	-	-	-		160	24	184	92	92	-	-	-	-
10.8	Turbine & condenser	-	-	-	-		80	12	92	-	92	-	-	-	-
10.9	Plant structures & buildings	-	-	-	-		312	47	359	179	179	-	-	-	-
10.10	Waste management	-	-	-	-		460	69	529	529	-	-	-	-	-
10.11	Facility & site closeout	-	-	-	-		90	14	104	52	52	-	-	-	-
10	Total	-	-	-	-		3,978	597	4,574	4,026	548	-	-	-	-
Planning & Site Preparations															
11	Prepare dismantling sequence	-	-	-	-		240	36	276	276	-	-	-	-	-
12	Plant prep & temp svces	-	-	-	-		1,895	284	2,180	2,180	-	-	-	-	-
13	Design water clean-up system	-	-	-	-		140	21	161	161	-	-	-	-	-
14	Rigging/Cont. Cntrl Envlp/ooling/etc	-	-	-	-		1,604	241	1,845	1,845	-	-	-	-	-
15	Procure casks/liners & containers	-	-	-	-		123	18	141	141	-	-	-	-	-
Detailed Work Procedures															
16.1	Plant systems	-	-	-	-		473	71	544	490	54	-	-	-	-
16.2	Reactor internals	-	-	-	-		250	38	288	268	-	-	-	-	-
16.3	Remaining buildings	-	-	-	-		135	20	155	39	116	-	-	-	-
16.4	CRD cooling assembly	-	-	-	-		100	15	115	115	-	-	-	-	-
16.5	CRD housings & ICI tubes	-	-	-	-		100	15	115	115	-	-	-	-	-
16.6	Incore instrumentation	-	-	-	-		100	15	115	115	-	-	-	-	-
16.7	Reactor vessel	-	-	-	-		363	54	417	417	-	-	-	-	-
16.8	Facility closeout	-	-	-	-		120	18	138	69	69	-	-	-	-
16.9	Missile shields	-	-	-	-		45	7	52	52	-	-	-	-	-
16.10	Biological shield	-	-	-	-		120	18	138	138	-	-	-	-	-
16.11	Steam generators	-	-	-	-		460	69	529	529	-	-	-	-	-
16.12	Reinforced concrete	-	-	-	-		100	15	115	58	58	-	-	-	-
16.13	Turbine & condensers	-	-	-	-		312	47	359	-	359	-	-	-	-
16.14	Auxiliary building	-	-	-	-		273	41	314	283	31	-	-	-	-
16.15	Reactor building	-	-	-	-		273	41	314	283	31	-	-	-	-
16	Total	-	-	-	-		3,224	484	3,708	2,989	719	-	-	-	-
17	Asbestos removal program	-	217	37	1	231	7	117	610	427	184	640	-	-	-

TABLE D-4
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site				10 CFR 61 GTCC Cu Ft	
													A CF	B CF	C CF	pounds	
Period 3 Additional Costs																	
18	Site Characterization Survey	-	-	-	-		683	102	785	785	-		-	-	-		
Subtotal Period 3 Activity Costs		-	217	37	1	231	14,554	2,299	17,340	15,889	1,450	640	-	-	-		
Period 3 Undistributed Costs																	
1	DOC staff relocation expenses	-	1,021	-	-		-	153	1,174	1,174	-		-	-	-		
2	Insurance	-	-	-	-		290	29	319	319	-		-	-	-		
3	Property taxes	-	-	-	-		309	31	340	340	-		-	-	-		
4	Health physics supplies	-	207	-	-		-	52	259	259	-		-	-	-		
5	Heavy equipment rental	-	446	-	-		-	67	513	513	-		-	-	-		
6	Disposal of DAW generated	-	-	17	5	788	-	199	1,009	1,009	-	2,560	-	-	176,707		
7	Plant energy budget	-	-	-	-		759	114	872	872	-		-	-	-		
8	NRC Fees	-	-	-	-		303	30	333	333	-		-	-	-		
9	Site Security Cost	-	-	-	-		714	107	821	821	-		-	-	-		
10	Fixed Overhead	-	-	-	-		1,086	163	1,248	1,248	-		-	-	-		
Subtotal Undistributed Costs Period 3		-	1,674	17	5	788	3,461	945	6,890	6,890	-	2,560	-	-	176,707		
Staff Costs																	
DOC Staff Cost		-	-	-	-		5,331	800	6,130	6,130	-		-	-	-		
Utility Staff Cost		-	-	-	-		16,565	2,465	19,049	19,049	-		-	-	-		
TOTAL PERIOD 3 COST		-	1,891	54	7	1,019	39,910	6,529	49,410	47,959	1,450	3,200	-	-	176,707		

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TABLE D-4
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site - Restore	Burial Site			10 CFR 61 GTCC Cu Ft	
Number												A CF	B CF	C CF	pounds	
PERIOD 4																
Nuclear Steam Supply System Removal																
19 1	Reactor Coolant Piping	26	40	4	5	131	-	57	263	263	-	319	-	-	29,769	-
19 2	Pressurizer Relief Tank	11	58	3	3	87	-	43	205	205	-	300	-	-	19,699	-
19 3	Reactor Coolant Pumps & Motors	21	30	21	27	2,789	-	721	3,609	3,609	-	2,256	-	-	633,930	-
19 4	Pressurizer	16	27	4	9	943	-	252	1,250	1,250	-	1,771	-	-	214,343	-
19 5	Steam Generators	113	920	2,087	1,977	4,530	-	1,922	11,530	11,530	-	18,878	-	-	2,339,184	-
19 6	Old Steam Generator Lower Shell Units	-	-	1,650	1,578	1,896	-	876	6,000	6,000	-	7,899	-	-	1,134,000	-
19 7	CRDMs/ICIs/Service Structure Removal	64	44	41	10	185	-	95	439	439	-	2,253	-	-	64,288	-
19 8	Reactor Vessel Internals	45	1,218	3,363	349	3,688	-	3,708	12,369	12,369	-	786	393	1,020	223,389	-
19 9	Vessel & Internals GTCC Disposal	-	-	-	-	12,355	-	6,178	18,533	18,533	-	-	-	-	-	553
19 1	Reactor Vessel	96	3,071	176	263	3,865	-	4,394	11,865	11,865	-	3,930	1,703	-	786,229	-
19 Totals		392	5,408	7,330	4,220	30,469	-	18,245	66,063	66,063	-	38,389	2,096	1,020	5,444,831	553
20	Remove spent fuel racks	204	22	-	-	88	166	154	634	634	-	285	-	-	31,590	-
Removal of Major Equipment																
21	Main Turbine/Generator	-	46	-	-	-	-	7	53	-	53	-	-	-	-	-
22	Main Condensers	-	371	-	-	-	-	56	426	-	426	-	-	-	-	-
Disposal of Plant Systems																
23 1	Amertap	-	37	-	-	-	-	6	43	-	43	-	-	-	-	-
23 2	Auxiliary Feedwater	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
23 3	Auxiliary Feedwater - Insulated	-	9	-	-	-	-	1	10	-	10	-	-	-	-	-
23 4	Auxiliary Feedwater - Insulated - RCA	-	13	-	-	-	-	2	15	15	-	-	-	-	-	-
23 5	Auxiliary Feedwater - RCA	-	3	-	-	-	-	0	4	4	-	-	-	-	-	-
23 6	Auxiliary Steam	-	0	-	-	-	-	0	0	-	0	-	-	-	-	-
23 7	Auxiliary Steam - Insulated	-	16	-	-	-	-	2	19	-	19	-	-	-	-	-
23 8	Auxiliary Steam - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-	-
23 9	Auxiliary Steam - RCA	-	0	-	-	-	-	0	0	-	-	-	-	-	-	-
23 10	Breathing Air - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-	-
23 11	Breathing Air - RCA	-	2	-	-	-	-	0	2	2	-	-	-	-	-	-
23 12	Chemical & Volume Control	-	50	-	-	280	-	83	413	413	-	748	-	-	63,666	-
23 13	Chemical & Volume Control - Insulated	-	173	-	-	245	-	105	523	523	-	456	-	-	55,760	-
23 14	Circulating Water	-	49	-	-	-	-	7	56	-	56	-	-	-	-	-
23 15	Component Cooling Water	-	78	-	-	-	-	12	90	-	90	-	-	-	-	-
23 16	Component Cooling Water - RCA	-	44	-	-	-	-	7	51	51	-	-	-	-	-	-
23 17	Condensate	-	89	-	-	-	-	13	102	-	102	-	-	-	-	-
23 18	Condensate - Insulated	-	28	-	-	-	-	4	32	-	32	-	-	-	-	-
23 19	Condensate Polishing	-	17	-	-	-	-	2	19	-	19	-	-	-	-	-
23 20	Condensate Polishing - Ins	-	43	-	-	-	-	6	50	-	50	-	-	-	-	-
23 21	Condensate Recovery	-	8	-	-	-	-	1	10	-	10	-	-	-	-	-
23 22	Condensate Recovery - Insulated	-	1	-	-	-	-	0	2	-	2	-	-	-	-	-
23 23	Condensate Recovery - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-	-
23 24	Condensate Recovery - RCA	-	3	-	-	-	-	0	3	3	-	-	-	-	-	-
23 25	Condensate Storage	-	36	-	-	-	-	5	42	-	42	-	-	-	-	-
23 26	Condenser	-	12	-	-	-	-	2	14	-	14	-	-	-	-	-
23 27	Containment Emergency Filter	-	3	-	-	0	2	1	6	6	-	1	-	-	105	-
23 28	Containment Normal & Emerg Cooling	-	426	-	-	88	277	170	961	961	-	170	-	-	20,009	-
23 29	Containment Normal & Emerg Cooling - Ins	-	4	-	-	5	-	2	11	11	-	9	-	-	1,238	-
23 30	Containment Post Accident Eval	-	0	-	-	0	0	0	1	1	-	0	-	-	35	-
23 31	Containment Purge	-	29	-	-	47	0	19	96	96	-	89	-	-	10,743	-
23 32	Containment Spray	-	50	-	-	154	-	51	255	255	-	293	-	-	34,998	-
23 33	Containment Spray - Insulated	-	43	-	-	84	-	32	159	159	-	154	-	-	19,070	-
23 34	EDG Building HVAC	-	1	-	-	-	-	0	2	-	2	-	-	-	-	-
23 35	Electrical - Clean	-	712	-	-	-	-	107	819	-	819	-	-	-	-	-
23 36	Electrical - Contaminated	-	335	-	-	16	65	97	513	513	-	32	-	-	3,664	-
23 37	Electrical - Decontaminated	-	305	-	-	-	-	46	351	351	-	-	-	-	-	-
23 38	Emergency Diesel Engine & Oil	-	35	-	-	-	-	5	40	-	40	-	-	-	-	-

TABLE D-4
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft
Number												A CF	B CF	C CF	pounds
Disposal of Plant Systems (continued)															
23 39	Emergency Diesel Engine & Oil - Ins	-	1	-	-	-	-	0	2	-	2	-	-	-	-
23 40	Extraction Steam	-	5	-	-	-	-	1	6	-	6	-	-	-	-
23 41	Extraction Steam - Insulated	-	26	-	-	-	-	4	29	-	29	-	-	-	-
23 42	Feedwater	-	25	-	-	-	-	4	29	-	29	-	-	-	-
23 43	Feedwater - Insulated	-	72	-	-	-	-	11	83	-	83	-	-	-	-
23 44	Feedwater - Insulated - RCA	-	8	-	-	-	-	1	9	9	-	-	-	-	-
23 45	Feedwater - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-
23 46	Feedwater Heater Drains & Vents	-	23	-	-	-	-	3	27	-	27	-	-	-	-
23 47	Feedwater Heater Drains & Vents - Ins	-	156	-	-	-	-	23	180	-	180	-	-	-	-
23 48	Fire Protection	-	9	-	-	-	-	1	10	-	10	-	-	-	-
23 49	Fire Protection - RCA	-	13	-	-	-	-	2	15	15	-	-	-	-	-
23 50	Fuel Handling HVAC	-	38	-	-	7	27	15	88	88	-	13	-	-	1,541
23 51	Generator	-	3	-	-	-	-	0	3	-	3	-	-	-	-
23 52	Generator - Insulated	-	1	-	-	-	-	0	1	-	1	-	-	-	-
23 53	Instrument Air	-	7	-	-	-	-	1	7	-	7	-	-	-	-
23 54	Instrument Air - Insulated	-	5	-	-	-	-	1	6	-	6	-	-	-	-
23 55	Instrument Air - Insulated - RCA	-	8	-	-	-	-	1	9	9	-	-	-	-	-
23 56	Instrument Air - RCA	-	5	-	-	-	-	1	6	6	-	-	-	-	-
23 57	Intake Cooling Water	-	77	-	-	-	-	12	89	-	89	-	-	-	-
23 58	Main Steam - Insulated	-	86	-	-	-	-	13	99	-	99	-	-	-	-
23 59	Main Steam - Insulated - RCA	-	5	-	-	-	-	1	6	6	-	-	-	-	-
23 60	Miscellaneous - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-
23 61	Primary Water Makeup	-	38	-	-	-	-	6	44	-	44	-	-	-	-
23 62	Reactor Coolant - Insulated	-	47	-	-	69	-	29	146	146	-	132	-	-	15,773
23 63	Refueling Equipment	-	73	-	-	290	-	91	454	454	-	569	-	-	65,804
23 64	Residual Heat Removal	-	45	-	-	1,155	-	300	1,499	1,499	-	2,159	-	-	262,460
23 65	Residual Heat Removal - Insulated	-	198	-	-	617	-	204	1,018	1,018	-	1,176	-	-	140,165
23 66	Safety Injection	-	107	-	-	43	145	59	355	355	-	140	-	-	9,813
23 67	Safety Injection - Insulated	-	83	-	-	215	-	75	373	373	-	412	-	-	48,960
23 68	Safety Injection Accumulator	-	154	-	-	137	29	77	397	397	-	279	-	-	31,098
23 69	Sample - NSSS	-	12	-	-	7	1	5	26	26	-	12	-	-	1,602
23 70	Sample - NSSS - Ins	-	12	-	-	8	-	5	26	26	-	14	-	-	1,858
23 71	Screen Wash	-	12	-	-	-	-	2	14	-	14	-	-	-	-
23 72	Secondary Sample	-	2	-	-	-	-	0	2	-	2	-	-	-	-
23 73	Secondary Sample - RCA	-	0	-	-	-	-	0	0	0	-	-	-	-	-
23 74	Secondary Wet Layup	-	11	-	-	-	-	2	13	-	13	-	-	-	-
23 75	Secondary Wet Layup - RCA	-	2	-	-	-	-	0	3	3	-	-	-	-	-
23 76	Service Water	-	0	-	-	-	-	0	0	-	0	-	-	-	-
23 77	Service Water - RCA	-	0	-	-	-	-	0	1	1	-	-	-	-	-
23 78	Spent Fuel Pool Cooling	-	68	-	-	216	-	71	355	355	-	431	-	-	49,000
23 79	Spent Fuel Pool Cooling - Insulated	-	37	-	-	79	-	29	146	146	-	149	-	-	18,053
23 80	Steam Generator Wet Layup	-	1	-	-	-	-	0	1	-	1	-	-	-	-
23 81	Steam Generator Wet Layup - RCA	-	0	-	-	-	-	0	0	0	-	-	-	-	-
23 82	Turbine Building HVAC	-	10	-	-	-	-	1	11	-	11	-	-	-	-
23 83	Turbine Lube Oil	-	20	-	-	-	-	3	23	-	23	-	-	-	-
23 84	Turbine Plant Chemical Addition	-	2	-	-	-	-	0	2	-	2	-	-	-	-
23 85	Turbine Plant Cooling Water	-	43	-	-	-	-	6	50	-	50	-	-	-	-
23 86	Turbine Plant Cooling Water - Insulated	-	24	-	-	-	-	4	27	-	27	-	-	-	-
23 87	Turbine Steam	-	32	-	-	-	-	5	37	-	37	-	-	-	-
23 88	Turbine Steam - Insulated	-	14	-	-	-	-	2	17	-	17	-	-	-	-
23 89	Waste Disposal	-	21	-	-	49	-	18	88	88	-	113	-	-	11,136
23 90	Waste Disposal - Insulated	-	56	-	-	90	-	37	183	183	-	187	-	-	20,538
23 Totals		-	4,365	-	-	3,903	547	1,919	10,734	8,570	2,164	7,719	-	-	887,090
24	Erect scaffolding for systems removal	-	191	-	-	5	17	51	264	264	-	16	-	-	1,829

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TABLE D-4
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
Decontamination of Site Buildings																
25 1	Reactor Building	462	300	44	22	2,867	128	1,050	4,873	4,873	-	5,936	-	-	672,211	-
25 2	Fuel Handling	167	169	2	1	58	105	156	658	658	-	188	-	-	20,478	-
25 Totals		629	469	46	22	2,925	233	1,206	5,531	5,531	-	6,124	-	-	692,689	-
26	ORISE confirmatory survey	-	-	-	-		1,064	319	1,383	1,383	-		-	-		-
27	Terminate license								Note 1							
Period 4 Additional Costs																
28	License Termination Survey	-	-	-	-		1,669	250	1,919	1,919	-		-	-		-
Subtotal Period 4 Activity Costs		1,225	10,871	7,375	4,243	37,390	3,696	22,208	87,007	84,365	2,643	52,533	2,096	1,020	7,058,029	553
Period 4 Undistributed Costs																
1	Decon equipment	491	-	-	-		-	74	564	564	-		-	-		-
2	Decon supplies	286	-	-	-		-	72	358	358	-		-	-		-
3	DOC staff relocation expenses		1,021	-	-		-	153	1,174	1,174	-		-	-		-
4	Process liquid waste	189	-	69	132	714	-	300	1,405	1,405	-		1,288	-	162,357	-
5	Insurance	-	-	-	-		748	75	822	822	-		-	-		-
6	Property taxes	-	-	-	-		968	97	1,065	958	106		-	-		-
7	Health physics supplies	-	1,392	-	-		-	348	1,741	1,741	-		-	-		-
8	Heavy equipment rental	-	7,348	-	-		-	1,102	8,450	7,605	845		-	-		-
9	Small tool allowance	-	121	-	-		-	18	140	126	14		-	-		-
10	Pipe cutting equipment	-	749	-	-		-	112	862	862	-		-	-		-
11	Disposal of DAW generated	-	-	52	16	2,469	-	625	3,161	3,161	-	8,016	-	-	553,426	-
12	Decommissioning Equipment Disposition	-	-	-	-	83	278	63	424	424	-	270	-	-	30,000	-
13	Plant energy budget	-	-	-	-		2,041	306	2,348	2,113	235		-	-		-
14	NRC Fees	-	-	-	-		1,077	108	1,185	1,185	-		-	-		-
15	Site Security Cost	-	-	-	-		3,485	523	4,008	4,008	-		-	-		-
16	Fixed Overhead	-	-	-	-		3,400	510	3,909	3,909	-		-	-		-
17	Radwaste Processing Skids	-	-	-	-		554	83	637	637	-		-	-		-
Subtotal Undistributed Costs Period 4		966	10,632	121	147	3,267	12,551	4,568	32,253	31,052	1,200	8,287	1,288	-	745,783	-
Staff Costs																
DOC Staff Cost		-	-	-	-		19,917	2,988	22,905	22,905	-		-	-		-
Utility Staff Cost		-	-	-	-		30,506	4,576	35,082	35,082	-		-	-		-
TOTAL PERIOD 4		2,191	21,503	7,496	4,390	40,656	66,671	34,339	177,247	173,404	3,843	60,819	3,384	1,020	7,803,812	553

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TABLE D-4
TURKEY POINT PLANT - UNIT 3
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			pounds	10 CFR 61
												A CF	B CF	C CF		GTCC Cu Ft
PERIOD 5																
Demolition of Remaining Site Buildings																
29 1	Reactor Building	-	2,696	-	-	-	-	404	3,101	465	2,636	-	-	-	-	-
29 2	Fuel Handling	-	340	-	-	-	-	51	391	39	352	-	-	-	-	-
29 3	Miscellaneous Structures	-	115	-	-	-	-	17	132	-	132	-	-	-	-	-
29 4	Sealwell	-	182	-	-	-	-	27	209	-	209	-	-	-	-	-
29 5	Turbine Building	-	314	-	-	-	-	47	361	-	361	-	-	-	-	-
29 6	Turbine Pedestal	-	256	-	-	-	-	38	294	-	294	-	-	-	-	-
29 Totals		-	3,902	-	-	-	-	585	4,488	504	3,983	-	-	-	-	-
Site Closeout Activities																
30	Grade & landscape site	-	94	-	-	-	-	14	108	-	108	-	-	-	-	-
31	Final report to NRC	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-
Subtotal Period 5 Activity Costs		-	3,996	-	-	-	156	623	4,775	684	4,091	-	-	-	-	-
Period 5 Undistributed Costs																
1	Insurance	-	-	-	-	-	120	12	132	132	-	-	-	-	-	-
2	Property taxes	-	-	-	-	-	227	23	249	-	249	-	-	-	-	-
3	Heavy equipment rental	-	1,577	-	-	-	-	237	1,813	-	1,813	-	-	-	-	-
4	Small tool allowance	-	28	-	-	-	-	4	33	-	33	-	-	-	-	-
5	Plant energy budget	-	-	-	-	-	59	9	67	-	67	-	-	-	-	-
6	Site Security Cost	-	-	-	-	-	151	23	174	-	174	-	-	-	-	-
Subtotal Undistributed Costs Period 5		-	1,605	-	-	-	556	307	2,468	132	2,336	-	-	-	-	-
Staff Costs																
DOC Staff Cost		-	-	-	-	-	2,179	327	2,506	-	2,506	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	751	113	863	777	86	-	-	-	-	-
TOTAL PERIOD 5		-	5,601	-	-	-	3,642	1,369	10,613	1,593	9,020	-	-	-	-	-
TOTAL COST TO DECOMMISSION		3,718	29,553	7,664	4,530	44,643	265,950	66,483	422,541	408,228	14,313	71,914	4,533	1,020	8,302,405	553

Total cost to decommission with 18.67% contingency \$ 422,540,990

Total NRC license termination cost is 96.61% or \$ 408,227,665

Non-nuclear demolition cost is 3.39% or \$ 14,313,316

Total site radwaste volume buried 77,467 cubic feet

Total site radwaste weight buried 8,302,405 pounds

Total 10CFR61 greater than class C waste buried 553 cubic feet

Total scrap metal released from site 12,064 tons

Total craft labor requirements 472,508 person hours

NOTES:

- 1) This activity is performed by the decommissioning staff following plant shutdown, the costs for this are included in this period's staff cost
- 2) This activity, while performed after final plant shutdown, is considered part of operations and therefore no decommissioning costs are included for this activity

TABLE D-5
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

II) Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC	Site	Burial Site			10 CFR 61
										LicTerm	Restore.	A CF	B CF	C CF	pounds
PERIOD 1: Mothballing Activities															
1	Prepare preliminary decommissioning cost	-	-	-	-		56	8	64		64	-	-	-	-
2	Notification of Cessation of Operations								Note 1						
3	Remove fuel & source material								Note 2						
4	Notification of Permanent Defueling								Note 1						
5	Deactivate plant systems & process waste								Note 1						
6	Prepare and submit PSDAR	-	-	-	-		86	13	98		98	-	-	-	-
7	Review plant dwgs & specs	-	-	-	-		56	8	64		64	-	-	-	-
8	Perform detailed rad survey								Note 1						
9	Estimate by-product inventory	-	-	-	-		43	6	49		49	-	-	-	-
10	End product description	-	-	-	-		43	6	49		49	-	-	-	-
11	Detailed by-product inventory	-	-	-	-		64	10	74		74	-	-	-	-
12	Define major work sequence	-	-	-	-		43	6	49		49	-	-	-	-
13	Perform SER and EA	-	-	-	-		133	20	152		152	-	-	-	-
14	Perform Site-Specific Cost Study	-	-	-	-		214	32	246		246	-	-	-	-
15	Prepare/submit License Termination Plan	-	-	-	-		175	26	201		201	-	-	-	-
16	Receive NRC approval of termination plan								Note 1						
Activity Specifications															
17 1	Prepare plant and facilities for SAFSTOR	-	-	-	-		210	32	242		242	-	-	-	-
17 2	Plant systems	-	-	-	-		178	27	205		205	-	-	-	-
17 3	Plant structures and buildings	-	-	-	-		133	20	153		153	-	-	-	-
17 4	Waste management	-	-	-	-		86	13	98		98	-	-	-	-
17 5	Facility and site dormancy	-	-	-	-		86	13	98		98	-	-	-	-
17	Total	-	-	-	-		693	104	797		797	-	-	-	-
Detailed Work Procedures															
18 1	Plant systems	-	-	-	-		202	30	233		233	-	-	-	-
18 2	Facility closeout & dormancy	-	-	-	-		51	8	59		59	-	-	-	-
18	Total	-	-	-	-		254	38	292		292	-	-	-	-
19	Procure vacuum drying system	-	-	-	-		4	1	5		5	-	-	-	-
20	Drain/de-energize non-cont systems	-	-	-	-		-	-	Note 1		-	-	-	-	-
21	Drain & dry NSSS	-	-	-	-		-	-	Note 1		-	-	-	-	-
22	Drain/de-energize contaminated systems	-	-	-	-		-	-	Note 1		-	-	-	-	-
23	Decon/secure contaminated systems	-	-	-	-		-	-	Note 1		-	-	-	-	-
Decontamination of Site Buildings															
24 1	Reactor Building	462	-	-	-		-	231	694		694	-	-	-	-
24 2	Auxiliary Building	173	-	-	-		-	87	260		260	-	-	-	-
24 3	Fuel Handling	181	-	-	-		-	91	272		272	-	-	-	-
24 4	Miscellaneous Structures - Contaminated	5	-	-	-		-	3	8		8	-	-	-	-
24 5	Radwaste Solidification Building	66	-	-	-		-	33	99		99	-	-	-	-
24	Totals	888	-	-	-		-	444	1,332		1,332	-	-	-	-
25	Prepare support equipment for storage	-	278	-	-		-	42	320		320	-	-	-	-
26	Install containment pressure equal lines	-	19	-	-		-	3	22		22	-	-	-	-
27	Interim survey prior to dormancy	-	-	-	-		320	48	369		369	-	-	-	-
28	Secure building accesses	-	-	-	-		-	-	Note 1		-	-	-	-	-
29	Prepare & submit interim report	-	-	-	-		25	4	29		29	-	-	-	-

000204

TABLE D-5
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
Period 1 Additional Costs																
30	Mixed/Hazardous Waste	-	-	-	-		3,289	493	3,782	3,782	-		-	-		-
31	Seaweed Remediation & Disposal	-	-	-	-		2,250	338	2,588	2,588	-		-	-		-
Subtotal Period 1 Activity Costs		888	297	-	-	-	7,746	1,651	10,582	10,582	-	-	-	-	-	-
Period 1 Undistributed Costs																
1	Decon equipment	491	-	-	-		-	74	564	564	-		-	-		-
2	Decon supplies	373	-	-	-		-	93	466	466	-		-	-		-
3	Process liquid waste	175	-	64	122	661	-	278	1,301	1,301	-	-	1,193	-	150,329	-
4	Insurance	-	-	-	-		2,060	206	2,266	2,266	-		-	-		-
5	Property taxes	-	-	-	-		310	31	341	341	-		-	-		-
6	Health physics supplies	-	273	-	-		-	68	341	341	-		-	-		-
7	Small tool allowance	-	13	-	-		-	2	15	15	-		-	-		-
8	Disposal of DAW generated	-	-	17	5	790	-	200	1,011	1,011	-	2,564	-	-	177,002	-
9	Plant energy budget	-	-	-	-		617	93	710	710	-		-	-		-
10	NRC Fees	-	-	-	-		304	30	334	334	-		-	-		-
11	Emergency Planning Fees	-	-	-	-		76	8	83	83	-		-	-		-
12	Site Security Cost	-	-	-	-		716	107	823	823	-		-	-		-
13	Fixed Overhead	-	-	-	-		1,088	163	1,251	1,251	-		-	-		-
Subtotal Undistributed Costs Period 1		1,039	286	81	127	1,451	5,170	1,353	9,507	9,507	-	2,564	1,193	-	327,331	-
Staff Costs																
DOC Staff Cost		-	-	-	-		-	-	-	-	-		-	-		-
Utility Staff Cost		-	-	-	-		17,993	2,899	20,892	20,892	-		-	-		-
TOTAL COST TO SAFSTOR		1,927	583	81	127	1,451	30,909	5,702	40,780	40,780	-	2,564	1,193	-	327,331	-
Total cost to SAFSTOR with 16.26% contingency		40,780,437														
Total site radwaste volume buried		3,756 cubic feet														
Total craft labor requirements		38,454 person hours														

000205

TABLE D-5
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site				10 CFR 61
												A CF	B CF	C CF	pounds	GTCC Cu Ft
PERIOD 2: SAFSTOR Dormancy Activities																
1	Quarterly inspection									Note 1						
2	Semi-annual environmental survey									Note 1						
3	Prepare reports									Note 1						
4	Health physics supplies	-	-	-	-		46	11	57	57	-		-	-	-	
5	Insurance	-	-	-	-		67	7	74	74	-		-	-	-	
6	Property taxes	-	-	-	-		206	21	227	227	-		-	-	-	
7	Disposal of contaminated solid waste	-	-	1	0	29	-	7	38	38	-	102	-	-	-	
8	Bituminous roof replacement	-	-	-	-		33	5	38	38	-	-	-	-	-	
9	Maintenance supplies	-	-	-	-		99	25	123	123	-	-	-	-	-	
10	Plant energy budget	-	-	-	-		127	19	146	146	-	-	-	-	-	
11	NRC Fees	-	-	-	-		162	16	178	178	-	-	-	-	-	
12	Emergency Planning Fees	-	-	-	-		3	0	4	4	-	-	-	-	-	
13	Site Security Cost	-	-	-	-		73	11	83	83	-	-	-	-	-	
14	Fixed Overhead	-	-	-	-		72	11	83	83	-	-	-	-	-	
15	Site maintenance staff	-	-	-	-		538	81	619	619	-	-	-	-	-	
PERIOD 2 ANNUAL MAINTENANCE TOTALS		-	-	1	0	29	1,426	214	1,670	1,670	-	102	-	-	-	

Total cost SAFSTOR dormancy with 52,926.7 years equals 88,378,621

Total site radwaste volume buried 5,393 cubic feet

000206

TABLE D-5
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61	
												A CF	B CF	C CF	pounds	GTCC Cu Ft
PERIOD 3																
1	Review plant dwgs & specs	-	-	-	-		197	30	226	226	-		-	-		-
2	Perform detailed rad survey								Note 1							
3	End product description	-	-	-	-		43	6	49	49	-		-	-		-
4	Detailed by-product inventory	-	-	-	-		56	8	64	64	-		-	-		-
5	Define major work sequence	-	-	-	-		321	48	369	369	-		-	-		-
6	Perform SER and EA	-	-	-	-		133	20	152	152	-		-	-		-
7	Perform Site-Specific Cost Study	-	-	-	-		214	32	246	246	-		-	-		-
8	Prepare/submit License Termination Plan	-	-	-	-		175	26	201	201	-		-	-		-
9	Receive NRC approval of termination plan								Note 1							
Activity Specifications																
10.1	Re-activate plant & temporary facilities	-	-	-	-		315	47	362	326	36		-	-		-
10.2	Plant systems	-	-	-	-		178	27	205	184	20		-	-		-
10.3	Reactor internals	-	-	-	-		304	46	349	349	-		-	-		-
10.4	Reactor vessel	-	-	-	-		278	42	320	320	-		-	-		-
10.5	Biological shield	-	-	-	-		21	3	25	25	-		-	-		-
10.6	Steam generators	-	-	-	-		133	20	153	153	-		-	-		-
10.7	Reinforced concrete	-	-	-	-		68	10	79	39	39		-	-		-
10.8	Turbine & condenser	-	-	-	-		34	5	39	-	39		-	-		-
10.9	Plant structures & buildings	-	-	-	-		133	20	153	77	77		-	-		-
10.10	Waste management	-	-	-	-		197	30	226	226	-		-	-		-
10.11	Facility & site closeout	-	-	-	-		38	6	44	22	22		-	-		-
10	Total	-	-	-	-		1,701	255	1,956	1,722	234		-	-		-
Planning & Site Preparations																
11	Prepare dismantling sequence	-	-	-	-		103	15	118	118	-		-	-		-
12	Plant prep & temp svces	-	-	-	-		1,895	284	2,180	2,180	-		-	-		-
13	Design water clean-up system	-	-	-	-		60	9	69	69	-		-	-		-
14	Rigging/Cont Cntrl Envlpis/tooling/etc	-	-	-	-		1,604	241	1,845	1,845	-		-	-		-
15	Procure casks/liners & containers	-	-	-	-		53	8	60	60	-		-	-		-
Detailed Work Procedures																
16.1	Plant systems	-	-	-	-		202	30	233	209	23		-	-		-
16.2	Reactor internals	-	-	-	-		107	16	123	123	-		-	-		-
16.3	Remaining buildings	-	-	-	-		58	9	66	17	50		-	-		-
16.4	CRD cooling assembly	-	-	-	-		43	6	49	49	-		-	-		-
16.5	CRD housings & ICI tubes	-	-	-	-		43	6	49	49	-		-	-		-
16.6	Incore instrumentation	-	-	-	-		43	6	49	49	-		-	-		-
16.7	Reactor vessel	-	-	-	-		155	23	179	179	-		-	-		-
16.8	Facility closeout	-	-	-	-		51	8	59	30	30		-	-		-
16.9	Missile shields	-	-	-	-		19	3	22	22	-		-	-		-
16.10	Biological shield	-	-	-	-		51	8	59	59	-		-	-		-
16.11	Steam generators	-	-	-	-		197	30	226	226	-		-	-		-
16.12	Reinforced concrete	-	-	-	-		43	6	49	25	25		-	-		-
16.13	Turbine & condensers	-	-	-	-		133	20	153	-	153		-	-		-
16.14	Auxiliary building	-	-	-	-		117	18	134	121	13		-	-		-
16.15	Reactor building	-	-	-	-		117	18	134	121	13		-	-		-
16	Total	-	-	-	-		1,379	207	1,586	1,278	307		-	-		-
17	Asbestos removal program	-	217	37	1	231	7	117	610	427	184	640	-	-		-

000207

TABLE D-5
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore	Burial Site			10 CFR 61
												A CF	B CF	C CF	pounds
Period 3 Additional Costs															
18	Site Characterization Survey	-	-	-	-		1,024	154	1,178	1,178	-		-	-	-
Subtotal Period 3 Activity Costs		-	217	37	1	231	8,963	1,460	10,910	10,185	725	640	-	-	-
Period 3 Undistributed Costs															
1	DOC staff relocation expenses	-	1,021	-	-		-	153	1,174	1,174	-		-	-	-
2	Insurance	-	-	-	-		291	29	320	320	-		-	-	-
3	Property taxes	-	-	-	-		310	31	341	341	-		-	-	-
4	Health physics supplies	-	208	-	-		-	52	260	260	-		-	-	-
5	Heavy equipment rental	-	448	-	-		-	67	515	515	-		-	-	-
6	Disposal of DAW generated	-	-	17	5	791	-	200	1,013	1,013	-	2,570	-	-	177,395
7	Plant energy budget	-	-	-	-		646	97	743	743	-		-	-	-
8	NRC Fees	-	-	-	-		304	30	335	335	-		-	-	-
9	Site Security Cost	-	-	-	-		427	64	491	491	-		-	-	-
10	Fixed Overhead	-	-	-	-		1,090	163	1,253	1,253	-		-	-	-
Subtotal Undistribnuted Costs Period 3		-	1,677	17	5	791	3,069	888	6,446	6,446	-	2,570	-	-	177,395
Staff Costs															
DOC Staff Cost		-	-	-	-		3,516	527	4,043	4,043	-		-	-	-
Utility Staff Cost		-	-	-	-		7,848	1,177	9,025	9,025	-		-	-	-
TOTAL PERIOD 3 COST		-	1,894	54	7	1,022	23,396	4,053	30,424	29,699	725	3,210	-	-	177,395

000208

TABLE D-5
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site				10 CFR 61
												A CF	B CF	C CF	pounds	GTCC Cu Ft
PERIOD 4																
Nuclear Steam Supply System Removal																
19 1	Reactor Coolant Piping	26	40	4	5	131	-	57	263	263	-	319	-	-	29,769	-
19 2	Pressurizer Relief Tank	11	58	3	3	87	-	43	205	205	-	300	-	-	19,899	-
19 3	Reactor Coolant Pumps & Motors	21	30	21	27	2,789	-	721	3,609	3,609	-	2,253	-	-	633,930	-
19 4	Pressurizer	16	27	4	9	943	-	252	1,250	1,250	-	1,771	-	-	214,343	-
19 5	Steam Generators	113	920	2,067	1,977	4,530	-	1,922	11,530	11,530	-	18,876	-	-	2,339,184	-
19 6	Old Steam Generator Lower Shell Units	-	-	1,650	1,578	1,896	-	876	6,000	6,000	-	7,899	-	-	1,134,000	-
19 7	CRDMs/ICIs/Service Structure Removal	64	44	41	10	185	-	95	439	439	-	2,253	-	-	64,288	-
19 8	Reactor Vessel Internals	45	1,218	3,383	349	3,888	-	3,708	12,370	12,370	-	786	393	1,020	223,389	-
19 9	Vessel & Internals GTCC Disposal	-	-	-	-	12,355	-	6,178	18,533	18,533	-	-	-	-	-	553
19 1	Reactor Vessel	96	3,071	176	263	3,865	-	4,394	11,865	11,865	-	3,930	1,703	-	786,229	-
19 Totals		392	5,408	7,330	4,220	30,469	-	18,245	66,063	66,063	-	38,386	2,096	1,020	5,444,831	553
20	Remove spent fuel racks	204	22	-	-	88	166	154	634	634	-	285	-	-	31,590	-
Removal of Major Equipment																
21	Main Turbine/Generator	-	46	-	-	-	-	7	53	-	53	-	-	-	-	-
22	Main Condensers	-	371	-	-	-	-	56	426	-	426	-	-	-	-	-
Disposal of Plant Systems																
23 1	Amertap	-	40	-	-	-	-	6	46	-	46	-	-	-	-	-
23 2	Auxiliary Bldg HVAC	-	176	-	-	42	129	74	420	420	-	83	-	-	9,533	-
23 3	Auxiliary Feedwater	-	8	-	-	-	-	1	9	-	9	-	-	-	-	-
23 4	Auxiliary Feedwater - Insulated	-	14	-	-	-	-	2	16	-	16	-	-	-	-	-
23 5	Auxiliary Feedwater - Insulated - RCA	-	20	-	-	-	-	3	23	23	-	-	-	-	-	-
23 6	Auxiliary Feedwater - RCA	-	5	-	-	-	-	1	5	5	-	-	-	-	-	-
23 7	Auxiliary Steam	-	1	-	-	-	-	0	1	-	1	-	-	-	-	-
23 8	Auxiliary Steam - Insulated	-	23	-	-	-	-	3	26	-	26	-	-	-	-	-
23 9	Auxiliary Steam - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-	-
23 10	Auxiliary Steam - RCA	-	0	-	-	-	-	0	0	0	-	-	-	-	-	-
23 11	Breathing Air - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-	-
23 12	Breathing Air - RCA	-	9	-	-	-	-	1	11	11	-	-	-	-	-	-
23 13	Chemical & Volume Control	-	239	-	-	1,660	-	475	2,373	2,373	-	5,495	-	-	377,166	-
23 14	Chemical & Volume Control - Insulated	-	304	-	-	427	-	183	913	913	-	803	-	-	96,999	-
23 15	Circulating Water	-	59	-	-	-	-	9	68	-	68	-	-	-	-	-
23 16	Component Cooling Water	-	105	-	-	-	-	16	121	-	121	-	-	-	-	-
23 17	Component Cooling Water - RCA	-	62	-	-	-	-	9	72	72	-	-	-	-	-	-
23 18	Condensate	-	105	-	-	-	-	16	120	-	120	-	-	-	-	-
23 19	Condensate - Insulated	-	41	-	-	-	-	6	47	-	47	-	-	-	-	-
23 20	Condensate Polishing	-	18	-	-	-	-	3	20	-	20	-	-	-	-	-
23 21	Condensate Polishing - Ins	-	53	-	-	-	-	8	61	-	61	-	-	-	-	-
23 22	Condensate Recovery	-	12	-	-	-	-	2	14	-	14	-	-	-	-	-
23 23	Condensate Recovery - Insulated	-	2	-	-	-	-	0	2	-	2	-	-	-	-	-
23 24	Condensate Recovery - Insulated - RCA	-	1	-	-	-	-	0	1	1	-	-	-	-	-	-
23 25	Condensate Recovery - RCA	-	4	-	-	-	-	1	4	4	-	-	-	-	-	-
23 26	Condensate Storage	-	38	-	-	-	-	6	44	-	44	-	-	-	-	-
23 27	Condenser	-	14	-	-	-	-	2	16	-	16	-	-	-	-	-
23 28	Containment Emergency Filter	-	3	-	-	0	2	1	6	6	-	1	-	-	105	-
23 29	Containment Normal & Emerg Cooling	-	431	-	-	93	273	172	970	970	-	179	-	-	21,249	-
23 30	Containment Normal & Emerg Cooling - Ins	-	5	-	-	7	-	3	15	15	-	12	-	-	1,653	-
23 31	Containment Post Accident Eval	-	8	-	-	4	0	3	14	14	-	7	-	-	826	-
23 32	Containment Post Accident Eval - Ins	-	16	-	-	23	-	10	50	50	-	42	-	-	5,328	-
23 33	Containment Purge	-	29	-	-	47	0	19	96	96	-	89	-	-	10,743	-
23 34	Containment Spray	-	54	-	-	161	-	54	268	268	-	307	-	-	36,569	-
23 35	Containment Spray - Insulated	-	47	-	-	91	-	34	172	172	-	167	-	-	20,642	-
23 36	Control Building HVAC	-	16	-	-	-	-	2	19	-	19	-	-	-	-	-
23 37	EDG Building HVAC	-	2	-	-	-	-	0	3	-	3	-	-	-	-	-
23 38	Electrical - Clean	-	1,085	-	-	-	-	163	1,248	-	1,248	-	-	-	-	-

TABLE D-5
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

ID	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61
Number												A CF	B CF	C CF	pounds GTCC Cu Ft
Disposal of Plant Systems (continued)															
23 39	Electrical - Contaminated	-	542	-	-	-	-	-	-	-	-	-	-	-	-
23 40	Electrical - Decontaminated	-	466	-	-	23	94	155	814	814	-	46	-	-	5,279
23 41	Emergency Diesel Engine & Oil	-	39	-	-	-	-	70	536	536	-	-	-	-	-
23 42	Emergency Diesel Engine & Oil - Ins	-	2	-	-	-	-	6	44	-	44	-	-	-	-
23 43	Extraction Steam	-	7	-	-	-	-	0	2	-	2	-	-	-	-
23 44	Extraction Steam - Insulated	-	41	-	-	-	-	1	8	-	8	-	-	-	-
23 45	Feedwater	-	73	-	-	-	-	6	47	-	47	-	-	-	-
23 46	Feedwater - Insulated	-	122	-	-	-	-	11	84	-	84	-	-	-	-
23 47	Feedwater - Insulated - RCA	-	14	-	-	-	-	18	140	-	140	-	-	-	-
23 48	Feedwater - RCA	-	1	-	-	-	-	2	16	16	-	-	-	-	-
23 49	Feedwater Heater Drains & Vents	-	26	-	-	-	-	0	1	1	-	-	-	-	-
23 50	Feedwater Heater Drains & Vents - Ins	-	195	-	-	-	-	4	30	-	30	-	-	-	-
23 51	Fire Protection	-	178	-	-	-	-	29	224	-	224	-	-	-	-
23 52	Fire Protection - RCA	-	121	-	-	-	-	27	204	-	204	-	-	-	-
23 53	Fuel Handling HVAC	-	38	-	-	-	-	18	139	139	-	-	-	-	-
23 54	Generator	-	3	-	-	7	27	15	88	88	-	13	-	-	1,541
23 55	Generator - Insulated	-	1	-	-	-	-	0	3	-	3	-	-	-	-
23 56	HVAC - Clean	-	165	-	-	-	-	0	1	-	1	-	-	-	-
23 57	HVAC - Contaminated	-	39	-	-	-	-	25	190	-	190	-	-	-	-
23 58	Instrument Air	-	11	-	-	6	26	15	87	87	-	13	-	-	1,459
23 59	Instrument Air - Insulated	-	10	-	-	-	-	2	13	-	13	-	-	-	-
23 60	Instrument Air - Insulated - RCA	-	14	-	-	-	-	1	11	-	11	-	-	-	-
23 61	Instrument Air - RCA	-	10	-	-	-	-	2	17	17	-	-	-	-	-
23 62	Intake Cooling Water	-	108	-	-	-	-	1	11	11	-	-	-	-	-
23 63	Main Steam - Insulated	-	105	-	-	-	-	16	124	-	124	-	-	-	-
23 64	Main Steam - Insulated - RCA	-	7	-	-	-	-	16	120	-	120	-	-	-	-
23 65	Miscellaneous - RCA	-	1	-	-	-	-	1	9	9	-	-	-	-	-
23 66	Nitrogen & Hydrogen	-	1	-	-	-	-	0	1	1	-	-	-	-	-
23 67	Nitrogen & Hydrogen - RCA	-	0	-	-	-	-	0	1	-	1	-	-	-	-
23 68	Primary Water Makeup	-	38	-	-	-	-	0	0	0	-	-	-	-	-
23 69	Radwaste Building HVAC	-	85	-	-	-	-	6	44	-	44	-	-	-	-
23 70	Reactor Coolant - Insulated	-	52	-	-	14	58	33	189	189	-	28	-	-	3,160
23 71	Refueling Equipment	-	88	-	-	75	-	32	158	158	-	143	-	-	17,098
23 72	Residual Heat Removal	-	49	-	-	368	-	114	570	570	-	724	-	-	83,568
23 73	Residual Heat Removal - Insulated	-	260	-	-	1,172	-	305	1,526	1,526	-	2,192	-	-	266,278
23 74	Safety Injection	-	107	-	-	793	-	263	1,315	1,315	-	1,524	-	-	180,132
23 75	Safety Injection - Insulated	-	115	-	-	43	145	59	355	355	-	141	-	-	9,862
23 76	Safety Injection Accumulator	-	185	-	-	313	-	107	536	536	-	603	-	-	71,183
23 77	Sample - NSSS	-	26	-	-	164	28	91	468	468	-	332	-	-	37,187
23 78	Sample - NSSS - Ins	-	33	-	-	14	1	10	51	51	-	23	-	-	3,089
23 79	Screen Wash	-	17	-	-	18	-	13	64	64	-	30	-	-	4,088
23 80	Secondary Sample	-	2	-	-	-	-	3	20	-	20	-	-	-	-
23 81	Secondary Sample - RCA	-	0	-	-	-	-	0	2	-	2	-	-	-	-
23 82	Secondary Wet Layup	-	12	-	-	-	-	0	0	0	-	-	-	-	-
23 83	Secondary Wet Layup - RCA	-	3	-	-	-	-	2	14	-	14	-	-	-	-
23 84	Service Water	-	11	-	-	-	-	0	3	3	-	-	-	-	-
23 85	Service Water - Insulated	-	5	-	-	-	-	2	13	-	13	-	-	-	-
23 86	Service Water - Insulated - RCA	-	9	-	-	-	-	1	5	-	5	-	-	-	-
23 87	Service Water - RCA	-	20	-	-	-	-	1	10	10	-	-	-	-	-
23 88	Spent Fuel Pool Cooling	-	74	-	-	-	-	3	23	23	-	-	-	-	-
23 89	Spent Fuel Pool Cooling - Insulated	-	43	-	-	232	-	77	383	383	-	463	-	-	52,708
23 90	Steam Generator Wet Layup	-	1	-	-	92	-	34	169	169	-	174	-	-	20,987
23 91	Steam Generator Wet Layup - RCA	-	0	-	-	-	-	0	1	-	1	-	-	-	-
23 92	Turbine Building HVAC	-	11	-	-	-	-	0	0	0	-	-	-	-	-
23 93	Turbine Lube Oil	-	27	-	-	-	-	2	13	-	13	-	-	-	-
23 94	Turbine Plant Chemical Addition	-	3	-	-	-	-	4	31	-	31	-	-	-	-
23 95	Turbine Plant Cooling Water	-	53	-	-	-	-	0	3	-	3	-	-	-	-
23 96	Turbine Plant Cooling Water - Insulated	-	31	-	-	-	-	8	61	-	61	-	-	-	-
23 97	Turbine Steam	-	47	-	-	-	-	5	36	-	36	-	-	-	-
		-		-	-	-	-	7	54	-	54	-	-	-	-

TABLE D-5
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

II) Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	A CF	Burial Site B CF C CF	pounds	10 CFR 61 GTCC Cu Ft
Disposal of Plant Systems (continued)															
23 98	Turbine Steam - Insulated	-	22	-	-	-	-	3	25	-	25	-	-	-	-
23 99	Waste Disposal	-	219	-	-	1,050	-	317	1,586	1,586	-	3,190	-	238,605	-
23 100	Waste Disposal - Insulated	-	338	-	-	523	-	215	1,077	1,077	-	956	-	118,930	-
23 101	Water Treatment Plant	-	69	-	-	-	-	10	79	-	79	-	-	-	-
23 102	Water Treatment Plant - Insulated	-	52	-	-	-	-	8	59	-	59	-	-	-	-
23 Totals		-	7,494	-	-	7,462	781	3,467	19,205	15,618	3,587	17,780	-	1,695,965	-
24	Erect scaffolding for systems removal	-	441	-	-	14	47	121	624	624	-	46	-	5,086	-
Decontamination of Site Buildings															
25 1	Reactor Building	482	300	44	22	2,887	128	1,050	4,873	4,873	-	5,936	-	672,211	-
25 2	Auxiliary Building	192	21	10	5	402	32	208	870	870	-	1,304	-	135,745	-
25 3	Fuel Handling	167	169	2	1	58	105	156	658	658	-	188	-	20,478	-
25 4	Miscellaneous Structures - Contaminated	6	0	0	0	13	0	6	26	26	-	43	-	4,541	-
25 5	Radwaste Solidification Building	72	12	3	2	138	9	75	312	312	-	449	-	47,077	-
25 Totals		899	503	59	29	3,478	275	1,496	6,739	6,739	-	7,921	-	880,051	-
26	ORISE confirmatory survey	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	Terminate license	-	-	-	-	-	1,064	319	1,383	1,383	-	-	-	-	-
Period 4 Additional Costs															
28	License Termination Survey	-	-	-	-	-	5,447	817	6,264	6,264	-	-	-	-	-
Subtotal Period 4 Activity Costs		1,495	14,285	7,389	4,249	41,511	7,780	24,682	101,391	97,326	4,066	64,418	2,096	1,020	8,057,523
Period 4 Undistributed Costs															
1	Decon equipment	491	-	-	-	-	-	74	564	564	-	-	-	-	-
2	Decon supplies	410	-	-	-	-	-	102	512	512	-	-	-	-	-
3	DOC staff relocation expenses	-	1,021	-	-	-	-	153	1,174	1,174	-	-	-	-	-
4	Process liquid waste	210	-	77	146	793	-	333	1,559	1,559	-	-	-	-	-
5	Insurance	-	-	-	-	-	629	63	692	692	-	1,429	-	180,183	-
6	Property taxes	-	-	-	-	-	691	69	760	684	76	-	-	-	-
7	Health physics supplies	-	1,757	-	-	-	-	439	2,196	2,196	-	-	-	-	-
8	Heavy equipment rental	-	5,242	-	-	-	-	786	6,028	5,425	603	-	-	-	-
9	Small tool allowance	-	171	-	-	-	-	26	197	177	20	-	-	-	-
10	Pipe cutting equipment	-	749	-	-	-	-	112	862	862	-	-	-	-	-
11	Disposal of DAW generated	-	-	37	11	1,761	-	446	2,255	2,255	-	5,719	-	394,813	-
12	Decommissioning Equipment Disposition	-	-	-	-	83	278	63	424	424	-	270	-	30,000	-
13	Plant energy budget	-	-	-	-	-	1,215	182	1,398	1,258	140	-	-	-	-
14	NRC Fees	-	-	-	-	-	852	85	938	938	-	-	-	-	-
15	Site Security Cost	-	-	-	-	-	3,234	485	3,719	3,719	-	-	-	-	-
16	Fixed Overhead	-	-	-	-	-	2,425	364	2,789	2,789	-	-	-	-	-
17	Radwaste Processing Skids	-	-	-	-	-	932	140	1,072	1,072	-	-	-	-	-
Subtotal Undistributed Costs Period 4		1,110	8,941	114	157	2,637	10,258	3,922	27,140	26,301	838	5,989	1,429	-	604,996
Staff Costs															
DOC Staff Cost		-	-	-	-	-	18,847	2,827	21,674	21,674	-	-	-	-	-
Utility Staff Cost		-	-	-	-	-	35,893	5,384	41,277	41,277	-	-	-	-	-
TOTAL PERIOD 4		2,605	23,225	7,503	4,406	44,149	72,778	36,816	191,481	186,577	4,904	70,407	3,525	1,020	8,662,518

TABLE D-5
TURKEY POINT PLANT - UNIT 4
SAFSTOR STATION DECOMMISSIONING COST ESTIMATE
(Thousands of 1998 Dollars)

III Number	Activity Description	Decon	Remove	Pack	Ship	Burial	Other	Contingency	Total	NRC LicTerm	Site Restore.	Burial Site			10 CFR 61 GTCC Cu Ft
												A CF	B CF	C CF	pounds
PERIOD 5															
Demolition of Remaining Site Buildings															
29 1	Reactor Building	-	2,898	-	-	-	-	404	3,101	465	2,638	-	-	-	-
29 2	Auxiliary Building	-	831	-	-	-	-	125	955	96	860	-	-	-	-
29 3	Control Building	-	81	-	-	-	-	12	93	-	93	-	-	-	-
29 4	Fuel Handling	-	340	-	-	-	-	51	391	39	352	-	-	-	-
29 5	Intake	-	188	-	-	-	-	28	214	-	214	-	-	-	-
29 6	Miscellaneous Structures - Clean	-	1,721	-	-	-	-	258	1,979	-	1,979	-	-	-	-
29 7	Miscellaneous Structures - Contaminated	-	69	-	-	-	-	10	79	4	75	-	-	-	-
29 8	Radwaste Solidification Building	-	532	-	-	-	-	80	612	81	551	-	-	-	-
29 9	Sealwell	-	182	-	-	-	-	27	209	-	209	-	-	-	-
29 1	Turbine Building	-	297	-	-	-	-	44	341	-	341	-	-	-	-
29 11	Turbine Pedestal	-	258	-	-	-	-	38	294	-	294	-	-	-	-
29	Totals	-	7,190	-	-	-	-	1,078	8,268	665	7,604	-	-	-	-
Site Closeout Activities															
30	Remove Rubble	-	619	-	-	-	-	93	712	-	712	-	-	-	-
31	Grade & landscape site	-	94	-	-	-	-	14	108	-	108	-	-	-	-
32	Final report to NRC	-	-	-	-	-	67	10	77	77	-	-	-	-	-
Subtotal Period 5 Activity Costs		-	7,903	-	-	-	67	1,195	9,165	742	8,423	-	-	-	-
Period 5 Undistributed Costs															
1	Insurance	-	-	-	-	-	120	12	132	132	-	-	-	-	-
2	Property taxes	-	-	-	-	-	227	23	249	-	249	-	-	-	-
3	Heavy equipment rental	-	1,577	-	-	-	-	237	1,813	-	1,813	-	-	-	-
4	Small tool allowance	-	55	-	-	-	-	8	63	-	63	-	-	-	-
5	Plant energy budget	-	-	-	-	-	68	10	78	-	78	-	-	-	-
6	Site Security Cost	-	-	-	-	-	362	54	417	-	417	-	-	-	-
Subtotal Undistributed Costs Period 5		-	1,632	-	-	-	777	344	2,752	132	2,621	-	-	-	-
Staff Costs															
DOC Staff Cost		-	-	-	-	-	4,380	657	5,038	-	5,038	-	-	-	-
Utility Staff Cost		-	-	-	-	-	2,672	401	3,073	2,766	307	-	-	-	-
TOTAL PERIOD 5		-	9,535	-	-	-	7,896	2,597	20,028	3,640	16,388	-	-	-	-
TOTAL COST TO DECOMMISSION		4,533	35,237	7,673	4,551	48,181	210,435	60,484	371,093	349,075	22,018	81,574	4,718	1,020	9,167,244

Total cost to decommission with 19.47% contingency: \$ 371,093,008

Total NRC license termination cost is 94.07% or \$ 349,075,353

Non-nuclear demolition cost is 5.63% or \$ 22,017,656

Total site radwaste volume buried 87,312 cubic feet

Total site radwaste weight buried 9,167,244 pounds

Total 10CFR61 greater than class C waste buried 553 cubic feet

Total scrap metal released from site 18,090 tons

Total craft labor requirements 789,604 person hours

NOTES:

- 1) This activity is performed by the decommissioning staff following plant shutdown; the costs for this are included in this period's staff cost.
- 2) This activity, while performed after final plant shutdown, is considered part of operations and therefore no decommissioning costs are included for this activity