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10 CFR 50.54(bb)
10 CFR 50.75(f)(3)

RA-14-104

December 30, 2014

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Oyster Creek Nuclear Generating Station
Renewed Facility Operating License No. DPR-16
NRC Docket Nos. 50-219 and 72-15

Subject: Submittal of Preliminary Decommissioning Cost Estimate and Spent Fuel Management Plan

Reference:
1) Letter from John G. Lamb (U. S. Nuclear Regulatory Commission) to Michael J. Pacilio (Exelon Generation Company, LLC), "Oyster Creek Nuclear Generating Station – Request for Information Regarding Preliminary Decommissioning Cost Estimate and Annual Decommissioning Funding Status Reports," dated September 17, 2014 (ML14252A703)

2) Letter RA-11-007 from Keith R. Jury (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Permanent Cessation of Operations at Oyster Creek Nuclear Generating Station," dated January 7, 2011 (ML110070507)

Exelon Generation Company, LLC (Exelon) is submitting this letter to provide a preliminary decommissioning cost estimate pursuant to 10 CFR 50.75(f)(3) and spent fuel management plan pursuant to 10 CFR 50.54(bb)[1] for Oyster Creek Nuclear Generating Station (OCNGS).

In accordance with 10 CFR 50.75, *"Reporting and recordkeeping for decommissioning planning,"* paragraph (f)(3), *"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."*

Attachment 1 of this submittal contains a preliminary decommissioning cost estimate for OCNGS. The cost estimate is a preliminary estimate of anticipated costs and will be updated at various times as deemed appropriate by OCNGS and/or in compliance with regulatory requirements. The attached preliminary decommissioning cost estimate assumes that OCNGS permanently terminates operations on December 31, 2019, in accordance with the Reference 2 letter.

[1] Section 50.54(bb) requires that licensees submit a spent fuel management plan to the NRC within two years following permanent shutdown or five years prior to the expiration of the operating license. The operating license for Oyster Creek Nuclear Generating Station expires in 2029. In Reference 2, Exelon provided notice of its intention to permanently cease operations effective December 31, 2019. As a result, Exelon is providing its spent fuel management plan within five years of the shutdown date.

The major factors that could affect the cost estimate as well as contingencies to allow for unknown or unplanned occurrences during decommissioning are included in the attached preliminary decommissioning cost estimate. Additionally, soil and ground water remediation costs are included in the cost estimate. The required soil remediation is based on a report that evaluated the known or suspected contaminated soil at OCNGS as of January 2004 and evaluation of subsequent 10 CFR 50.75(g)(1) reports.

The attached preliminary decommissioning cost estimate evaluates three (3) options for decommissioning OCNGS. Exelon has not made a final determination of the decommissioning approach for OCNGS. For the purpose of choosing a decommissioning option to demonstrate adequacy of funding to meet regulatory requirements, the SAFSTOR option has been selected. Exelon reserves the right to choose a decommissioning option in accordance with its business needs, recognizing that it needs to assure the chosen option meets U.S. Nuclear Regulatory Commission (NRC) requirements for decommissioning funding.

As discussed in 10 CFR 50.54(bb), *"Conditions of licenses,"* paragraph (bb), a licensee shall *"…submit written notification to the Commission 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."* Accordingly, Attachment 2 of this submittal includes the Spent Fuel Management Plan for NRC review and preliminary approval.

Attachment 3 contains the projected annual cash flow required for decommissioning OCNGS based on the SAFSTOR scenario from the Attachment 1 cost estimate. (The Attachment 1 cost estimate is in thousands of 2011 dollars. The Attachment 1 costs have been escalated to 2014 dollars in Attachment 3.) The costs for radiological decommissioning (license termination costs), spent fuel management, Independent Spent Fuel Storage Installation (ISFSI) decommissioning, and site restoration (non-radiological decommissioning) are reflected in Attachment 3. Exelon recognizes that an exemption from 10 CFR 50.82(a)(8)(i)(A) is required to use decommissioning trust funds for expenses other than decommissioning activities as the term "decommissioning" is defined in 10 CFR 50.2.

Attachment 4 contains the projected annual cash flow from the OCNGS decommissioning trust fund for decommissioning the site (including radiological decommissioning, spent fuel management, ISFSI decommissioning, and site restoration) based on the SAFSTOR scenario from the Attachment 1 cost estimate. The cash flow analysis conservatively assumes all expenses in a year are incurred at the beginning of year (i.e., beginning of year convention) during the decommissioning period.

As of November 30, 2014, OCNGS decommissioning trust fund balances totaled $869.9 million. Escalated at 2% annual real rate of return to November 30, 2019, the trust fund will amount to $960.5 million before deducting decommissioning expenses, which exceeds the amount required to complete decommissioning of the site under the SAFSTOR scenario of the attached preliminary cost estimate.

In accordance with 10 CFR 50.54(bb), a copy of this notification will be maintained until the expiration of the OCNGS operating license. Additionally, OCNGS will notify the NRC of any significant changes in the proposed Spent Fuel Management Plan described in Attachment 2.

There are no new regulatory commitments contained in this letter.

If you have any questions or require additional information, please contact Richard Gropp at 610-765-5557.

Respectfully,

James Barstow
Director, Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachment 1- Preliminary Decommissioning Cost Estimate for Oyster Creek Nuclear Generating Station
Attachment 2- Spent Fuel Management Plan for Oyster Creek Nuclear Generating Station
Attachment 3- Annual SAFSTOR Decommissioning Cost Cash Flow for Oyster Creek Nuclear Generating Station
Attachment 4- Annual SAFSTOR Decommissioning Fund Cash Flow for Oyster Creek Nuclear Generating Station

cc: Regional Administrator - NRC Region I
NRC Senior Resident Inspector - Oyster Creek Nuclear Generating Station
NRC Project Manager - Oyster Creek Nuclear Generating Station
Director, Bureau of Nuclear Engineering, New Jersey Department of Environmental Protection
Mayor of Lacey Township, Forked River, New Jersey

ATTACHMENT 1

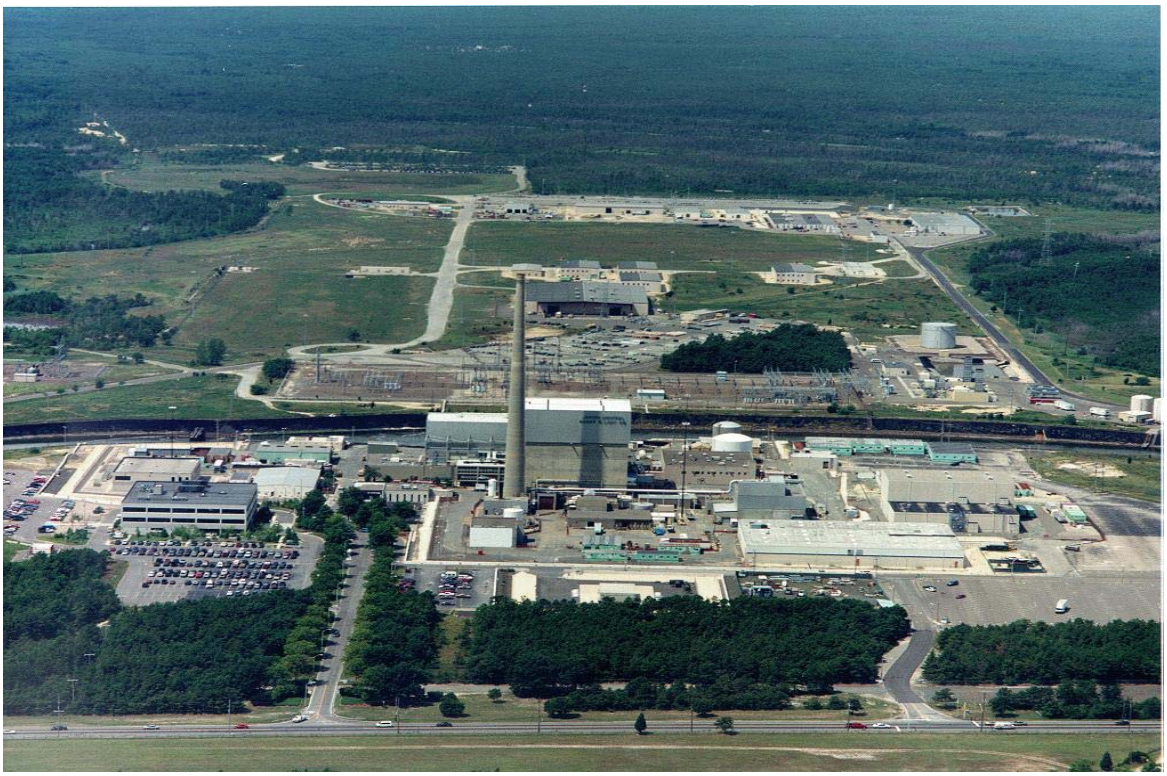
PRELIMINARY DECOMMISSIONING COST ESTIMATE
FOR
OYSTER CREEK NUCLEAR GENERATING STATION

Document E16-1640-002, Rev. 4

DECOMMISSIONING COST ANALYSIS

for the

OYSTER CREEK NUCLEAR GENERATING STATION



prepared for

Exelon Generation Company LLC

prepared by

TLG Services, Inc.
Bridgewater, Connecticut

December 2014

APPROVALS

Project Manager	William A. Cloutier, Jr.	12/12/2014 Date
Project Engineer	John A. Carlson	12/12/14 Date
Technical Manager	Francis W. Seymore	12/12/14 Date

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EXECUTIVE SUMMARY

This report presents updated estimates of the cost to decommission the Oyster Creek Nuclear Generating Station (Oyster Creek) for the identified decommissioning scenarios following a scheduled cessation of plant operations. The analysis relies upon site-specific, technical information, originally developed in an evaluation for the GPU Nuclear Corporation in 1997-99,[1] revised in subsequent evaluations in 2003-04[2] and 2008-09,[3] and finally updated to reflect current assumptions pertaining to the disposition of the nuclear unit and relevant industry experience in undertaking such projects. The updated estimates are designed to provide Exelon Generation Company (Exelon) with sufficient information to assess its financial obligations as they pertain to the eventual decommissioning of the nuclear station.

The primary goal of the decommissioning is the removal and disposal of the contaminated systems and structures so that the plant's operating license can be terminated. The analysis recognizes that spent fuel will be stored at the site in the plant's storage pool and/or in an independent spent fuel storage installation (ISFSI) until such time that it can be transferred to a Department of Energy (DOE) facility. Consequently, the estimates also include those costs to manage and subsequently decommission such storage facilities.

The estimates are based on numerous fundamental assumptions, including regulatory requirements, low-level radioactive waste disposal practices, high-level radioactive waste management options, site restoration requirements, and project contingencies. The estimates incorporate a minimum cooling period of approximately five and one-half years for the spent fuel that resides in the reactor building storage pool when operations cease. The estimates also include the dismantling of non-essential structures and limited restoration of the site.

Alternatives and Regulations

The Nuclear Regulatory Commission (NRC or Commission) provided initial decommissioning requirements in its rule adopted on June 27, 1988.[4] In this rule,

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1 "Decommissioning Cost Analysis for the Oyster Creek Nuclear Generating Station ," Document No. G01-1271-003, TLG Services, Inc., February 1999

2 "Decommissioning Cost Analysis for the Oyster Creek Nuclear Generating Station," Document No. E16-1455-006, Rev. 0, TLG Services, Inc., March 2004

3 "Decommissioning Cost Analysis for the Oyster Creek Nuclear Generating Station," Document No. E11-1555-010, TLG Services, Inc., Rev. 1, March 2009

4 U.S. Code of Federal Regulations, Title 10, Parts 30, 40, 50, 51, 70 and 72 "General Requirements for

the NRC set forth financial criteria for decommissioning licensed nuclear power 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 is 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."[5]
>
> 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."[6] Decommissioning is to be completed within 60 years, although longer time periods will be considered when necessary to protect public health and safety.
>
> 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."[7] As with the SAFSTOR alternative, decommissioning is currently required to be completed within 60 years.
>
> The 60-year restriction has limited the practicality for the ENTOMB alternative at commercial reactors that generate significant amounts of long-lived radioactive material. In 1997, the Commission directed its staff to re-evaluate this alternative and identify the technical requirements and regulatory actions that would be necessary for entombment to become a viable option. The resulting evaluation provided several recommendations, however, rulemaking has been deferred based upon several factors (e.g., no licensee has committed to pursuing the entombment option, the unresolved issues associated with the disposition of greater-than-Class C material (GTCC), and the NRC's current priorities) at least until after the additional research studies are complete. The Commission concurred with the staff's recommendation.

Decommissioning Nuclear Facilities," Nuclear Regulatory Commission, Federal Register Volume 53, Number 123 (p 24018 et seq.), June 27, 1988

5 Ibid. Page FR24022, Column 3

6 Ibid.

7 Ibid. Page FR24023, Column 2

In 1996 the NRC amended its decommissioning regulations to clarify ambiguities and codify procedures and terminology as a means of enhancing efficiency and uniformity in the decommissioning process.[8] The amendments allow for greater public participation and better define the transition process from operations to decommissioning. Regulatory Guide 1.184, issued in July 2000, further described the methods and procedures acceptable to the NRC staff for implementing the requirements of the 1996 amendments relating to the initial activities and major phases of the decommissioning process. The costs and schedules presented in this analysis follow the general guidance and processes described in these regulations.

Decommissioning Scenarios

The following scenarios were evaluated and are representative of the alternatives available to the owner. The current operating license expires in 2029; however, this study assumes that the plant will retire in 2019.

1. DECON: Decommissioning activities commence shortly after the cessation of plant operations. The spent fuel in the plant's spent fuel storage pool is transferred to the ISFSI within five and one-half years. The equipment, structures, and portions of the plant containing radioactive contaminants are removed or decontaminated to a level that permits the facility to be released for unrestricted use. Non-essential structures are then demolished. Spent fuel storage operations continue at the site (ISFSI) until the transfer of the fuel to the DOE is complete, assumed to be in the year 2036.

2. Delayed DECON: In the second scenario, the unit is shutdown and prepared for dismantling similar to the DECON scenario; however, in this scenario, the unit enters an abbreviated period of storage prior to the actual start of field activities. The spent fuel discharged to the storage pool once operations cease remains in the pool until it can be transferred to a DOE facility. The ISFSI, used to support operations, is not used to off-load the storage pool. Decommissioning is delayed until the transfer of the fuel from both the pool and ISFSI to the DOE is completed in the year 2036. The unit is then decommissioned.

3. SAFSTOR: The unit is placed into safe-storage in the third scenario. Decommissioning is deferred beyond the fuel storage period to the maximum extent possible; termination of the license would conclude within the required 60-year period. The spent fuel in the plant's spent fuel storage pool is

[8] U.S. Code of Federal Regulations, Title 10, Parts 2, 50, and 51, "Decommissioning of Nuclear Power Reactors," NRC, Federal Register Volume 61, (p 39278 et seq.), July 29, 1996

transferred to the ISFSI within five and one-half years. Spent fuel storage operations continue at the site until the transfer of the fuel to the DOE is complete, assumed to be in the year 2036. The plant remains in safe-storage following the removal of spent fuel from the site, timed to allow final decommissioning and license termination to be completed within 60 years of final shutdown. As with the first two scenarios, decommissioning activities are sequenced and integrated so as to minimize the total duration of the physical dismantling process.

Methodology

The methodology used to develop the estimates described within this document follows the basic approach originally presented in the cost estimating guidelines [9] developed by the Atomic Industrial Forum (now Nuclear Energy Institute). This reference describes a unit factor method for determining decommissioning activity costs. The unit factors used in this analysis incorporate site-specific costs and the latest available information on worker productivity in decommissioning.

An activity duration critical path is used to determine the total decommissioning program schedule. The schedule is relied upon in calculating the carrying costs, which include program management, administration, field engineering, equipment rental, and support services such as quality control and security. This systematic approach for assembling decommissioning estimates ensures a high degree of confidence in the reliability of the resulting cost estimate.

Contingency

Consistent with standard cost estimating practice, contingencies are applied to the decontamination and dismantling costs 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."[10] The cost elements in the estimates 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

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

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

used in this analysis, does not account for price escalation and inflation in the cost of decommissioning over the remaining operating life of the station.

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, although not all of the material is suitable for "shallow-land" disposal. With the passage of the "Low-Level Radioactive Waste Policy Act" in 1980,[11] and its Amendments of 1985,[12] the states became ultimately responsible for the disposition of low-level radioactive waste generated within their own borders.

New Jersey is a member of the three-state Atlantic Interstate Low-Level Radioactive Waste Management Compact, formed after South Carolina formally joined the Northeast Regional Compact. The Barnwell Low-Level Radioactive Waste Management Facility located in South Carolina is expected to be available to support the decommissioning of Oyster Creek. It is also assumed that Exelon can access other disposal sites, should it prove cost-effective. As such, rate schedules for both the Barnwell and the Energy*Solutions*' facility in Clive, Utah are used to generate disposal costs.

For the purpose of this analysis, the Energy*Solutions*' facility is used as the basis for estimating the disposal cost for the lowest level and majority of the radioactive waste (Class A [13]). Energy*Solutions* does not have a license to dispose of the more highly radioactive waste (Classes B and C), for example, generated in the dismantling of the reactor vessel. The disposal cost for this material is based upon the rate schedule for the Barnwell facility.

The dismantling of the components residing closest to the reactor core generates radioactive waste considered unsuitable for shallow-land disposal (i.e., low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the NRC for Class C radioactive waste (GTCC)). The Low-Level

11 "Low-Level Radioactive Waste Policy Act of 1980," Public Law 96-573, 1980
12 "Low-Level Radioactive Waste Policy Amendments Act of 1985," Public Law 99-240, 1986
13 U.S. Code of Federal Regulations, Title 10, Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste"

Radioactive Waste Policy Amendments Act of 1985 assigned the federal government the responsibility for the disposal of this material. The Act also stated that the beneficiaries of the activities resulting in the generation of such radioactive waste bear all reasonable costs of disposing of such waste. However, to date, the federal government has not identified a cost for disposing of GTCC or a schedule for acceptance. As such, the GTCC radioactive waste in this study is assumed to be packaged and disposed of as high-level waste, at a cost equivalent to that envisioned for the spent fuel.

The GTCC material is either stored with the spent fuel at the ISFSI or shipped directly to a DOE facility as it is generated (depending upon the timing of the decommissioning and whether the spent fuel has been removed from the site prior to the start of decommissioning).

A significant portion of the waste material generated during decommissioning may only be potentially contaminated by radioactive materials. This waste can be analyzed on site or shipped off site to licensed facilities for further analysis, for processing and/or for conditioning/recovery. Reduction in the volume of low-level radioactive waste requiring disposal in a licensed low-level radioactive waste disposal facility can be accomplished through a variety of methods, including analyses and surveys or decontamination to eliminate the portion of waste that does not require disposal as radioactive waste, compaction, incineration or metal melt. The estimates for Oyster Creek reflect the savings from waste recovery/volume reduction.

High-Level Radioactive Waste Management

Congress passed the "Nuclear Waste Policy Act" (NWPA) in 1982, assigning the federal government's long-standing responsibility for disposal of the spent nuclear fuel created by the commercial nuclear generating plants to the DOE. The DOE was to begin accepting spent fuel by January 31, 1998; however, to date no progress in the removal of spent fuel from commercial generating sites has been made.

Today, the country is at an impasse on high-level waste disposal, even with the License Application for a geologic repository submitted by the DOE to the NRC in 2008. The current Administration has cut the budget for the repository program while promising to "conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle … and make recommendations for a new plan."[14] Towards this goal, the Administration appointed a Blue Ribbon Commission on America's Nuclear Future (Blue Ribbon Commission) to make recommendations for

14 Blue Ribbon Commission on America's Nuclear Future Charter, http://cybercemetery.unt.edu/archive/brc/20120620215336/http://brc.gov/index.php?q=page/charter

a new plan for nuclear waste disposal. The Blue Ribbon Commission's charter includes a requirement that it consider "[o]ptions for safe storage of used nuclear fuel while final disposition pathways are selected and deployed."[15]

On January 26, 2012, the Blue Ribbon Commission issued its "Report to the Secretary of Energy" containing a number of recommendations on nuclear waste disposal. Two of the recommendations that may impact decommissioning planning are:

- "[T]he United States [should] establish a program that leads to the timely development of one or more consolidated storage facilities"[16]
- "[T]he United States should undertake an integrated nuclear waste management program that leads to the timely development of one or more permanent deep geological facilities for the safe disposal of spent fuel and high-level nuclear waste."[17]

In January 2013, the DOE issued the "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," in response to the recommendations made by the Blue Ribbon Commission and as "a framework for moving toward a sustainable program to deploy an integrated system capable of transporting, storing, and disposing of used nuclear fuel..."[18]

"With the appropriate authorizations from Congress, the Administration currently plans to implement a program over the next 10 years that:

- Sites, designs and licenses, constructs and begins operations of a pilot interim storage facility by 2021 with an initial focus on accepting used nuclear fuel from shut-down reactor sites;
- Advances toward the siting and licensing of a larger interim storage facility to be available by 2025 that will have sufficient capacity to provide flexibility in the waste management system and allows for acceptance of enough used nuclear fuel to reduce expected government liabilities; and

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15 Ibid.

16 "Blue Ribbon Commission on America's Nuclear Future, Report to the Secretary of Energy," http://www.brc.gov/sites/default/files/documents/brc_finalreport_jan2012.pdf, p. 32, January 2012

17 Ibid., p.27

18 "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," U.S. DOE, January 11, 2013

- Makes demonstrable progress on the siting and characterization of repository sites to facilitate the availability of a geologic repository by 2048."[19]

The NRC's review of DOE's license application to construct a geologic repository at Yucca Mountain was suspended in 2011 when the Administration slashed the budget for completing that work. However, the US Court of Appeals for the District of Columbia Circuit recently issued a writ of mandamus (in August 2013) [20] ordering NRC to comply with federal law and restart its review of DOE's Yucca Mountain repository license application to the extent of previously appropriated funding for the review.

Completion of the decommissioning process is dependent upon the DOE's ability to remove spent fuel from the site in a timely manner. DOE's repository program had assumed that spent fuel allocations would be accepted for disposal from the nation's commercial nuclear plants, with limited exceptions, in the order (the "queue") in which it was discharged from the reactor.[21] With a large fleet of reactors, Exelon may be able to re-assign allocations between its units to minimize on-site storage costs.

Assuming a 2025 start date for DOE initiating transfer of commercial spent fuel to a federal facility (based upon the proposed timeline for the availability of the larger interim storage facility), the assemblies generated from Oyster Creek operations are projected to be shipped from the Oyster Creek site in the years 2034 through 2036 (assuming the cessation of plant operations in 2019). This equates to 76 multi-purpose canisters (at 61 assemblies per canister).

An ISFSI, operated under a Part 50 General License (in accordance with 10 CFR 72, Subpart K[22]), has been constructed to support continued plant operations. This

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19 Ibid., p.2

20 United States Court of Appeals for the District Of Columbia Circuit, In Re: Aiken County, et al, August 2013 http://www.cadc.uscourts.gov/internet/opinions.nsf/BAE0CF34F762EBD985257BC6004DEB18/$file/11-1271-1451347.pdf

21 U.S. Code of Federal Regulations, Title 10, Part 961.11, Article IV – Responsibilities of the Parties, B. DOE Responsibilities, 5.(a) … DOE shall issue an annual acceptance priority ranking for receipt of SNF and/or HLW at the DOE repository. This priority ranking shall be based on the age of SNF and/or HLW as calculated from the date of discharge of such materials from the civilian nuclear power reactor. The oldest fuel or waste will have the highest priority for acceptance …"

22 U.S. Code of Federal Regulations, Title 10, Part 72, Subpart K, "General License for Storage of Spent Fuel at Power Reactor Sites."

analysis assumes that the facility can be expanded to support decommissioning operations (in the DECON and SAFSTOR scenarios).

The spent fuel in the wet storage pools at the cessation of plant operations is expected to be transferred to the ISFSI (DECON and SAFSTOR scenarios) within the first five and one-half years following shutdown. Once the wet storage pool is emptied, the reactor building can be either decontaminated and dismantled or prepared for long-term storage. The pool is kept operational in the Delayed DECON scenario until the spent fuel stored in the pool can be transferred to the DOE.

Exelon's strongly held position is that the DOE has a contractual obligation to accept Oyster Creek's fuel in a timely manner and consistent with its contract commitments. No assumption made in this study should be interpreted to be inconsistent with this claim. However, at this time, including the cost of storing spent fuel in this study is the most reasonable approach because it insures the availability of sufficient decommissioning funds at the end of the station's life if the DOE has not met its contractual obligation to take the fuel.

Site Restoration

The efficient removal of the contaminated materials at the site will 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 once the license is terminated 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 is more efficient and less costly than if the process were deferred. Experience at shutdown generating stations has shown that plant facilities quickly degrade without maintenance, adding additional expense and creating potential hazards to the public and the demolition work force. Consequently, this analysis assumes that non-essential site structures within the restricted access area are removed to a nominal depth of three feet below the local grade level wherever possible. The site is then graded and stabilized.

Summary

The costs to decommission Oyster Creek were evaluated for several decommissioning scenarios, incorporating the attributes of both the DECON and SAFSTOR decommissioning alternatives. Regardless of the timing of the decommissioning activities, the estimates assume the eventual removal of all the contaminated and activated plant components and structural materials, such that

the facility operator may then have unrestricted use of the site with no further requirement for an operating license. Delayed decommissioning is initiated after the spent fuel has been removed from the site and is accomplished within the 60-year period required by current NRC regulations. In the interim, the spent fuel remains in storage at the site until such time that the transfer to a DOE facility can be completed. Once the transfer is complete, the storage facilities are also decommissioned.

The scenarios analyzed for the purpose of generating the estimates are described in Section 2. The assumptions are presented in Section 3, along with schedules of annual expenditures. The major cost contributors are identified in Section 6, with detailed activity costs, waste volumes, and associated manpower requirements delineated in Appendices C, D, and E. Cost summaries for the various scenarios are provided at the end of this section for the major cost components.

SUMMARY OF DECOMMISSIONING COST ELEMENTS
DECON
(thousands of 2011 dollars)

Cost Element	Total
Decontamination	22,297
Removal	148,522
Packaging	22,786
Transportation	17,598
Waste Disposal	64,400
Off-site Waste Processing	10,024
Program Management [1]	417,042
Spent Fuel Pool Isolation	11,822
Spent Fuel Management[2]	100,110
Insurance and Regulatory Fees	20,929
Energy	13,156
Characterization and Licensing Surveys	19,885
Property Taxes	21,212
Miscellaneous Equipment	6,800
Site O&M	3,127
Total [3]	899,710

Cost Element	
NRC License Termination	665,975
Spent Fuel Management	177,146
Site Restoration	56,589
Total [3]	899,710

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

SUMMARY OF DECOMMISSIONING COST ELEMENTS
DELAYED DECON
(thousands of 2011 dollars)

Cost Element	Total
Decontamination	23,573
Removal	134,505
Packaging	17,207
Transportation	13,288
Waste Disposal	39,463
Off-site Waste Processing	11,541
Program Management [1]	501,758
Spent Fuel Pool Isolation	11,822
Spent Fuel Management[2]	37,454
Insurance and Regulatory Fees	25,123
Energy	18,772
Characterization and Licensing Surveys	21,402
Property Taxes	25,586
Miscellaneous Equipment	10,399
Site O&M	8,327
Total [3]	900,219

Cost Element	
NRC License Termination	541,703
Spent Fuel Management	299,125
Site Restoration	59,390
Total [3]	900,219

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

SUMMARY OF DECOMMISSIONING COST ELEMENTS
SAFSTOR
(thousands of 2011 dollars)

Cost Element	Total
Decontamination	23,321
Removal	137,788
Packaging	16,136
Transportation	11,848
Waste Disposal	37,361
Off-site Waste Processing	11,589
Program Management [1]	556,588
Spent Fuel Pool Isolation	11,822
Spent Fuel Management[2]	96,744
Insurance and Regulatory Fees	57,478
Energy	24,479
Characterization and Licensing Surveys	21,402
Property Taxes	68,922
Miscellaneous Equipment	18,942
Site O&M	21,895
Total [3]	1,116,314

Cost Element	
NRC License Termination	873,828
Spent Fuel Management	183,117
Site Restoration	59,369
Total [3]	1,116,314

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

1. INTRODUCTION

This report presents updated estimates of the cost to decommission the Oyster Creek Nuclear Generating Station (Oyster Creek), for the scenarios described in Section 2, following a scheduled cessation of plant operations. The analysis relies upon site-specific, technical information from an earlier evaluation prepared in 2008-09,[1] updated to reflect current assumptions pertaining to the disposition of the nuclear unit and relevant industry experience in undertaking such projects. The current estimates are designed to provide Exelon Generation Company (Exelon), with sufficient information to assess their financial obligations, as they pertain to the eventual decommissioning of the nuclear unit. It is not a detailed engineering document, but a financial analysis prepared in advance of the detailed engineering that will be required to carry out the decommissioning

1.1 OBJECTIVES OF STUDY

The objectives of this study are to prepare comprehensive estimates of the cost to decommission Oyster Creek, to provide a sequence or schedule for the associated activities, and to develop waste stream projections from the decontamination and dismantling activities. The plant's operating license currently expires on April 9, 2029; however, this study assumes that the plant will be retired on December 31, 2019.

1.2 SITE DESCRIPTION

The Oyster Creek nuclear unit is about two miles inland from the shore of Barnegat Bay on the coast of New Jersey. The site is approximately nine miles south of Toms River, New Jersey; about fifty miles east of Philadelphia, Pennsylvania; and sixty miles south of Newark, New Jersey. The generating station is comprised of a single reactor with supporting facilities.

Oyster Creek was designed and constructed by the General Electric Company Atomic Power Equipment Department as a turnkey project. The reactor is a single-cycle, forced circulation boiling water reactor producing steam for direct use in the steam turbine. The reactor vessel and the recirculation system are contained within the drywell of a pressure absorption containment system housed within the reactor building. The primary containment system consists of the drywell, vent pipes, and a pool of water contained in the absorption chamber (torus). The reactor building encloses the primary containment system, thereby providing a secondary containment.

Oyster Creek presently operates under a full term operating license at a maximum thermal power level of about 1930 MWth with a corresponding gross electrical output of approximately 670 MWe. Heat produced in the reactor is converted to electrical energy by the steam and power conversion system. A turbine-generator system converts the thermal energy of steam produced by the reactor into mechanical shaft power and then into electrical energy. The turbine consists of a high-pressure, double-flow turbine element and three double-flow, low-pressure turbine elements all aligned in tandem. The generator is a direct-driven 60 Hertz, 24,000 volt, conductor-cooled, synchronous generator rated at 687,500 kVA. The turbine is operated in a closed feedwater cycle which condenses the steam; the heated feedwater is returned to the reactor. Heat rejected in the main condensers is removed by the circulating water system.

The circulating water system provides the heat sink required for removal of waste heat in the power plant's thermal cycle. Water is drawn from Barnegat Bay through a 140 foot wide intake canal which follows the general course of the south branch of Forked River. The system has the principal function of removing heat by absorbing this energy in the main condenser. After passing through the plant condensers, the water is routed through the discharge canal which empties into Barnegat Bay.

1.3 REGULATORY GUIDANCE

The Nuclear Regulatory Commission (NRC or Commission) provided initial decommissioning requirements in its rule "General Requirements for Decommissioning Nuclear Facilities," issued in June 1988.[2]* This rule set forth financial criteria for decommissioning licensed nuclear power 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 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,[3]" which provided additional guidance to the licensees of nuclear facilities on the financial 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.

* Annotated references for citations in Sections 1-6 are provided in Section 7.

The rule defined three decommissioning alternatives as being acceptable to the NRC: DECON, SAFSTOR, and ENTOMB. The DECON alternative assumes that any contaminated or activated portion of the plant's systems, structures, and facilities are removed or decontaminated to levels that permit the site to be released for unrestricted use shortly after the cessation of plant operations. The rule 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. 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 unrestricted release limits for license termination.

The ENTOMB alternative has not been viewed as a viable option for power reactors due to the significant time required to isolate the long-lived radionuclides for decay to permissible levels. However, with recent rulemaking permitting the controlled release of a site, the NRC has re-evaluated this alternative.[4] The resulting feasibility study, based upon an assessment by Pacific Northwest National Laboratory, concluded that the method did have conditional merit for some, if not most, reactors. However, the staff also found that additional rulemaking would be needed before this option could be treated as a generic alternative. The NRC had considered rulemaking to alter the 60-year time for completing decommissioning and to clarify the use of engineered barriers for reactor entombments.[5] However, the NRC's staff has recommended that rulemaking be deferred, based upon several factors, e.g., no licensee has committed to pursuing the entombment option, the unresolved issues associated with the disposition of greater-than-Class C material (GTCC), and the NRC's current priorities, at least until after the additional research studies are complete. The Commission concurred with the staff's recommendation.

The NRC published amendments to its decommissioning regulations in 1996.[6] When the regulations were originally adopted in 1988, it was assumed that the majority of licensees would decommission at the end of the facility's operating licensed life. Since that time, several licensees permanently and prematurely ceased operations. Exemptions from certain operating requirements were required once the reactor was defueled to facilitate the decommissioning. Each case was 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 will submit written certification to the NRC within 30 days after the decision to cease operations. Certification will also be required once the fuel is permanently removed from the reactor vessel. Submittal of these notices will 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 is 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 is required to submit applications to the NRC to terminate the license, which will include a License Termination Plan (LTP).

1.3.1 Nuclear Waste Policy Act

Congress passed the "Nuclear Waste Policy Act" (NWPA) in 1982,[7] assigning the federal government's long-standing responsibility for disposal of the spent nuclear fuel created by the commercial nuclear generating plants to the DOE. The DOE was to begin accepting spent fuel by January 31, 1998; however, to date no progress in the removal of spent fuel from commercial generating sites has been made.

Today, the country is at an impasse on high-level waste disposal, even with the License Application for a geologic repository submitted by the DOE to the NRC in 2008. The current Administration has cut the budget for the repository program while promising to "conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle … and make recommendations for a new plan." Towards this goal, the Administration appointed a Blue Ribbon Commission on America's Nuclear Future (Blue Ribbon Commission) to make recommendations for a new plan for nuclear waste disposal. The Blue Ribbon Commission's charter includes a requirement that it consider "[o]ptions for safe storage of used nuclear fuel while final disposition pathways are selected and deployed."[8]

On January 26, 2012, the Blue Ribbon Commission issued its "Report to the Secretary of Energy" containing a number of recommendations on

nuclear waste disposal. Two of the recommendations that may impact decommissioning planning are:

- "[T]he United States [should] establish a program that leads to the timely development of one or more consolidated storage facilities"
- "[T]he United States should undertake an integrated nuclear waste management program that leads to the timely development of one or more permanent deep geological facilities for the safe disposal of spent fuel and high-level nuclear waste."[9]

In January 2013, the DOE issued the "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," in response to the recommendations made by the Blue Ribbon Commission and as "a framework for moving toward a sustainable program to deploy an integrated system capable of transporting, storing, and disposing of used nuclear fuel..."[10]

"With the appropriate authorizations from Congress, the Administration currently plans to implement a program over the next 10 years that:

- Sites, designs and licenses, constructs and begins operations of a pilot interim storage facility by 2021 with an initial focus on accepting used nuclear fuel from shut-down reactor sites;
- Advances toward the siting and licensing of a larger interim storage facility to be available by 2025 that will have sufficient capacity to provide flexibility in the waste management system and allows for acceptance of enough used nuclear fuel to reduce expected government liabilities; and
- Makes demonstrable progress on the siting and characterization of repository sites to facilitate the availability of a geologic repository by 2048."

The NRC's review of DOE's license application to construct a geologic repository at Yucca Mountain was suspended in 2011 when the Administration slashed the budget for completing that work. However, the US Court of Appeals for the District of Columbia Circuit recently issued a writ of mandamus (in August 2013)[11] ordering NRC to comply with federal law and restart its review of DOE's Yucca Mountain

repository license application to the extent of previously appropriated funding for the review.

Completion of the decommissioning process is dependent upon the DOE's ability to remove spent fuel from the site in a timely manner. DOE's repository program had assumed that spent fuel allocations would be accepted for disposal from the nation's commercial nuclear plants, with limited exceptions, in the order (the "queue") in which it was discharged from the reactor.[12] With a large fleet of reactors, Exelon may be able to re-assign allocations between its units to minimize on-site storage costs.

Assuming a 2025 start date for DOE initiating transfer of commercial spent fuel to a federal facility (based upon the proposed timeline for the availability of the larger interim storage facility), the assemblies generated from Oyster Creek operations are projected to be shipped from the Oyster Creek site in the years 2034 through 2036 (assuming the cessation of plant operations in 2019). This equates to 76 multi-purpose canisters (at 61 assemblies per canister).

An ISFSI, operated under a Part 50 General License (in accordance with 10 CFR 72, Subpart K[13]), has been constructed to support continued plant operations. This analysis assumes that the facility can be expanded to support decommissioning operations (in the DECON and SAFSTOR scenarios).

The spent fuel in the wet storage pools at the cessation of plant operations is expected to be transferred to the ISFSI (DECON and SAFSTOR scenarios) within the first five and one-half years following shutdown. Once the wet storage pools are emptied, the reactor buildings can be either decontaminated and dismantled or prepared for long-term storage. The spent fuel pools are kept operational in the Delayed DECON scenario until the transfer of spent fuel from the pools to the DOE can be completed.

Exelon's strongly held position is that the DOE has a contractual obligation to accept Oyster Creek's fuel in a timely manner and consistent with its contract commitments. No assumption made in this study should be interpreted to be inconsistent with this claim. However, at this time, including the cost of storing spent fuel in this study is the most reasonable approach because it insures the availability of sufficient

decommissioning funds at the end of the station's life if the DOE has not met its contractual obligation to take the fuel.

1.3.2 Low-Level Radioactive Waste Acts

The contaminated and activated material generated in the decontamination and dismantling of a commercial nuclear reactor is classified as low-level (radioactive) waste, although not all of the material is suitable for "shallow-land" disposal. With the passage of the "Low-Level Radioactive Waste Policy Act" in 1980,[14] and its Amendments of 1985,[15] the states became ultimately responsible for the disposition of low-level radioactive waste generated within their own borders.

New Jersey is a member of the three-state Atlantic Interstate Low-Level Radioactive Waste Management Compact, formed after South Carolina formally joined the Northeast Regional Compact. The Barnwell Low-Level Radioactive Waste Management Facility, located in South Carolina, is expected to be available to support the decommissioning of Oyster Creek. It is also assumed that Exelon can access other disposal sites, should it prove cost-effective. As such, rate schedules for both the Barnwell and the Energy*Solutions*' facility in Clive, Utah are used to generate disposal costs.

For the purpose of this analysis, the Energy*Solutions*' facility is used as the basis for estimating the disposal cost for the lowest level and majority of the radioactive waste (Class A [16]). Energy*Solutions* does not have a license to dispose of the more highly radioactive waste (Classes B and C), for example, generated in the dismantling of the reactor vessel. The disposal cost for this material is based upon the rate schedule for the Barnwell facility.

The dismantling of the components residing closest to the reactor core generates radioactive waste considered unsuitable for shallow-land disposal (i.e., low-level radioactive waste with concentrations of radionuclides that exceed the limits established by the NRC for Class C radioactive waste (GTCC)). The Low-Level Radioactive Waste Policy Amendments Act of 1985 assigned the federal government the responsibility for the disposal of this material. The Act also stated that the beneficiaries of the activities resulting in the generation of such radioactive waste bear all reasonable costs of disposing of such waste. However, to date, the federal government has not identified a cost for

disposing of GTCC or a schedule for acceptance. As such, the GTCC radioactive waste in this study is assumed to be packaged and disposed of as high-level waste, at a cost equivalent to that envisioned for the spent fuel.

The GTCC material is either stored with the spent fuel at the ISFSI or shipped directly to a DOE facility as it is generated (depending upon the timing of the decommissioning and whether the spent fuel has been removed from the site prior to the start of decommissioning).

A significant portion of the waste material generated during decommissioning may only be potentially contaminated by radioactive materials. This waste can be analyzed on site or shipped off site to licensed facilities for further analysis, for processing and/or for conditioning/recovery. Reduction in the volume of low-level radioactive waste requiring disposal in a licensed low-level radioactive waste disposal facility can be accomplished through a variety of methods, including analyses and surveys or decontamination to eliminate the portion of waste that does not require disposal as radioactive waste, compaction, incineration or metal melt. The estimates for Oyster Creek reflect the savings from waste recovery/volume reduction.

1.3.3 Radiological Criteria for License Termination

In 1997, the NRC published Subpart E, "Radiological Criteria for License Termination,"[17] amending 10 CFR §20. This subpart provides radiological criteria for releasing a facility for unrestricted use. The regulation states that the site can be released for unrestricted use if radioactivity levels are such that the average member of a critical group would not receive a Total Effective Dose Equivalent (TEDE) in excess of 25 millirem per year, and provided that residual radioactivity has been reduced to levels that are As Low As Reasonably Achievable (ALARA). The decommissioning estimates for Oyster Creek assume that the site will be remediated to a residual level consistent with the NRC-prescribed level as well as the State of New Jersey's remedial action levels for radioactive material.

It should be noted that the NRC and the Environmental Protection Agency (EPA) differ on the amount of residual radioactivity considered acceptable in site remediation. The EPA has two limits that apply to radioactive materials. An EPA limit of 15 millirem per year is derived from criteria established by the Comprehensive Environmental

Response, Compensation, and Liability Act (CERCLA or Superfund).[18] An additional limit of 4 millirem per year, as defined in 40 CFR §141.16, is applied to drinking water.[19]

On October 9, 2002, the NRC signed an agreement with the EPA on the radiological decommissioning and decontamination of NRC-licensed sites. The Memorandum of Understanding (MOU)[20] provides that EPA will defer exercise of authority under CERCLA for the majority of facilities decommissioned under NRC authority. The MOU also includes provisions for NRC and EPA consultation for certain sites when, at the time of license termination, (1) groundwater contamination exceeds EPA-permitted levels; (2) NRC contemplates restricted release of the site; and/or (3) residual radioactive soil concentrations exceed levels defined in the MOU.

The MOU does not impose any new requirements on NRC licensees and should reduce the involvement of the EPA with NRC licensees who are decommissioning. Most sites are expected to meet the NRC criteria for unrestricted use, and the NRC believes that only a few sites will have groundwater or soil contamination in excess of the levels specified in the MOU that trigger consultation with the EPA. However, if there are other hazardous materials on the site, the EPA may be involved in the cleanup. As such, the possibility of dual regulation remains for certain licensees. The present study does not include any costs for this occurrence.

2. DECOMMISSIONING ALTERNATIVES

Detailed cost estimates were developed to decommission Oyster Creek for three variations of the approved decommissioning alternatives: DECON and SAFSTOR. Although the scenarios differ with respect to technique, process, cost, and schedule, they attain the same result: the ultimate release of the site for unrestricted use.

Three decommissioning scenarios were evaluated for the nuclear station. The scenarios selected are representative of alternatives available to the owner and are defined as follows:

1. DECON: Decommissioning activities commence shortly after the cessation of plant operations. The spent fuel in the plant's spent fuel storage pool is transferred to the ISFSI within five and one-half years. The equipment, structures, and portions of the plant containing radioactive contaminants are removed or decontaminated to a level that permits the facility to be released for unrestricted use. Non-essential structures are then demolished. Spent fuel storage operations continue at the site (ISFSI) until the transfer of the fuel to the DOE is complete, assumed to be in the year 2036.

2. Delayed DECON: In the second scenario the unit is shutdown and prepared for dismantling similar to the DECON scenario; however, in this scenario, the unit enters an abbreviated period of storage prior to the actual start of field activities. The spent fuel discharged to the storage pool once operations cease remains in the pool until it can be transferred to a DOE facility. The ISFSI, used to support operations, is not used to off-load the storage pool. Decommissioning is delayed until the transfer of the fuel from both the pool and ISFSI to the DOE is completed in the year 2036. The unit is then decommissioned.

3. SAFSTOR: The unit is placed into safe-storage in the third scenario. Decommissioning is deferred beyond the fuel storage period to the maximum extent possible; termination of the license would conclude within the required 60-year period. The spent fuel in the plant's spent fuel storage pool is transferred to the ISFSI within five and one-half years. Spent fuel storage operations continue at the site until the transfer of the fuel to the DOE is complete, assumed to be in the year 2036. The plant remains in safe-storage following the removal of spent fuel from the site, timed to allow final decommissioning and license termination to be completed within 60 years of final shutdown. As with the first two scenarios, decommissioning activities are

integrated so as to minimize the total duration of the physical dismantling process.

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, the 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).

The conceptual approach that the NRC has described in its regulations divides 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 facilitate de-activation and closure. During the first phase, 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 would then be prohibited from reactor operation.

The second phase encompasses activities during the storage period or during major decommissioning activities, or a combination of the two. The third phase pertains to the activities involved in license termination. The decommissioning estimates developed for Oyster Creek are also divided into phases or periods; however, demarcation of the phases is based upon major milestones within the project or significant changes in the projected expenditures.

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 dispose of the spent fuel residing at the site; such costs are funded through a surcharge on electrical generation. However, the study does estimate the costs incurred with the interim on-site storage of the fuel pending shipment by the DOE to an off-site disposal facility.

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. Through implementation of a staffing transition plan, the organization required to manage the

intended decommissioning activities is assembled from available plant staff and outside resources. 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

The PSDAR, required before or within two years after permanent cessation of operations, provides a description of the licensee's planned decommissioning activities, a timetable, and the associated financial requirements of the intended decommissioning program. Upon receipt of the PSDAR, the NRC will make the document available to the public for comment in a local meeting 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 10 CFR §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, permanently modifies the structure of the containment, or results in dismantling components (for shipment) containing GTCC, as defined by 10 CFR §61. Major components are further defined as comprising the reactor vessel and internals, large bore reactor recirculation system piping, and other large components that are radioactive. The NRC includes the following additional criteria for use of the §50.59 process in decommissioning. The proposed activity must not:

- foreclose release of the site for possible unrestricted use,
- significantly increase decommissioning costs,
- cause any significant environmental impact, or
- violate the terms of the licensee's existing license.

Existing operational technical specifications are reviewed and modified to reflect plant conditions and the safety concerns associated with permanent cessation of operations. The environmental impact associated with the planned decommissioning activities is also considered. Typically, a licensee will not be allowed to proceed if the consequences of a particular decommissioning activity are greater than that bounded by previously evaluated environmental assessments or impact statements. In this instance, the licensee would have to submit

a license amendment for the specific activity and update the environmental report.

The decommissioning program outlined in the PSDAR will be designed to accomplish the required tasks within the ALARA guidelines (as defined in 10 CFR §20) 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. Consequently, with the development of the PSDAR, activity specifications, cost-benefit and safety analyses, and work packages and procedures, would be assembled to support the proposed decontamination and dismantling activities.

Site Preparations

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

- Characterization of the site and surrounding environs. This includes radiation surveys of work areas, major components (including the reactor vessel and its internals), internal piping, and primary shield cores.
- Isolation of the spent fuel storage pool and fuel handling systems, such that decommissioning operations can commence on the balance of the plant. Decommissioning operations are scheduled around the fuel handling area to optimize the overall project schedule. The fuel is transferred to the ISFSI as it decays to the point that it meets the definition of standard fuel (DECON and SAFSTOR alternatives), or the DOE (Delayed DECON). Consequently, it is assumed that the fuel pool remains operational for approximately five and one-half years following the cessation of operations.
- Specification of transport and disposal requirements for activated materials and/or hazardous materials, including shielding and waste stabilization.
- Development of procedures for occupational exposure control, control and release of liquid and gaseous effluent, processing of radwaste (including dry-active waste, resins, filter media, metallic and non-metallic components generated in decommissioning), site security and emergency programs, and industrial safety.

2.1.2 Period 2 - Decommissioning Operations

This period includes the physical decommissioning activities associated with the removal and disposal of contaminated and activated components and structures, including the successful amendment of the 10 CFR §50 operating license (releasing the site, exclusive of the ISFSI). Significant decommissioning activities in this phase include:

- Construction of temporary facilities and/or modification of existing facilities to support dismantling activities. This may include a centralized processing area to facilitate equipment removal and component preparations for off-site disposal.
- Reconfiguration and modification of site structures and facilities as needed to support decommissioning operations. This may include the upgrading of roads (on and off site) to facilitate hauling and transport. Modifications may be required to the containment structure to facilitate access of large/heavy equipment. Modifications may also be required to the refueling area of the reactor building to support the segmentation of the reactor vessel internals and component extraction.
- Design and fabrication of temporary and permanent shielding to support removal and transportation activities, construction of contamination control envelopes, and the procurement of specialty tooling.
- Procurement (lease or purchase) of shipping canisters, cask liners, and industrial packages.
- Decontamination of components and piping systems as required to control (minimize) worker exposure.
- Removal of piping and components no longer essential to support decommissioning operations.
- Transfer of the steam separator and dryer assemblies to the dryer-separator pool for segmentation. Segmentation by weight and activity maximizes the loading of the shielded transport casks. The operations are conducted under water using remotely-operated tooling and contamination controls.
- Disconnection of the control blades from the drives on the vessel lower head. Blades are transferred to the spent fuel pool for packaging.

- Disassembly, segmentation, and packaging of the core shroud and in-core guide tubes. Some of the material is expected to exceed Class C disposal requirements. As such, those segments are packaged in modified fuel storage canisters for geologic disposal.
- Removal and segmentation of the remaining internals, fuel support castings, and core plate assembly.
- Draining and decontamination of the reactor well and the permanent sealing of the spent fuel transfer gate. Installation of a shielded platform for segmentation of the reactor vessel. Cutting operations are performed in air using remotely operated equipment within a contamination control envelope, with the water level maintained just below the cut to minimize the working area dose rates. Sections are transferred to the dryer-separator pool for packaging and interim storage.
- Disconnection of the control rod drives and instrumentation tubes from reactor vessel lower head. The lower reactor head and vessel support skirt are then segmented.
- Removal of the reactor recirculation pumps. Exterior surfaces are decontaminated and openings covered. Components can serve as their own burial containers provided that all penetrations are properly sealed.
- Demolition of the sacrificial shield activated concrete by controlled demolition.

At least two years prior to the anticipated date of license termination, an LTP is required. Submitted as a supplement to the Final Safety Analysis Report (FSAR) or its equivalent, 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 the end use of the site, an updated cost estimate to complete the decommissioning, and any associated environmental concerns. The NRC will notice the receipt of the plan, make the plan available for public comment, and schedule a local meeting. LTP approval will be subject to any conditions and limitations as deemed appropriate by the Commission. The licensee may then commence with the final remediation of site facilities and services, including:

- Removal of remaining plant systems and associated components as they become nonessential to the decommissioning program or worker

health and safety (e.g., waste collection and treatment systems, electrical power and ventilation systems).

- Removal of the steel liners from the drywell, disposing of the activated and contaminated sections as radioactive waste. Removal of any activated/contaminated concrete.
- Removal of the steel liners from the steam separator and dryer pool, reactor well and spent fuel storage pool.
- Surveys of the decontaminated areas of the containment structures.
- Removal of the contaminated equipment and material from the turbine and radwaste buildings, and any other contaminated facility. Use radiation and contamination control techniques until radiation surveys indicate that the structures can be released for unrestricted access and conventional demolition. This activity may necessitate the dismantling and disposition of most of the systems and components (both clean and contaminated) located within these buildings. This activity will facilitate surface decontamination and subsequent verification surveys required prior to obtaining release for demolition.
- Removal of the remaining components, equipment, and plant services in support of the area release survey(s).
- Routing of material removed in the decontamination and dismantling to a central processing area. Material certified to be free of contamination is released for unrestricted disposition, e.g., as scrap, recycle, or general disposal. Contaminated material is characterized and segregated for additional off-site processing (disassembly, chemical cleaning, volume reduction, and waste treatment), and/or packaged for controlled disposal at a low-level radioactive waste disposal facility.

Incorporated into the LTP is the Final Survey Plan. This plan identifies the radiological surveys to be performed once the decontamination activities are completed and is developed using the guidance provided in the "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)."[21] This document incorporates the statistical approaches to survey design and data interpretation used by the EPA. It also identifies commercially available instrumentation and procedures for conducting radiological surveys. Use of this guidance ensures that the surveys 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 the requested change to the operating license (that would release the property, exclusive of the ISFSI, for unrestricted use).

The NRC will amend the operating license if it determines that site remediation has been performed in accordance with the LTP, 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 will 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. Although performed in a controlled and safe manner, blasting, coring, drilling, scarification (surface removal), and the other decontamination activities will substantially degrade power block structures including the reactor, turbine and radwaste buildings. Under certain circumstances, verifying that subsurface radionuclide concentrations meet NRC site release requirements will 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 likely 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 than if the process were deferred. Site facilities quickly degrade without 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 are dismantled as a continuation of the decommissioning activity. Foundations and exterior walls are removed to a nominal depth of three feet below grade. The three-foot depth allows for the placement of gravel for drainage, as well as topsoil, so that vegetation can be established for erosion control. Site areas affected by the dismantling activities are restored and the plant area graded as required to prevent ponding and inhibit the refloating of subsurface materials.

Concrete rubble produced by demolition activities is processed to remove rebar and miscellaneous embedments. The processed material is then used on site to backfill voids. Excess materials are trucked to an off-site area for disposal as construction debris.

2.1.4 ISFSI Operations and Decommissioning

The ISFSI will continue to operate under a general license (10 CFR §50) following the amendment of the operating license to release the adjacent (power block) property. Assuming the DOE starts accepting fuel from Oyster Creek in 2034, transfer of spent fuel from the ISFSI is anticipated to continue through the year 2036.

At the conclusion of the spent fuel transfer process, the ISFSI will be decommissioned. The existing design for the ISFSI is based upon the use of a multi-purpose canister and a concrete horizontal module for pad storage. For purposes of this cost analysis, it is assumed that the concrete and steel in several of the modules will have low levels of neutron activation. These modules will be designated for controlled disposal. The remaining modules will be dismantled using conventional techniques for the demolition of reinforced concrete. The concrete storage pad will then be removed, and the area graded and landscaped to conform to the surrounding environment.

The NRC will terminate the §50 license when it determines that the remediation of the ISFSI has been performed in accordance with an ISFSI license termination plan and that the final radiation survey and associated documentation demonstrate that the facility is suitable for release. Once the requirements are satisfied, the NRC can terminate the license for the ISFSI.

2.2 SAFSTOR AND DELAYED DECOMMISSIONING

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 dormancy 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 are 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.

The following discussion is appropriate for both the SAFSTOR and Delayed DECON scenarios, the primary differences being in the storage methods for the spent fuel and the length of the dormancy period. Spent fuel is continued to be stored in the wet storage pool for the Delayed DECON scenario until such time that the transfer to a DOE facility can be completed, i.e., the ISFSI is not used to offload the pool. Decommissioning operations are assumed to begin once the transfer is complete. By contrast, all of the fuel remaining in the storage pool after the minimum required cooling period is relocated to the ISFSI in the SAFSTOR scenario and the pool emptied. The nuclear unit remains in storage after fuel transfer operations are completed, with decommissioning operations initiated such that the license is terminated within the required 60-year time period. In both scenarios, the spent fuel is transferred from the ISFSI to the DOE between the years 2034 and 2036.

2.2.1 Period 1 - Preparations

Preparations for long-term storage 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 process of placing the plant in safe-storage includes, but is not limited to, the following activities:

- Isolation of the spent fuel storage services and fuel handling systems located in the reactor building 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 scheduled around the fuel handling systems to the greatest extent possible.
- Draining and de-energizing of the non-contaminated systems not required to support continued site operations or maintenance.
- Disposing of contaminated filter elements and resin beds not required for processing wastes from layup activities for future operations.
- Draining of the reactor vessel, with the internals left in place and the vessel head secured.
- Draining and de-energizing non-essential, contaminated systems with decontamination as required for future maintenance and inspection.
- Preparing lighting and alarm systems whose continued use is required; de-energizing portions of fire protection, electric power, and HVAC systems whose continued use is not required.
- Cleaning of the loose surface contamination from building access pathways.
- Performing an interim radiation survey of plant, posting warning signs where appropriate.
- Erecting physical barriers and/or securing all access to radioactive or contaminated areas, except as required for inspection and maintenance.
- Installing security and surveillance monitoring equipment and relocating security fence around secured structures, as required.

2.2.2 Period 2 - 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 alternatives. Dormancy activities include a 24-hour security 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. Resident maintenance personnel perform equipment maintenance, inspection activities, routine services to maintain safe conditions, adequate lighting, heating, and ventilation, and periodic preventive maintenance on essential site services.

An environmental surveillance program is carried out during the dormancy period to ensure that releases of radioactive material to the environment are prevented and/or 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. The security fence, sensors, alarms, and other surveillance equipment provide security. Fire and radiation alarms are also monitored and maintained. While remote surveillance is an option, it does not offer the immediate response time of a physical presence.

The transfer of the spent fuel to a DOE facility continues during this period until complete.

After an optional period of storage (such that license terminations are accomplished within 60 years of final shutdown), it is required that the licensee submit applications to terminate the license, along with an LTP (described in Section 2.1.2), thereby initiating the third phase.

2.2.3 Periods 3 and 4 - Delayed Decommissioning

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, and the assembly of a decommissioning management organization. Final planning for activities and the 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 and 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 deferred scenarios is the absence, in the latter, of any constraint on the availability of the fuel storage facilities located within the reactor building for decommissioning.

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. Given the levels of radioactivity and spectrum of radionuclides expected from fifty 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 the waste generated from the decommissioning activities. However, due to the lower activity levels, a greater percentage of the waste volume can be designated for off-site processing and recovery.

The delay in decommissioning also yields lower working area radiation levels. As such, the estimates for the delayed scenarios incorporate reduced ALARA controls for the lower occupational exposure potential.

Although the initial radiation levels due to ^{60}Co will decrease 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 scenario. Portions of the sacrificial 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 will be surveyed as they are removed and disposed of in accordance with the existing radioactive release criteria.

2.2.4 Period 5 - Site Restoration

Following completion of decommissioning operations, site-restoration activities can begin. If the site structures are to be dismantled, dismantling as a continuation of the decommissioning process is clearly the most appropriate and cost-effective option, as described in Section 2.1.3. The basis for the dismantling cost in the SAFSTOR scenario is consistent with that described for DECON, presuming the removal of structures and site facilities to a nominal depth of three feet below grade and the limited restoration of the site.

3. COST ESTIMATE

The cost estimates prepared for decommissioning Oyster Creek consider the unique features of the site, including the NSSS, power generation systems, support services, site buildings, and ancillary facilities. The basis of the estimates, including the sources of information relied upon, the estimating methodology employed, site-specific considerations, and other pertinent assumptions, is described in this section.

3.1 BASIS OF ESTIMATE

The estimates were developed with site-specific, technical information developed in an evaluation prepared for Exelon in 2008-09. The information was reviewed for the current analysis and updated as deemed appropriate. The site-specific considerations and assumptions used in the previous evaluation were also revisited. Modifications were incorporated where new information was available or experience from ongoing decommissioning programs provided viable alternatives or improved processes.

3.2 METHODOLOGY

The methodology used to develop the estimates follows the basic approach originally presented in the AIF/NESP-036 study report, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates,"[22] and the DOE "Decommissioning Handbook."[23] These documents present a unit factor method for estimating decommissioning activity costs, which simplifies the estimating calculations. Unit factors for concrete removal ($/cubic yard), steel removal ($/ton), and cutting costs ($/inch) were developed using local labor rates. The activity-dependent costs were estimated with the item quantities (cubic yards and tons), developed from plant drawings and inventory documents. Removal rates and material costs for the conventional disposition of components and structures relied upon information available in the industry publication, "Building Construction Cost Data," published by R.S. Means.[24]

This analysis reflects lessons learned from TLG's involvement in the Shippingport Station Decommissioning Project, completed in 1989, as well as the decommissioning of the Cintichem reactor, hot cells, and associated facilities, completed in 1997. In addition, the planning and engineering for the Pathfinder, Shoreham, Rancho Seco, Trojan, Yankee Rowe, Big Rock Point, Maine Yankee, Humboldt Bay-3, Oyster Creek, Connecticut Yankee, and San

Onofre-1 nuclear units have provided additional insight into the process, the regulatory aspects, and the technical challenges of decommissioning commercial nuclear units.

The unit factor method provides a demonstrable basis for establishing reliable cost estimates. The detail provided in the unit factors, including activity duration, labor costs (by craft), and equipment and consumable costs, ensures that essential elements have not been omitted. Appendix A presents the detailed development of a typical unit factor. Appendix B provides the values contained within one set of factors developed for this analysis.

Work Difficulty Factors

WDFs were assigned to each area, commensurate with the inefficiencies associated with working in confined, hazardous environments. The ranges used for the WDFs are as follows:

- Access Factor 0% to 50%
- Respiratory Protection Factor 0% to 25%
- Radiation/ALARA Factor 0% to 100%
- Protective Clothing Factor 0% to 50%
- Work Break Factor 8.33%

These factors and their associated range of values were developed in conjunction with the Atomic Industrial Forum's Guideline Study. The factors (and their suggested application) are discussed in more detail in Appendix F.

Scheduling Program Durations

The unit factors, adjusted by the WDFs as described above, are applied against the inventory of materials to be removed in the radiologically controlled areas. The resulting man-hours, or crew-hours, are used in the development of the decommissioning program schedule, using resource loading and event sequencing considerations. The scheduling of conventional removal and dismantling activities are based upon productivity information available from the "Building Construction Cost Data" publication.

An area-by-area activity duration critical path was used to develop the total decommissioning program schedule. The unit cost factors, adjusted for WDF's as described above, were applied against the inventory of materials to be removed in each defined work area. Each work area was assessed for the most efficient number of workers/crews for the decommissioning activities. These

adjusted unit cost factors were applied against the available manpower so that an overall duration for removal of components and piping from each work area could be calculated. Work area identification is consistent with the Survey Tracking Number (STN) system utilized by GPU's radiological services group in the 1997 timeframe. An index of the GPU STN's is provided in Appendix G.

The program schedule is used to determine the period-dependent costs for program management, administration, field engineering, equipment rental, contracted services, etc. The study relies upon regional or site-specific salary and wage rates for the personnel associated with the intended program.

3.3 FINANCIAL COMPONENTS OF THE COST MODEL

TLG's proprietary decommissioning cost model, DECCER, produces a number of distinct cost elements. These direct expenditures, however, do not comprise the total cost to accomplish the project goal, i.e., license termination and site restoration.

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, and labor stoppages. 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 funds to cover these types of expenses.

3.3.1 Contingency

The activity- and period-dependent costs are combined to develop the total decommissioning cost. 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[25] 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 analysis 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 analysis, does not account for price escalation and inflation in the cost of decommissioning over the remaining operating life of the station.

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. 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.

For example, the most technologically challenging task in decommissioning a commercial nuclear station is the disposition of the reactor vessel and internal components, now highly radioactive after a lifetime of exposure to core activity. The disposition of these components forms the basis of 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 expected optimization, however, 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 the operation of highly specialized tooling, field conditions, and water clarity.

Contingency funds are an integral part of the total cost to complete the decommissioning process. Exclusion of this component puts at risk a

successful completion of the intended tasks and, potentially, subsequent related activities. For this study, TLG examined the major activity-related problems (decontamination, segmentation, equipment handling, packaging, transport, and waste disposal) that necessitate a contingency. Individual activity contingencies ranged from 10% to 75%, depending on the degree of difficulty judged to be appropriate from TLG's actual decommissioning experience. The contingency values used in this study are as follows:

Decontamination	50%
Contaminated Component Removal	25%
Contaminated Component Packaging	10%
Contaminated Component Transport	15%
Low-Level Radioactive Waste Disposal	25%
Reactor Segmentation	75%
NSSS Component Removal	25%
Reactor Waste Packaging	25%
Reactor Waste Transport	25%
Reactor Vessel Component Disposal	50%
GTCC Disposal	15%
Non-Radioactive Component Removal	15%
Heavy Equipment and Tooling	15%
Supplies	25%
Engineering	15%
Energy	15%
Characterization and Termination Surveys	30%
Construction	15%
Taxes and Fees	10%
Insurance	10%
Staffing	15%
Spent Fuel Storage (Dry) Modules	15%
Spent Fuel Transfer Costs	15%
Operations and Maintenance Expenses	15%

The contingency values are applied to the appropriate components of the estimates on a line-item basis. A composite value is then reported at the end of each estimate. For example, the composite contingency value

reported for the DECON alternative is 18.3%. Values for the other alternatives are delineated within their respective detailed cost tables in Appendices D and E.

3.3.2 Financial Risk

In addition to the routine uncertainties addressed by contingency, another cost element that is sometimes necessary to consider when bounding decommissioning costs relates to uncertainty, or risk. Examples can include changes in work scope, pricing, job performance, and other variations that could conceivably, but not necessarily, occur. Consideration is sometimes necessary to generate a level of confidence in the estimate, within a range of probabilities. TLG considers these types of costs under the broad term "financial risk." 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, national 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, and national and local hearings.
- 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 national commitments (e.g., in the ability to accommodate certain waste forms for disposition or in the timetable for such, for example, in the start and rate of acceptance of spent fuel by the DOE).
- Pricing changes for basic inputs, such as labor, energy, materials, and burial.

This cost study, however, does not add any additional cost to the estimate for financial risk since there is insufficient historical data from which to project future liabilities. Consequently, the areas of uncertainty or risk are revisited periodically and addressed through repeated revisions or updates of the base estimate.

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 impacts of the considerations identified below are included in this cost study.

3.4.1 Spent Fuel Management

The cost to dispose of spent fuel generated from plant operations is not reflected within the estimates to decommission the Oyster Creek site. Ultimate disposition of the spent fuel is within the province of the DOE's Waste Management System, as defined by the NWPA. As such, the disposal cost is financed by a 1 mill/kWhr surcharge paid into the DOE's waste fund during operations. However, the NRC requires licensees to establish a program to manage and provide funding for the management of all irradiated fuel at the reactors until title of the fuel is transferred to the Secretary of Energy. This funding requirement is fulfilled through inclusion of certain high-level waste cost elements within the estimate, as described below.

The total inventory of assemblies that will require handling during decommissioning is based upon several assumptions. The pickup of commercial fuel is assumed to begin in the year 2025. The maximum rate at which the fuel is removed from the commercial sites is based upon an annual capacity at the geologic repository of 3,000 metric tons of uranium (MTU). Any delay in the startup of the repository or decrease in the rate of acceptance will correspondingly prolong the transfer process and result in the fuel remaining at the site longer.

In all three scenarios, the existing ISFSI will continue to operate for the fifteen years following final shutdown. Assuming that the DOE commences repository operation in 2025, all fuel is projected to be removed from the Oyster Creek site by the year 2036.

Operation and maintenance costs for the storage facilities are included within the estimates and address the cost for staffing the facilities, as well as security, insurance, and licensing fees. Costs are also provided for the final disposition of the facilities once the transfer is complete.

Repository Startup

Operation of the DOE's yet-to-be constructed geologic repository is contingent upon the review and approval of the facility's license application by the NRC, the successful resolution of pending litigation, and the development of a national transportation system. With the appropriate authorizations from Congress, the Administration currently plans to implement a program over the next 10 years that could result in an interim storage facility being available by 2025.

Spent Fuel Management Model

The Exelon nuclear fleet consists of 26 units at 14 sites in Illinois, Pennsylvania, New Jersey, New York and Maryland, including the inactive units at Dresden, Peach Bottom and Zion (Zion is still included in the spent fuel analysis model since the fuel transfer to DOE will be done as part of the Exelon allocation). The ability to complete the decommissioning of these units, particularly for the DECON and Delayed DECON alternatives, is highly dependent upon when the DOE is assumed to remove spent fuel from the sites.

The DOE's repository program assumes that spent fuel will be accepted for disposal from the nation's commercial nuclear plants in the order (the "queue") in which it was removed from service ("oldest fuel first"). A computer model developed by Exelon Nuclear was used to determine when the DOE would provide allocations in the queue for removal of spent fuel from the individual sites. Repository operations were based upon annual industry-wide receipt of 400 Metric Tons Heavy Metal (MTHM) in the first year of operation, a total of 3,800 MTHM in years 2 through 4 and 3,000 MTHM for year 5 and beyond.[26]

ISFSIs are constructed as necessary to maintain full-core discharge capability at the individual sites. Once the DOE begins repository operations, spent fuel shipments are managed across the fleet to optimize spent fuel storage.

Canister Design

The design and capacity of future cask acquisitions for the ISFSI is based upon the NUHOMS® system, with a 61-fuel assembly capacity. The DOE is assumed to provide the MPC for fuel transferred directly from the pool to the DOE at no cost to the owner.

Canister Loading and Transfer

The cost for the labor to load/transport the spent fuel from the pool to the ISFSI pad is based upon Exelon experience. For estimating purposes, 50% of this cost is used to estimate the cost to transfer the fuel from the ISFSI to the DOE.

Operations and Maintenance

Annual costs (excluding labor) of approximately $763,000 and $90,000 are used for operation and maintenance of the spent fuel pool and the ISFSI, respectively.

ISFSI Design Considerations

A multi-purpose (storage and transport) dry shielded storage canister with a horizontal, reinforced concrete storage module is used as a basis for the cost analysis. The final core off load, equivalent to 10 modules, is assumed to have some level of neutron-induced activation as a result of the long-term storage of the fuel (i.e., to levels exceeding free-release limits). The ten modules are disposed of at a licensed facility. The cost of the disposition of this material, as well as the demolition of the ISFSI facility, is included in the estimate.

3.4.2 Reactor Vessel and Internal Components

The NSSS (reactor vessel and reactor recirculation system components) will be decontaminated using chemical agents prior to the start of cutting operations (for DECON alternative only). A decontamination factor (average reduction) of 10 is assumed for the process.

The reactor pressure vessel and internal components are segmented for disposal in shielded, reusable transportation casks. Segmentation is performed in the dryer-separator pool, where a turntable and remote cutter are 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 transportation regulations will dictate segmentation and packaging methodology.

The dismantling of the reactor internals will generate radioactive waste considered unsuitable for shallow land disposal (i.e., GTCC). Although the material is not classified as high-level waste, the DOE has indicated it will accept this waste for disposal at the future high-level waste repository.[27] However, the DOE has not been forthcoming with an acceptance criteria or 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 has been packaged and disposed of as high-level waste, at a cost equivalent to that envisioned for the spent fuel. It is not anticipated that the DOE would accept this waste prior to completing the transfer of spent fuel. Therefore, until such time the DOE is ready to accept GTCC waste, it is reasonable to assume that this material would remain in storage at the Oyster Creek site.

Intact disposal of the reactor vessel and internal components can provide savings in cost and worker exposure by eliminating the complex segmentation requirements, isolation of the GTCC material, and transport/storage of the resulting waste packages. Portland General Electric (PGE) was able to dispose of the Trojan reactor as an intact package. However, its location on the Columbia River simplified the transportation analysis since:

- the reactor package could be secured to the transport vehicle for the entire journey, i.e., the package was not lifted during transport,
- there were no man-made or natural terrain features between the plant site and the disposal location that could produce a large drop, and
- transport speeds were very low, limited by the overland transport vehicle and the river barge.

As a member of the Northwest Compact, PGE had a site available for disposal of the package - the US Ecology facility in Washington State. The characteristics of this arid site proved favorable in demonstrating compliance with land disposal regulations.

It is not known whether this option will be available when Oyster Creek ceases operation. Future viability of this option will depend upon the ultimate location of the disposal site, as well as the disposal site licensee's ability to accept highly radioactive packages and effectively isolate them from the environment. Additionally, with BWRs, the diameter of the reactor vessel may severely limit overland transport. Consequently, the study assumes the reactor vessel will require segmentation, as a bounding condition.

3.4.3 Primary System Components

Reactor recirculation 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 transported by shielded van. The reactor recirculation pumps and motors are lifted out intact, packaged, and transported for processing and/or disposal.

3.4.4 Main Turbine and Condenser

The main turbine will be dismantled using conventional maintenance procedures. The turbine rotors and shafts will be removed to a laydown area. The lower turbine casings will be removed from their anchors by controlled demolition. The main condensers will also be disassembled and moved to a laydown area. Material is then prepared for transportation to an off-site recycling facility where it will be surveyed and designated for either decontamination or volume reduction, conventional disposal, or controlled disposal. Components will be packaged and readied for transport in accordance with the intended disposition.

3.4.5 Transportation Methods

Contaminated piping, components, and structural material other than the highly activated reactor vessel and internal components will qualify as LSA-I, II or III or Surface Contaminated Object, SCO-I or II, as described in Title 49.[28] The contaminated material will be packaged in Industrial Packages (IP-1, IP-2, or IP-3, as defined in subpart 173.411) for transport unless demonstrated to qualify as their own shipping containers. The reactor vessel and internal components are expected to be transported as Type B, in accordance with §71. It is conceivable that the reactor, due to its limited specific activity, could qualify as LSA-II or

III. However, the high radiation levels on the outer surface would require that additional shielding be incorporated within the packaging so as to attenuate the dose to levels acceptable for transport.

Transport of the highly activated metal, produced in the segmentation of the reactor vessels and internal components, will be by shielded truck cask. Cask shipments may exceed 95,000 pounds, including vessel segment(s), supplementary shielding, cask tie-downs, and tractor-trailer. The maximum level of activity per shipment assumed permissible was based upon the license limits of the available shielded transport casks. The segmentation scheme for the vessel and internal segments is designed to meet these limits.

The transport of large intact components (e.g., large heat exchangers and other oversized components) will be by a combination of truck, rail, and/or multi-wheeled transporter. Truck transport costs were estimated using published tariffs from Tri-State Motor Transit.[29]

3.4.6 Low-Level Radioactive Waste Disposal

To the greatest extent practical, metallic material generated in the decontamination and dismantling processes is treated to reduce the total volume requiring controlled disposal. The treated material, meeting the regulatory and/or site release criterion, is released as scrap, requiring no further cost consideration. Conditioning and recovery of the waste stream is performed off site at a licensed processing center.

The mass of radioactive waste generated during the various decommissioning activities is reported by line item in Appendices C, D and E, and summarized in Section 5. The Section 5 waste summaries are consistent with 10 CFR §61 classifications. Commercially available steel containers are 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, and penetrations. The waste volumes are calculated on the exterior package dimensions for containerized material or a dimensional calculation for components serving as their own waste containers.

The more highly activated reactor components are transported in reusable, shielded truck casks with disposable liners. In calculating disposal costs, the burial fees are applied against the liner volume, with surcharges added for the special handling requirements and the

radiological characteristics 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.

Disposal fees are calculated using current disposal agreements, with surcharges added for the highly activated components, for example, generated in the segmentation of the reactor vessel. The majority of the material generated from the decontamination and dismantling activities (approximately 94% for the DECON alternative) is Class A waste. The disposal cost for this material is based upon Exelon's current agreement with Energy*Solutions* for its disposal facility in Clive, Utah. Another 5% of the total volume (also Class A) is assumed to be sent to the Barnwell facility.

Since the Energy*Solutions* facility is not able to accept the higher activity waste (Class B and C) generated in the decontamination of the reactor vessel and segmentation of the components closest to the core, the cost of disposal of this material (approximately 1% of the total volume) was based upon Exelon's rates for the Barnwell facility.

Material exceeding Class C limits (limited to material closest to the reactor core and comprising less than 0.4% of the total waste volume) is generally not suitable for shallow-land disposal. This material is packaged in the same multipurpose canisters used for spent fuel storage/transport.

3.4.7 Site Conditions Following Decommissioning

The NRC will terminate (or amend) the site license when 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. The NRC's involvement in the decommissioning process will end at this point. Building codes and environmental regulations will dictate the next step in the decommissioning process, as well as the owner's own future plans for the site.

Non-essential structures or buildings severely damaged in decontamination process are removed to a nominal depth of three feet below grade. Concrete rubble generated from demolition activities is processed and made available as clean fill. The excavations will be

regraded such that the power block area will have a final contour consistent with adjacent surroundings.

The estimates include the remediation of contaminated soil. This assumption may be affected by continued plant operations and/or future regulatory actions, such as the development of site-specific release criteria.

3.5 ASSUMPTIONS

The following are the major assumptions made in the development of the estimates for decommissioning the site.

3.5.1 Estimating Basis

The study follows the principles of ALARA through the use of work duration adjustment factors. These factors address the impact of activities such as radiological protection instruction, mock-up training, and the use of respiratory protection and protective clothing. The factors lengthen a task's duration, increasing costs and lengthening the overall schedule. ALARA planning is considered in the costs for engineering and planning, and in the development of activity specifications and detailed procedures. Changes to worker exposure limits may impact the decommissioning cost and project schedule.

3.5.2 Labor Costs

The craft labor required to decontaminate and dismantle the nuclear unit will be acquired through standard site contracting practices. The current cost of labor at the site is used as an estimating basis. Costs for site administration, operations, construction, and maintenance personnel are based upon average salary information provided by Exelon or from comparable industry information.

Exelon will hire a Decommissioning Operations Contractor (DOC) to manage the decommissioning. The owner will provide site security, radiological health and safety, quality assurance and overall site administration during the decommissioning and demolition phases. Contract personnel will provide engineering services (e.g., for preparing the activity specifications, work procedures, activation, and structural analyses) under the direction of Exelon.

3.5.3 Design Conditions

Any fuel cladding failure that occurred 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., ^{137}Cs, ^{90}Sr, or transuranics) has been prevented from reaching levels exceeding those that permit the major NSSS components to be shipped under current transportation regulations and disposal requirements.

The curie contents of the vessel and internals at final shutdown are derived from those listed in NUREG/CR-3474.[30] Actual estimates are derived from the curie/gram values contained therein and adjusted for the different mass of the Oyster Creek components, projected operating life, and different periods of decay. Additional short-lived isotopes were derived from NUREG/CR-0130[31] and NUREG/CR-0672,[32] and benchmarked to the long-lived values from NUREG/CR-3474.

The disposal cost for the control blades removed from the vessel with the final core load is included within the estimates. Control blade residence time in the reactor is assumed to be controlled such that the blades do not become GTCC material. Disposition of any blades stored in the pool from operations is considered an operating expense and therefore not accounted for in the estimates.

Activation of the reactor building structure is confined to the sacrificial shield. More extensive activation (at very low levels) of the interior structures within containment has been detected at several reactors and their owners have elected to dispose of the affected material at a controlled facility rather than reuse the material as fill on site or send it to a landfill. The ultimate disposition of the material removed from the reactor building will depend upon the site release criteria selected, as well as the designated end use for the site.

3.5.4 General

Transition Activities

Existing warehouses will be cleared of non-essential material and remain for use by Exelon and its subcontractors. The plant's operating staff will perform the following activities at no additional cost or credit to the project during the transition period:

- Drain and collect fuel oils, lubricating oils, and transformer oils for recycle and/or sale.
- Drain and collect acids, caustics, and other chemical stores for recycle and/or sale.
- Processes operating waste inventories, i.e., the estimates do not address the disposition of any legacy wastes; the disposal of operating wastes during this initial period is not considered a decommissioning expense.

Scrap and Salvage

The existing plant equipment is considered obsolete and suitable for scrap as deadweight quantities only. Exelon will make economically reasonable efforts to salvage equipment following final plant shutdown. However, dismantling techniques assumed by TLG for equipment in this analysis are not consistent with removal techniques required for salvage (resale) of equipment. Experience has 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. Since placing a salvage value on this machinery and equipment would be speculative, and the value would be small in comparison to the overall decommissioning expenses, this analysis does not attempt to quantify the possible salvage value that an owner may realize based upon those efforts.

It is assumed, for purposes of this analysis, that any value received from the sale of scrap generated in the dismantling process would be more than offset by the on-site processing costs. The dismantling techniques assumed in the decommissioning estimates do not include the additional cost for size reduction and preparation to meet "furnace ready" conditions. For example, the recovery of copper from electrical cabling may require the removal and disposition of any contaminated insulation, an added expense. With a volatile market, the potential profit margin in scrap recovery is highly speculative, regardless of the ability to free release this material. This assumption is an implicit recognition of scrap value in the disposal of clean metallic waste at no additional cost to the project.

Furniture, tools, mobile equipment such as forklifts, trucks, bulldozers, and other property will be removed at no cost or credit to the

decommissioning project. Disposition may include relocation to other facilities. Spare parts will also be made available for alternative use.

Energy

For estimating purposes, the plant is assumed to be de-energized, with the exception of those facilities associated with spent fuel storage. Replacement power costs are used for the cost of energy consumption during decommissioning for tooling, lighting, ventilation, and essential services.

Insurance

Costs for continuing coverage (nuclear liability and property insurance) following cessation of plant operations and during decommissioning are included and based upon current operating premiums. Reductions in premiums throughout the decommissioning process are based upon guidance provided by Exelon.

Taxes

Property taxes are included for all decommissioning periods. Exelon provided a schedule estimate of decreasing tax payments against the current tax assessment. These reductions continue until reaching a minimum property tax payment of $1,000,000 per year; this level is maintained for the balance of the decommissioning program.

Site Modifications

The perimeter fence and in-plant security barriers will be moved, as appropriate, to conform to the Site Security Plan in force during the various stages of the project.

3.6 COST ESTIMATE SUMMARY

A schedule of expenditures for each scenario is provided in Tables 3.1 through 3.3. Decommissioning costs are reported in the year of projected expenditure; however, the values are provided in thousands of 2011 dollars. Costs are not inflated, escalated, or discounted over the period of expenditure. The annual expenditures are based upon the detailed activity costs reported in Appendices C through E, along with the schedules discussed in Section 4.

TABLE 3.1
SCHEDULE OF ANNUAL EXPENDITURES
DECON
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2019	183	31	6	0	33	253
2020	67,261	11,335	2,224	171	12,325	93,317
2021	91,003	33,530	3,257	23,107	23,596	174,493
2022	72,012	28,519	1,990	19,168	10,341	132,031
2023	65,797	16,924	1,654	7,004	6,212	97,590
2024	65,977	16,970	1,659	7,023	6,229	97,858
2025	56,731	12,363	1,265	7,231	5,923	83,514
2026	43,173	4,761	654	3,612	4,295	56,495
2027	30,669	8,697	273	8	2,576	42,222
2028	23,269	8,525	174	0	2,380	34,348
2029	4,961	0	0	0	2,160	7,121
2030	4,961	0	0	0	2,160	7,121
2031	4,961	0	0	0	2,160	7,121
2032	4,974	0	0	0	2,166	7,140
2033	4,961	0	0	0	2,160	7,121
2034	5,104	431	0	0	2,160	7,696
2035	6,254	3,881	0	0	2,160	12,296
2036	6,268	4,431	0	0	7,270	17,970
2037	5,205	1,423	0	1,745	3,699	12,072
2038	823	318	0	239	553	1,933
Total	564,548	152,139	13,156	69,307	100,560	899,710

TABLE 3.2
SCHEDULE OF ANNUAL EXPENDITURES
DELAYED DECON
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2019	145	3	6	0	14	169
2020	53,387	1,323	2,212	61	5,558	62,541
2021	39,896	5,087	1,311	1,431	17,624	65,349
2022	14,347	421	441	16	3,444	18,670
2023	14,347	421	441	16	3,444	18,670
2024	14,386	422	442	16	3,454	18,721
2025	14,347	421	441	16	3,444	18,670
2026	14,347	421	441	16	3,444	18,670
2027	14,347	421	441	16	3,444	18,670
2028	14,386	422	442	16	3,454	18,721
2029	14,347	421	441	16	3,444	18,670
2030	14,347	421	441	16	3,444	18,670
2031	14,347	421	441	16	3,444	18,670
2032	14,386	422	442	16	3,454	18,721
2033	14,347	421	441	16	3,444	18,670
2034	14,635	1,284	441	16	3,444	19,820
2035	16,935	8,184	441	16	3,444	29,020
2036	10,376	5,185	282	10	2,853	18,706
2037	43,703	1,677	2,206	62	2,405	50,053
2038	72,058	20,567	2,151	12,377	9,501	116,654
2039	64,149	18,163	1,928	15,255	10,942	110,437
2040	69,899	11,292	1,659	14,964	8,065	105,878
2041	37,097	4,114	528	1,497	2,750	45,986
2042	24,040	10,850	221	0	1,466	36,576
2043	9,748	4,399	89	0	594	14,831
Total	628,351	97,188	18,772	45,886	110,021	900,219

TABLE 3.3
SCHEDULE OF ANNUAL EXPENDITURES
SAFSTOR
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2019	154	29	6	0	31	220
2020	56,552	10,816	2,212	61	11,522	81,162
2021	43,052	14,555	1,311	1,431	17,909	78,258
2022	17,503	9,889	441	16	4,006	31,856
2023	17,503	9,889	441	16	4,006	31,856
2024	17,551	9,916	442	16	4,017	31,943
2025	12,065	5,054	330	12	3,244	20,704
2026	6,716	297	221	8	2,494	9,735
2027	6,716	297	221	8	2,494	9,735
2028	6,734	298	221	8	2,500	9,762
2029	6,716	297	221	8	2,494	9,735
2030	6,716	297	221	8	2,494	9,735
2031	6,716	297	221	8	2,494	9,735
2032	6,734	298	221	8	2,500	9,762
2033	6,716	297	221	8	2,494	9,735
2034	6,859	729	221	8	2,494	10,310
2035	8,009	4,179	221	8	2,494	14,910
2036	8,020	4,180	221	8	2,500	14,928
2037	3,809	291	221	7	2,314	6,641
2038	3,809	291	221	7	2,314	6,641
2039	3,809	291	221	7	2,314	6,641
2040	3,819	291	221	7	2,321	6,660
2041	3,809	291	221	7	2,314	6,641
2042	3,809	291	221	7	2,314	6,641
2043	3,809	291	221	7	2,314	6,641
2044	3,819	291	221	7	2,321	6,660
2045	3,809	291	221	7	2,314	6,641
2046	3,809	291	221	7	2,314	6,641
2047	3,809	291	221	7	2,314	6,641
2048	3,819	291	221	7	2,321	6,660
2049	3,809	291	221	7	2,314	6,641
2050	3,809	291	221	7	2,314	6,641
2051	3,809	291	221	7	2,314	6,641

TABLE 3.3 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
SAFSTOR
(thousands, 2011 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2052	3,819	291	221	7	2,321	6,660
2053	3,809	291	221	7	2,314	6,641
2054	3,809	291	221	7	2,314	6,641
2055	3,809	291	221	7	2,314	6,641
2056	3,819	291	221	7	2,321	6,660
2057	3,809	291	221	7	2,314	6,641
2058	3,809	291	221	7	2,314	6,641
2059	3,809	291	221	7	2,314	6,641
2060	3,819	291	221	7	2,321	6,660
2061	3,809	291	221	7	2,314	6,641
2062	3,809	291	221	7	2,314	6,641
2063	3,809	291	221	7	2,314	6,641
2064	3,819	291	221	7	2,321	6,660
2065	3,809	291	221	7	2,314	6,641
2066	3,809	291	221	7	2,314	6,641
2067	3,809	291	221	7	2,314	6,641
2068	3,819	291	221	7	2,321	6,660
2069	3,809	291	221	7	2,314	6,641
2070	3,809	291	221	7	2,314	6,641
2071	3,809	291	221	7	2,314	6,641
2072	3,819	291	221	7	2,321	6,660
2073	3,809	291	221	7	2,314	6,641
2074	3,809	291	221	7	2,314	6,641
2075	30,732	1,197	1,564	27	2,369	35,889
2076	66,971	14,501	2,192	7,539	6,228	97,430
2077	64,064	22,408	1,990	15,841	11,863	116,165
2078	70,697	11,640	1,654	14,860	8,226	107,078
2079	43,969	4,266	736	3,649	3,750	56,370
2080	24,106	10,909	221	0	1,470	36,706
2081	13,173	5,961	121	0	803	20,058
Total	699,563	153,545	24,479	43,832	194,895	1,116,314

4. SCHEDULE ESTIMATE

The schedules for the decommissioning scenarios considered in this study follow 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 plans described in Section 3.4.1.

A schedule or sequence of activities is presented in Figure 4.1 for the DECON decommissioning alternative. The schedule is also representative of the work activities identified in the delayed dismantling scenarios, absent any spent fuel constraints. The scheduling sequence assumes that fuel is removed from the spent fuel pool within the first five and one-half years after operations cease. The key activities listed in the schedule do not reflect a one-to-one correspondence with those activities in the cost tables, but reflect dividing some activities for clarity and combining others for convenience. The schedule was prepared using the "Microsoft Project 2010" computer software.[33]

4.1 SCHEDULE ESTIMATE ASSUMPTIONS

The schedule 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 work activity durations used in the precedence network reflect the actual man-hour estimates from the cost tables, 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 DECON decommissioning schedule:

- The reactor building is isolated until such time that all spent fuel has been discharged from the storage pool to the DOE. Decontamination and dismantling of the storage pool is initiated once the transfer of spent fuel to the DOE is complete.
- All work (except vessel and internals removal) is performed during an 8-hour workday, 5 days per week, with no overtime. There are eleven paid holidays per year.
- 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 detailed cost tables are based upon the durations developed in the schedule for decommissioning Oyster Creek. 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 is used as the basis for determining the period-dependent costs. A second critical path is also shown for the spent fuel cooling period, which determines the release of the reactor building for final decontamination.

Project timelines are provided in Figures 4.2 through 4.4; the milestone dates are based on this same shutdown date. The start of decommissioning activities in the Delayed Decommissioning scenario is concurrent with the end of the fuel transfer activity (i.e., to an off-site DOE facility).

FIGURE 4.1
DECON ACTIVITY SCHEDULE

ID	Task Name
1	Oyster Creek schedule
2	Shutdown Unit 1
3	Period 1a Unit 1 - Shutdown through transition
4	Certificate of permanent cessation of operations submitted
5	Fuel storage pool operations
6	Dry fuel storage operations
7	Reconfigure plant
8	Prepare activity specifications
9	Perform site characterization
10	PSDAR submitted
11	Written certificate of permanent removal of fuel submitted
12	Site specific decommissioning cost estimate submitted
13	DOC staff mobilized
14	Period 1b Unit 1 - Decommissioning preparations
15	Fuel storage pool operations
16	Reconfigure plant (continued)
17	Dry fuel storage operations
18	Prepare detailed work procedures
19	Decon NSSS
20	Isolate spent fuel pool
21	Period 2a Unit 1 - Large component removal
22	Fuel storage pool operations
23	Dry fuel storage operations
24	Preparation for reactor vessel removal
25	Reactor vessel & internals
26	Remaining large NSSS components disposition
27	Non-essential systems
28	Main turbine/generator
29	Main condenser
30	License termination plan submitted
31	Period 2b Unit 1 - Decontamination (wet fuel)
32	Fuel storage pool operations
33	Dry fuel storage operations
34	Remove systems not supporting wet fuel storage
35	Decon buildings not supporting wet fuel storage

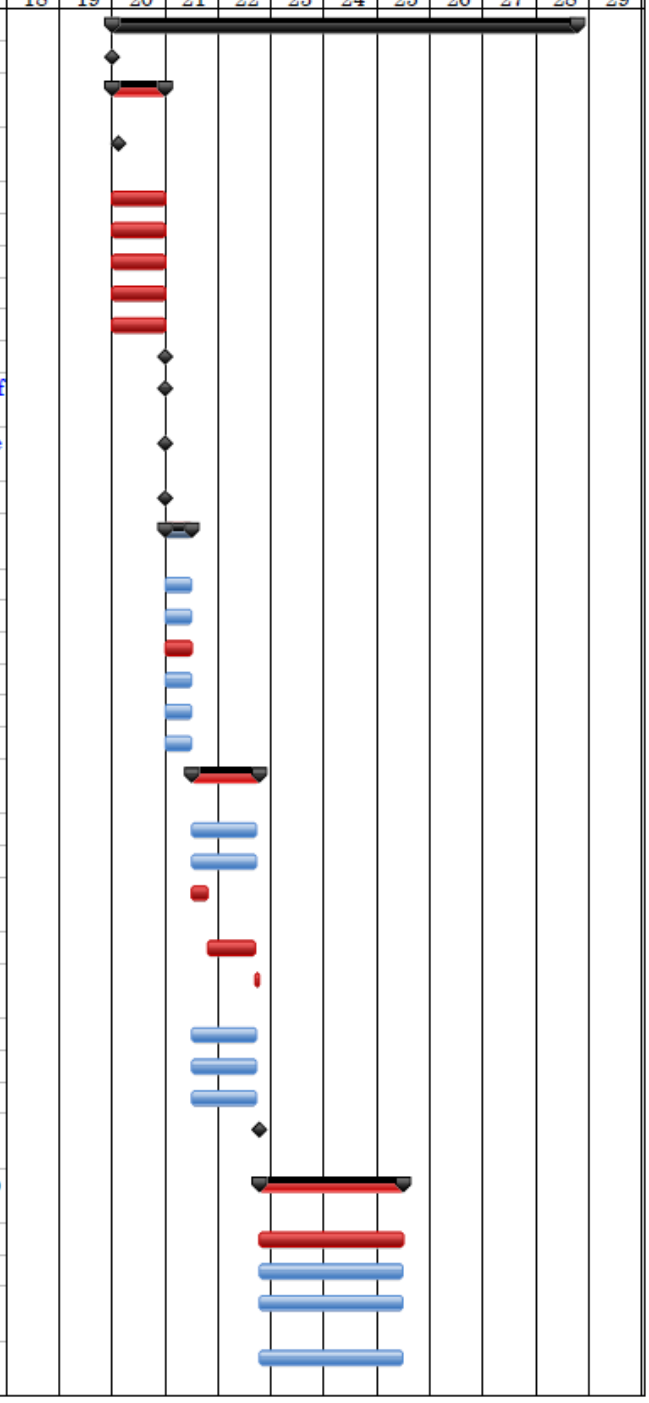


FIGURE 4.1
DECON ACTIVITY SCHEDULE
(continued)

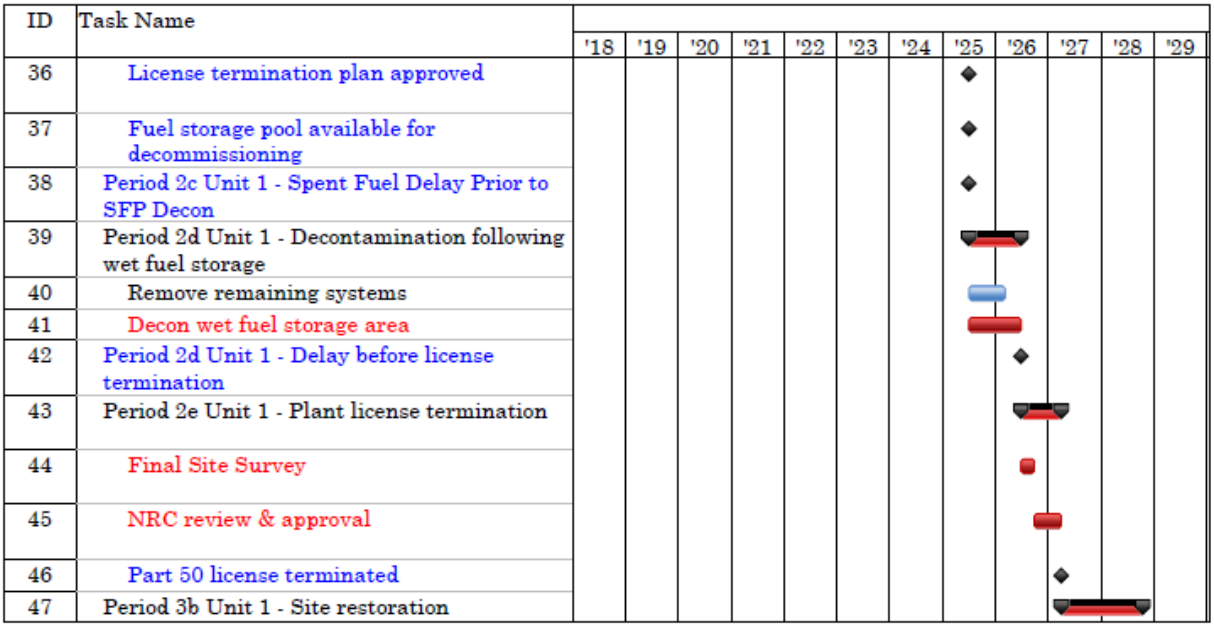


FIGURE 4.2
DECOMMISSIONING TIMELINE
DECON
(not to scale)

DECON
(Shutdown December 31, 2019)

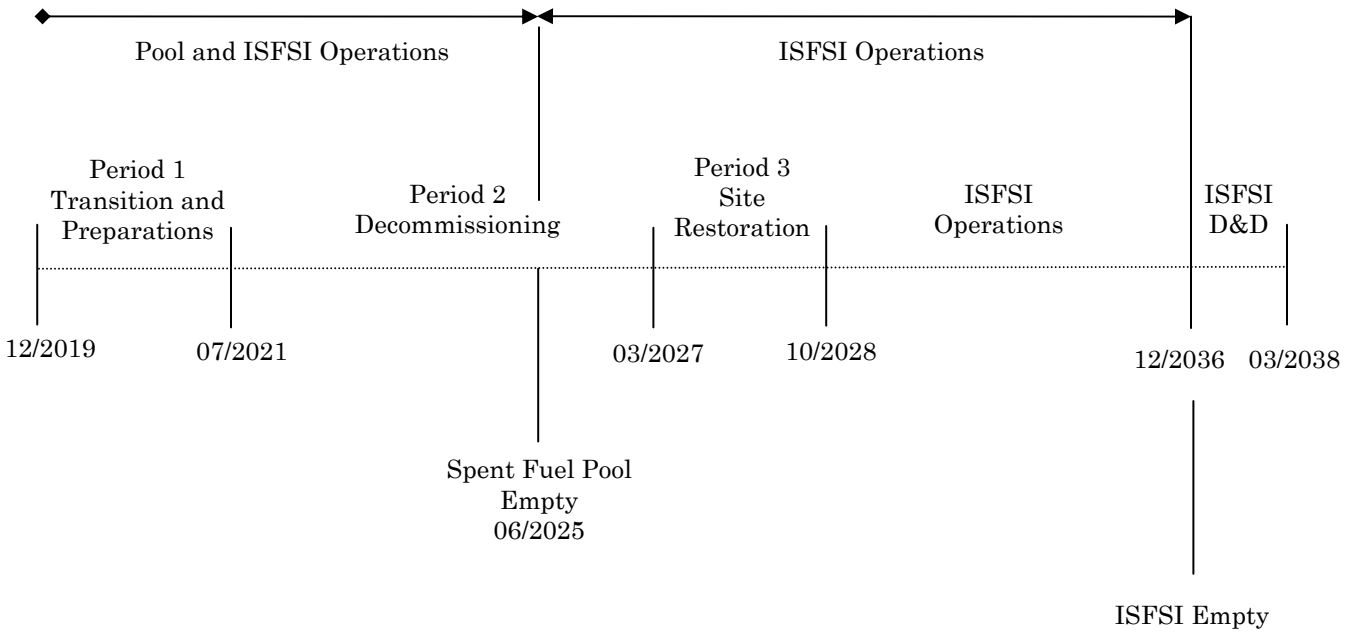


FIGURE 4.3
DECOMMISSIONING TIMELINE
DELAYED DECON
(not to scale)

Delayed DECON
(Shutdown December 31, 2019)

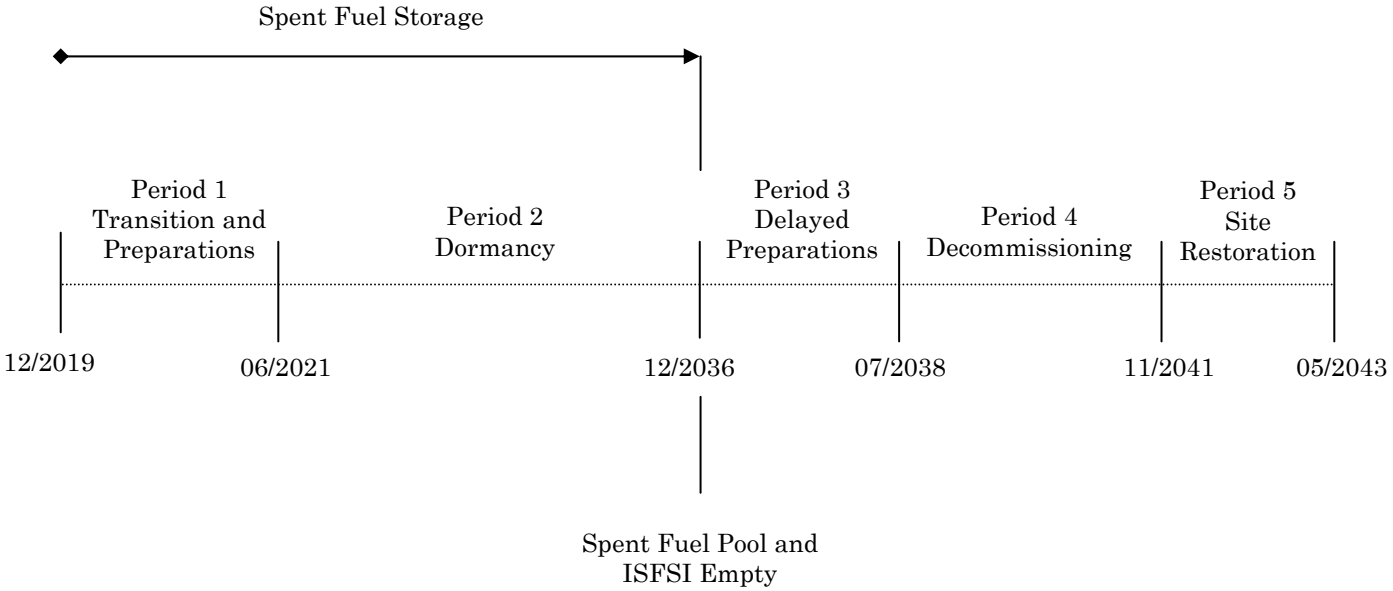
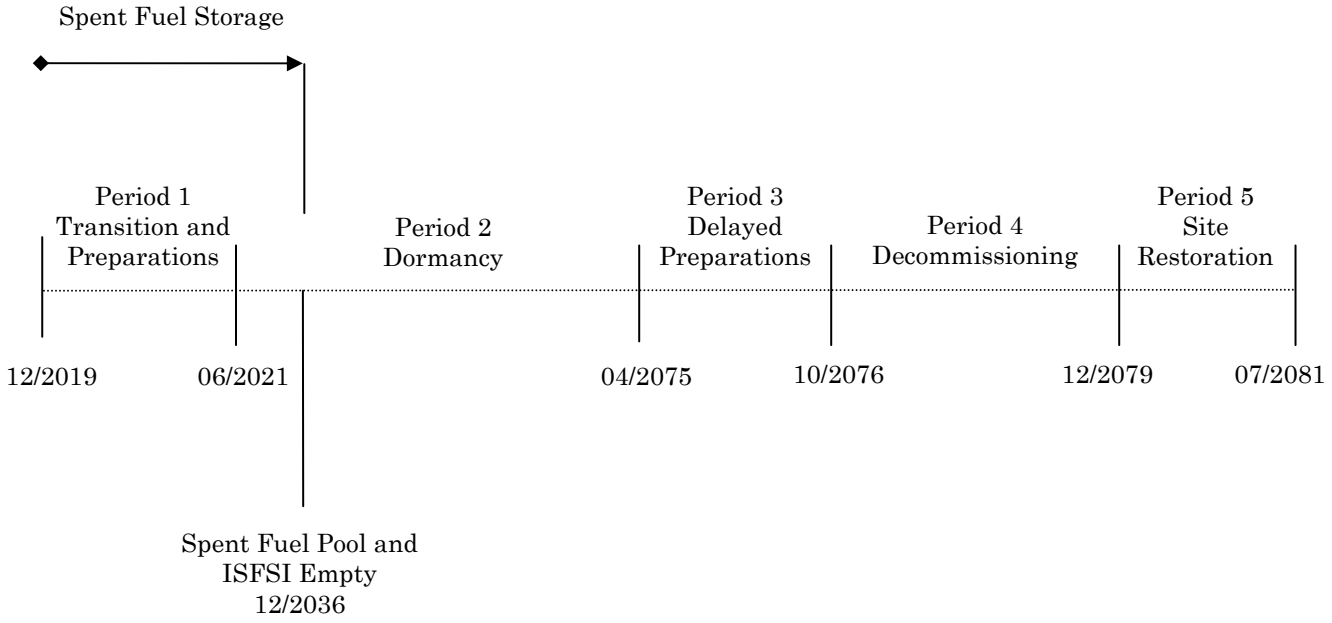


FIGURE 4.4
DECOMMISSIONING TIMELINE
SAFSTOR
(not to scale)

SAFSTOR
(Shutdown December 31, 2019)



5. RADIOACTIVE WASTES

The objectives of the decommissioning process are the removal of all radioactive material from the site that would restrict its future use and the termination of the NRC license(s). This currently requires the remediation of all radioactive material at the site in excess of applicable legal limits. Under the Atomic Energy Act,[34] 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, §71 defines radioactive material as it pertains to packaging and transportation and §61 specifies its disposition.

Most of the materials being transported for controlled burial are categorized as Low Specific Activity (LSA) or Surface Contaminated Object (SCO) materials containing Type A quantities, as defined in 49 CFR §173-178. Shipping containers are required to be Industrial Packages (IP-1, IP-2 or IP-3, as defined in subpart 173.411). 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, and penetrations.

The volumes of radioactive waste generated during the various decommissioning activities at the site is shown on a line-item basis in Appendices C, D, and E and summarized in Tables 5.1 through 5.3. The quantified waste volume summaries shown in these tables are consistent with §61 classifications. The volumes are calculated based on the exterior dimensions for containerized material and on the displaced volume of components serving as their own waste containers.

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.

No process system containing/handling radioactive substances at shutdown is presumed to meet material release criteria by decay alone, i.e., systems radioactive at shutdown will still be radioactive over the time period during which the decommissioning is accomplished, 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 material generated in the decontamination and dismantling of Oyster Creek is primarily generated during Period 2 of the DECON alternative and Period 4 of the deferred alternatives. Material that is considered potentially contaminated when removed from the radiologically controlled area is sent to processing facilities in Tennessee for conditioning and disposal. Heavily contaminated components and activated materials are routed for controlled disposal. The disposal volumes reported in the tables reflect the savings resulting from reprocessing and recycling.

Disposal fees are calculated using current disposal agreements, with surcharges added for the highly activated components, for example, generated in the segmentation of the reactor vessel. The majority of the material generated from the decontamination and dismantling activities (approximately 94% for the DECON alternative) is Class A waste. The disposal cost for this material is based upon Exelon's current agreement with Energy*Solutions* for its disposal facility in Clive, Utah. Another 5% of the total volume (also Class A) is assumed to be sent to the Barnwell facility.

Since the Energy*Solutions* facility is not able to accept the higher activity waste (Class B and C) generated in the decontamination of the reactor vessel and segmentation of the components closest to the core, the cost of disposal of this material (approximately 1% of the total volume) was based upon Exelon's rates for the Barnwell facility.

A small quantity of material will be generated during the Oyster Creek decommissioning will not be considered suitable for near-surface disposal, and is assumed to be disposed of in a geologic repository, in a manner similar to that envisioned for spent fuel disposal. Such material, known as Greater-Than-Class-C or GTCC material, is estimated to require five spent fuel storage canisters (or the equivalent) to dispose of the most radioactive portions of the reactor vessel internals. The volume and weight reported in Tables 5.1 through 5.3 represent the packaged weight and volume of the spent fuel storage canisters.

TABLE 5.1
DECOMMISSIONING WASTE SUMMARY
DECON

	Waste Class[1]	Volume (cubic feet)	Weight (pounds)
Low-Level Radioactive Waste			
Energy*Solutions* (Clive, Utah)			
Containerized	A	123,335	6,922,273
Bulk	A	262,559	20,911,740
Atlantic Compact (Barnwell, S.C.)	A	21,081	2,114,319
	B	2,413	274,227
	C	918	61,980
Geologic Repository (Greater-than-Class C)	>C	1,428	282,300
Total		411,735	30,566,839
Processed Waste (off-site)		401,427	17,169,570
Scrap Metal			48,668,000

[1] Waste is classified according to the requirements as delineated in Title 10 CFR, Part 61.55
[2] Columns may not add due to rounding.

TABLE 5.2
DECOMMISSIONING WASTE SUMMARY
DELAYED DECON

	Waste Class[1]	Volume (cubic feet)	Weight (pounds)
Low-Level Radioactive Waste			
Energy*Solutions* (Clive, Utah)			
Containerized	A	50,941	2,824,673
Bulk	A	241,514	19,067,090
Atlantic Compact (Barnwell, S.C.)	A	20,169	1,948,021
	B	1,002	109,390
	C	470	53,730
Geologic Repository (Greater-than-Class C)	>C	1,428	282,300
Total		315,523	24,285,204
Processed Waste (off-site)		470,429	19,975,460
Scrap Metal			48,584,000

[1] Waste is classified according to the requirements as delineated in Title 10 CFR, Part 61.55
[2] Columns may not add due to rounding.

TABLE 5.3
DECOMMISSIONING WASTE SUMMARY
SAFSTOR

	Waste Class[1]	Volume (cubic feet)	Weight (pounds)
Low-Level Radioactive Waste			
Energy*Solutions* (Clive, Utah)			
Containerized	A	50,414	2,735,513
Bulk	A	243,889	19,114,590
Atlantic Compact (Barnwell, S.C.)	A	20,686	1,936,101
	B	1,127	121,830
	C	344	41,290
Geologic Repository (Greater-than-Class C)	>C	1,428	282,300
Total		317,889	24,231,624
Processed Waste (off-site)		470,956	20,064,620
Scrap Metal			48,584,000

[1] Waste is classified according to the requirements as delineated in Title 10 CFR, Part 61.55
[2] Columns may not add due to rounding.

6. RESULTS

The analysis to estimate the costs to decommission Oyster Creek relied upon the site-specific, technical information developed for a previous analysis prepared in 2008-09. While not an engineering study, the estimates provide Exelon with sufficient information to assess their financial obligations, as they pertain to the eventual decommissioning of the nuclear station.

The estimates described in this report are based on numerous fundamental assumptions, including regulatory requirements, project contingencies, low-level radioactive waste disposal practices, high-level radioactive waste management options, and site restoration requirements. The decommissioning scenarios assume continued operation of the plant's spent fuel pool for a minimum of five and one-half years following the cessation of operations for continued cooling of the assemblies. The spent fuel is removed from the site within fifteen years of final shutdown.

The cost projected to promptly decommission (DECON) Oyster Creek is estimated to be $899.7 million. The majority of this cost (approximately 74.0%) is associated with the physical decontamination and dismantling of the nuclear unit so that the license can be terminated. Another 19.7% is associated with the management, interim storage, and eventual transfer of the spent fuel. The remaining 6.3% is for the demolition of the designated structures and limited restoration of the site.

The primary cost contributors, identified in Tables 6.1 through 6.3, are either labor-related or associated with the management and disposition of the radioactive waste. Program management is the largest single contributor to the overall cost. The magnitude of the expense is a function of both the size of the organization required to manage the decommissioning, as well as the duration of the program. It is assumed, for purposes of this analysis, that Exelon will oversee the decommissioning program, using a DOC to manage the decommissioning labor force and the associated subcontractors. The size and composition of the management organization varies with the decommissioning phase and associated site activities. However, once the operating license is terminated, the staff is substantially reduced for the conventional demolition and restoration of the site.

As described in this report, the spent fuel pool will remain operational for approximately five and one-half years following the cessation of operations (DECON alternative). The pool will be isolated and an independent spent fuel island created. This will allow decommissioning operations to proceed in and around the pool area. Within this approximately five and one-half-year period, the spent fuel will be transferred to the ISFSI.

The cost for waste disposal includes only those costs associated with the controlled disposition of the low-level radioactive waste generated from decontamination and dismantling activities, including plant equipment and components, structural material, filters, resins and dry-active waste. As described in Section 5, disposal of the majority of the radioactive material is at Energy*Solutions* facility in Clive, Utah or some alternative facility. Highly activated components, requiring additional isolation from the environment, are packaged for geologic disposal. Disposal of these components is based upon a cost equivalent for spent fuel.

A significant portion of the metallic waste is designated for additional processing and treatment at an off-site facility. Processing reduces the volume of material requiring controlled disposal through such techniques and processes as survey and sorting, decontamination, and volume reduction. The material that cannot be unconditionally released is packaged for controlled disposal at one of the currently operating facilities. The cost identified in the summary table for processing is all-inclusive, incorporating the ultimate disposition of the material.

Removal costs reflect the labor-intensive nature of the decommissioning process, as well as the management controls required to ensure a safe and successful program. Decontamination and packaging costs also have a large labor component that is based upon labor cost data supplied by Exelon. Non-radiological demolition is a natural extension of the decommissioning process. The methods employed in decontamination and dismantling are generally destructive and indiscriminate in inflicting collateral damage. With a work force mobilized to support decommissioning operations, non-radiological demolition can be an integrated activity and a logical expansion of the work being performed in the process of terminating the operating license. Prompt demolition reduces future liabilities and can be more cost effective than deferral, due to the deterioration of the facilities (and therefore the working conditions) with time.

The reported cost for transport includes the tariffs and surcharges associated with moving large components and/or overweight shielded casks overland, as well as the general expense, e.g., labor and fuel, of transporting material to the destinations identified in this report. For purposes of this analysis, material is primarily moved overland by truck.

Decontamination is used to reduce the plant's radiation fields and minimize worker exposure. Slightly contaminated material or material located within a contaminated area is sent to an off-site processing center, i.e., this analysis does not assume that contaminated plant components and equipment can be decontaminated for uncontrolled release in-situ. Centralized processing centers have proven to be a

more economical means of handling the large volumes of material produced in the dismantling of a nuclear unit.

License termination survey costs are associated with the labor intensive and complex activity of verifying that contamination has been removed from the site to the levels specified by the regulating agency. This process involves a systematic survey of all remaining plant surface areas and surrounding environs, sampling, isotopic analysis, and documentation of the findings. The status of any plant components and materials not removed in the decommissioning process will also require confirmation and will add to the expense of surveying the facilities alone.

The remaining costs include allocations for heavy equipment and temporary services, as well as for other expenses such as regulatory fees and the premiums for nuclear insurance. While site operating costs are greatly reduced following the final cessation of plant operations, certain administrative functions do need to be maintained either at a basic functional or regulatory level.

TABLE 6.1
SUMMARY OF DECOMMISSIONING COST ELEMENTS
DECON
(thousands of 2011 dollars)

Cost Element	Cost	Percentage
Decontamination	22,297	2.5%
Removal	148,522	16.5%
Packaging	22,786	2.5%
Transportation	17,598	2.0%
Waste Disposal	64,400	7.2%
Off-site Waste Processing	10,024	1.1%
Program Management [1]	417,042	46.4%
Spent Fuel Pool Isolation	11,822	1.3%
Spent Fuel – Direct Expenditures [2]	100,110	11.1%
Insurance and Regulatory Fees	20,929	2.3%
Energy	13,156	1.5%
Characterization and Licensing Surveys	19,885	2.2%
Property Taxes	21,212	2.4%
Miscellaneous Equipment	6,800	0.8%
Site O&M	3,127	0.3%
Total [3]	899,710	100.0%

Cost Element	Cost	Percentage
License Termination	665,975	74.0%
Spent Fuel Management	177,146	19.7%
Site Restoration	56,589	6.3%
Total [3]	899,710	100.0%

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

TABLE 6.2
SUMMARY OF DECOMMISSIONING COST ELEMENTS
DELAYED DECON
(thousands of 2011 dollars)

Cost Element	Cost	Percentage
Decontamination	23,573	2.6%
Removal	134,505	14.9%
Packaging	17,207	1.9%
Transportation	13,288	1.5%
Waste Disposal	39,463	4.4%
Off-site Waste Processing	11,541	1.3%
Program Management [1]	501,758	55.7%
Spent Fuel Pool Isolation	11,822	1.3%
Spent Fuel – Direct Expenditures [2]	37,454	4.2%
Insurance and Regulatory Fees	25,123	2.8%
Energy	18,772	2.1%
Characterization and Licensing Surveys	21,402	2.4%
Property Taxes	25,586	2.8%
Miscellaneous Equipment	10,399	1.2%
Site O&M	8,327	0.9%
Total [3]	900,219	100.0%

Cost Element	Cost	Percentage
License Termination	541,703	60.2%
Spent Fuel Management	299,125	33.2%
Site Restoration	59,390	6.6%
Total [3]	900,219	100.0%

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

TABLE 6.3
SUMMARY OF DECOMMISSIONING COST ELEMENTS
SAFSTOR
(thousands of 2011 dollars)

Cost Element	Cost	Percentage
Decontamination	23,321	2.1%
Removal	137,788	12.3%
Packaging	16,136	1.4%
Transportation	11,848	1.1%
Waste Disposal	37,361	3.3%
Off-site Waste Processing	11,589	1.0%
Program Management [1]	556,588	49.9%
Spent Fuel Pool Isolation	11,822	1.1%
Spent Fuel – Direct Expenditures [2]	96,744	8.7%
Insurance and Regulatory Fees	57,478	5.1%
Energy	24,479	2.2%
Characterization and Licensing Surveys	21,402	1.9%
Property Taxes	68,922	6.2%
Miscellaneous Equipment	18,942	1.7%
Site O&M	21,895	2.0%
Total [3]	1,116,314	100.0%

Cost Element	Cost	Percentage
License Termination	873,828	78.3%
Spent Fuel Management	183,117	16.4%
Site Restoration	59,369	5.3%
Total [3]	1,116,314	100.0%

[1] Includes engineering and security costs
[2] Excludes program management costs (staffing) but includes costs for spent fuel loading/transfer/spent fuel pool O&M and EP fees
[3] Columns may not add due to rounding

7. REFERENCES

1 "Decommissioning Cost Analysis for the Oyster Creek Nuclear Generating Station," Document No. E16-1555-010, Rev. 1, TLG Services, Inc., March 2009

2. 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 et seq.), June 27, 1988

3. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors," October 2003

4. U.S. Code of Federal Regulations, Title 10, Part 20, Subpart E, "Radiological Criteria for License Termination"

5. U.S. Code of Federal Regulations, Title 10, Parts 20 and 50, "Entombment Options for Power Reactors," Advanced Notice of Proposed Rulemaking, Federal Register Volume 66, Number 200, October 16, 2001

6. 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 (p 39278 et seq.), July 29, 1996

7. "Nuclear Waste Policy Act of 1982," 42 U.S. Code 10101, et seq. http://pbadupws.nrc.gov/docs/ML1327/ML13274A489.pdf#page=419

8. Blue Ribbon Commission on America's Nuclear Future Charter, http://cybercemetery.unt.edu/archive/brc/20120620215336/http://brc.gov/index.php?q=page/charter

9. "Blue Ribbon Commission on America's Nuclear Future, Report to the Secretary of Energy," http://www.brc.gov/sites/default/files/documents/brc_finalreport_jan2012.pdf, p. 32, January 2012

10. "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," U.S. DOE, January 11, 2013

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11. United States Court of Appeals for the District of Columbia Circuit, In Re: Aiken County, Et Al., August 2013, http://www.cadc.uscourts.gov/internet/opinions.nsf/BAE0CF34F762EBD985257BC6004DEB18/$file/11-1271-1451347.pdf

12. U.S. Code of Federal Regulations, Title 10, Part 961.11, Article IV – Responsibilities of the Parties, B. DOE Responsibilities, 5.(a) "… DOE shall issue an annual acceptance priority ranking for receipt of SNF and/or HLW at the DOE repository. This priority ranking shall be based on the age of SNF and/or HLW as calculated from the date of discharge of such materials from the civilian nuclear power reactor. The oldest fuel or waste will have the highest priority for acceptance …"

13. U.S. Code of Federal Regulations, Title 10, Part 72, Subpart K, "General License for Storage of Spent Fuel at Power Reactor Sites"

14. "Low-Level Radioactive Waste Policy," Public Law 96-573, 1980

15. "Low-Level Radioactive Waste Policy Amendments Act of 1985," Public Law 99-240, January 15, 1986

16. U.S. Code of Federal Regulations, Title 10, Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste"

17. U.S. Code of Federal Regulations, Title 10, Part 20, Subpart E, "Radiological Criteria for License Termination," Federal Register, Volume 62, Number 139 (p 39058 et seq.), July 21, 1997

18. "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination," EPA Memorandum OSWER No. 9200.4-18, August 22, 1997

19. U.S. Code of Federal Regulations, Title 40, Part 141.16, "Maximum contaminant levels for beta particle and photon radioactivity from man-made radionuclides in community water systems"

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21. "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)," NUREG/CR-1575, Rev. 1, EPA 402-R-97-016, Rev. 1, August 2000

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

23. W.J. Manion and T.S. LaGuardia, "Decommissioning Handbook," U.S. Department of Energy, DOE/EV/10128-1, November 1980

24. "Building Construction Cost Data 2011," Robert Snow Means Company, Inc., Kingston, Massachusetts

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26. Civilian Radioactive Waste Management System Waste Acceptance System Requirements Document," Revision 5, ICN01 (DOE/RW-0351) effective March 10, 2008

27. "Strategy for Management and Disposal of Greater-Than-Class C Low-Level Radioactive Waste," Federal Register Volume 60, Number 48 (p 13424 et seq.), March 1995

28. U.S. Department of Transportation, Title 49 of the Code of Federal Regulations, "Transportation," Parts 173 through 178, 1996

29. Tri-State Motor Transit Company, published tariffs, Interstate Commerce Commission (ICC), Docket No. MC-427719 Rules Tariff, March 2004, Radioactive Materials Tariff, February 2011

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30. 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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32. 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

33. "Microsoft Project 2010," Microsoft Corporation, Redmond, WA, 2003

34. “Atomic Energy Act of 1954,” (68 Stat. 919)

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 waste processing area.

2. CALCULATIONS

Act ID	Activity Description	Activity Duration (minutes)	Critical Duration (minutes)*
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, send to waste processing area	60	60
	Totals (Activity/Critical)	355	255

Duration adjustment(s):	
+ Respiratory protection adjustment (25% of critical duration)	64
+ Radiation/ALARA adjustment (30% of critical duration)	77
Adjusted work duration	396
+ Protective clothing adjustment (30% of adjusted duration)	119
Productive work duration	515
+ Work break adjustment (8.33 % of productive duration)	43
Total work duration (minutes)	558

***** Total duration = 9.300 hr *****

* Alpha designators indicate activities that can be performed in parallel

APPENDIX A
(Continued)

3. LABOR REQUIRED

Crew	Number	Duration (Hours)	Rate ($/hr)	Cost
Laborers	3.00	9.300	50.59	1,411.46
Craftsmen	2.00	9.300	72.91	1,356.13
Foreman	1.00	9.300	77.72	722.80
General Foreman	0.25	9.300	83.77	194.77
Fire Watch	0.05	9.300	50.59	23.52
Health Physics Technician	1.00	9.300	56.70	527.31
Total labor cost				$4,235.99

4. EQUIPMENT & CONSUMABLES COSTS

Equipment Costs	none
Consumables/Materials Costs	
• Blotting paper 50 @ $0.58/sq ft [1]	$29.00
• Tarpaulin, oil resistant, fire retardant 50 @ $0.43/sq ft [2]	$21.50
• Gas torch consumables 1 @ $11.07 x 1 /hr [3]	$11.07
Subtotal cost of equipment and materials	$61.57
Overhead & profit on equipment and materials @ 17.00 %	$10.47
Total costs, equipment & material	$72.04

TOTAL COST:

Removal of contaminated heat exchanger <3000 pounds:	$4,308.03
Total labor cost:	$4,235.99
Total equipment/material costs:	$72.04
Total craft labor man-hours required per unit:	67.89

5. NOTES AND REFERENCES

- Work difficulty factors were developed in conjunction with the Atomic Industrial Forum's (now NEI) program to standardize nuclear decommissioning cost estimates and are delineated in Volume 1, Chapter 5 of the "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986.

- References for equipment & consumables costs:

    1. www.mcmaster.com online catalog, McMaster Carr Spill Control (7193T88)
    2. R.S. Means (2011) Division 01 56, Section 13.60-0600, page 20
    3. R.S. Means (2011) Division 01 54 33, Section 40-6360, page 664

- Material and consumable costs were adjusted using the regional indices for Forked River, New Jersey.

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	0.58
Removal of clean pipe 0.25 to 2 inches diameter, $/linear foot	6.04
Removal of clean pipe >2 to 4 inches diameter, $/linear foot	8.74
Removal of clean pipe >4 to 8 inches diameter, $/linear foot	17.42
Removal of clean pipe >8 to 14 inches diameter, $/linear foot	33.29
Removal of clean pipe >14 to 20 inches diameter, $/linear foot	43.19
Removal of clean pipe >20 to 36 inches diameter, $/linear foot	63.57
Removal of clean pipe >36 inches diameter, $/linear foot	75.57
Removal of clean valve >2 to 4 inches	115.38
Removal of clean valve >4 to 8 inches	174.18
Removal of clean valve >8 to 14 inches	332.93
Removal of clean valve >14 to 20 inches	431.87
Removal of clean valve >20 to 36 inches	635.66
Removal of clean valve >36 inches	755.68
Removal of clean pipe hanger for small bore piping	36.93
Removal of clean pipe hanger for large bore piping	132.67
Removal of clean pump, <300 pound	291.70
Removal of clean pump, 300-1000 pound	820.63
Removal of clean pump, 1000-10,000 pound	3,242.22
Removal of clean pump, >10,000 pound	6,262.89
Removal of clean pump motor, 300-1000 pound	345.82
Removal of clean pump motor, 1000-10,000 pound	1,351.36
Removal of clean pump motor, >10,000 pound	3,040.55
Removal of clean heat exchanger <3000 pound	1,740.87
Removal of clean heat exchanger >3000 pound	4,371.81
Removal of clean feedwater heater/deaerator	12,325.01
Removal of clean moisture separator/reheater	25,340.92
Removal of clean tank, <300 gallons	375.45
Removal of clean tank, 300-3000 gallon	1,187.89
Removal of clean tank, >3000 gallons, $/square foot surface area	10.04

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit
Removal of clean electrical equipment, <300 pound	160.20
Removal of clean electrical equipment, 300-1000 pound	563.03
Removal of clean electrical equipment, 1000-10,000 pound	1,126.06
Removal of clean electrical equipment, >10,000 pound	2,696.17
Removal of clean electrical transformer < 30 tons	1,872.46
Removal of clean electrical transformer > 30 tons	5,392.33
Removal of clean standby diesel generator, <100 kW	1,912.54
Removal of clean standby diesel generator, 100 kW to 1 MW	4,268.93
Removal of clean standby diesel generator, >1 MW	8,837.56
Removal of clean electrical cable tray, $/linear foot	14.90
Removal of clean electrical conduit, $/linear foot	6.50
Removal of clean mechanical equipment, <300 pound	160.20
Removal of clean mechanical equipment, 300-1000 pound	563.03
Removal of clean mechanical equipment, 1000-10,000 pound	1,126.06
Removal of clean mechanical equipment, >10,000 pound	2,696.17
Removal of clean HVAC equipment, <300 pound	193.70
Removal of clean HVAC equipment, 300-1000 pound	676.53
Removal of clean HVAC equipment, 1000-10,000 pound	1,348.30
Removal of clean HVAC equipment, >10,000 pound	2,696.17
Removal of clean HVAC ductwork, $/pound	0.61
Removal of contaminated instrument and sampling tubing, $/linear foot	1.52
Removal of contaminated pipe 0.25 to 2 inches diameter, $/linear foot	22.14
Removal of contaminated pipe >2 to 4 inches diameter, $/linear foot	37.12
Removal of contaminated pipe >4 to 8 inches diameter, $/linear foot	60.02
Removal of contaminated pipe >8 to 14 inches diameter, $/linear foot	115.23
Removal of contaminated pipe >14 to 20 inches diameter, $/linear foot	137.67
Removal of contaminated pipe >20 to 36 inches diameter, $/linear foot	189.97
Removal of contaminated pipe >36 inches diameter, $/linear foot	225.52
Removal of contaminated valve >2 to 4 inches	453.26
Removal of contaminated valve >4 to 8 inches	534.38

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit
Removal of contaminated valve >8 to 14 inches	1,093.21
Removal of contaminated valve >14 to 20 inches	1,384.29
Removal of contaminated valve >20 to 36 inches	1,840.57
Removal of contaminated valve >36 inches	2,196.14
Removal of contaminated pipe hanger for small bore piping	143.96
Removal of contaminated pipe hanger for large bore piping	474.77
Removal of contaminated pump, <300 pound	940.71
Removal of contaminated pump, 300-1000 pound	2,195.08
Removal of contaminated pump, 1000-10,000 pound	7,271.71
Removal of contaminated pump, >10,000 pound	17,655.09
Removal of contaminated pump motor, 300-1000 pound	953.80
Removal of contaminated pump motor, 1000-10,000 pound	2,961.81
Removal of contaminated pump motor, >10,000 pound	6,664.50
Removal of contaminated heat exchanger <3000 pound	4,308.03
Removal of contaminated heat exchanger >3000 pound	12,499.36
Removal of contaminated feedwater heater/deaerator	31,262.00
Removal of contaminated moisture separator/reheater	68,239.01
Removal of contaminated tank, <300 gallons	1,566.16
Removal of contaminated tank, >300 gallons, $/square foot	31.54
Removal of contaminated electrical equipment, <300 pound	731.65
Removal of contaminated electrical equipment, 300-1000 pound	1,791.81
Removal of contaminated electrical equipment, 1000-10,000 pound	3,442.77
Removal of contaminated electrical equipment, >10,000 pound	6,950.88
Removal of contaminated electrical cable tray, $/linear foot	35.67
Removal of contaminated electrical conduit, $/linear foot	18.17
Removal of contaminated mechanical equipment, <300 pound	820.17
Removal of contaminated mechanical equipment, 300-1000 pound	2,015.63
Removal of contaminated mechanical equipment, 1000-10,000 pound	3,872.06
Removal of contaminated mechanical equipment, >10,000 pound	6,950.88
Removal of contaminated HVAC equipment, <300 pound	820.17

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit
Removal of contaminated HVAC equipment, 300-1000 pound	2,015.63
Removal of contaminated HVAC equipment, 1000-10,000 pound	3,872.06
Removal of contaminated HVAC equipment, >10,000 pound	6,950.88
Removal of contaminated HVAC ductwork, $/pound	2.10
Removal/plasma arc cut of contaminated thin metal components, $/linear in.	4.02
Additional decontamination of surface by washing, $/square foot	8.21
Additional decontamination of surfaces by hydrolasing, $/square foot	37.06
Decontamination rig hook up and flush, $/ 250 foot length	6,904.99
Chemical flush of components/systems, $/gallon	18.43
Removal of clean standard reinforced concrete, $/cubic yard	163.02
Removal of grade slab concrete, $/cubic yard	215.45
Removal of clean concrete floors, $/cubic yard	414.96
Removal of sections of clean concrete floors, $/cubic yard	1,258.40
Removal of clean heavily rein concrete w/#9 rebar, $/cubic yard	270.73
Removal of contaminated heavily rein concrete w/#9 rebar, $/cubic yard	2,113.63
Removal of clean heavily rein concrete w/#18 rebar, $/cubic yard	342.28
Removal of contaminated heavily rein concrete w/#18 rebar, $/cubic yard	2,787.73
Removal heavily rein concrete w/#18 rebar & steel embedments, $/cubic yard	533.01
Removal of below-grade suspended floors, $/cubic yard	414.96
Removal of clean monolithic concrete structures, $/cubic yard	1,054.73
Removal of contaminated monolithic concrete structures, $/cubic yard	2,101.37
Removal of clean foundation concrete, $/cubic yard	826.68
Removal of contaminated foundation concrete, $/cubic yard	1,955.13
Explosive demolition of bulk concrete, $/cubic yard	36.25
Removal of clean hollow masonry block wall, $/cubic yard	107.84
Removal of contaminated hollow masonry block wall, $/cubic yard	299.44
Removal of clean solid masonry block wall, $/cubic yard	107.84
Removal of contaminated solid masonry block wall, $/cubic yard	299.44
Backfill of below-grade voids, $/cubic yard	33.82
Removal of subterranean tunnels/voids, $/linear foot	130.49

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit
Placement of concrete for below-grade voids, $/cubic yard	137.69
Excavation of clean material, $/cubic yard	3.67
Excavation of contaminated material, $/cubic yard	39.90
Removal of clean concrete rubble (tipping fee included), $/cubic yard	25.95
Removal of contaminated concrete rubble, $/cubic yard	27.45
Removal of building by volume, $/cubic foot	0.35
Removal of clean building metal siding, $/square foot	1.32
Removal of contaminated building metal siding, $/square foot	3.80
Removal of standard asphalt roofing, $/square foot	2.71
Removal of transite panels, $/square foot	2.51
Scarifying contaminated concrete surfaces (drill & spall), $/square foot	12.37
Scabbling contaminated concrete floors, $/square foot	7.46
Scabbling contaminated concrete walls, $/square foot	20.05
Scabbling contaminated ceilings, $/square foot	68.73
Scabbling structural steel, $/square foot	6.27
Removal of clean overhead crane/monorail < 10 ton capacity	798.67
Removal of contaminated overhead crane/monorail < 10 ton capacity	1,870.00
Removal of clean overhead crane/monorail >10-50 ton capacity	1,916.79
Removal of contaminated overhead crane/monorail >10-50 ton capacity	4,471.00
Removal of polar crane > 50 ton capacity	8,055.49
Removal of gantry crane > 50 ton capacity	33,702.09
Removal of structural steel, $/pound	0.25
Removal of clean steel floor grating, $/square foot	5.75
Removal of contaminated steel floor grating, $/square foot	13.56
Removal of clean free standing steel liner, $/square foot	15.05
Removal of contaminated free standing steel liner, $/square foot	36.48
Removal of clean concrete-anchored steel liner, $/square foot	7.52
Removal of contaminated concrete-anchored steel liner, $/square foot	42.43
Placement of scaffolding in clean areas, $/square foot	18.75
Placement of scaffolding in contaminated areas, $/square foot	27.59

APPENDIX B

UNIT COST FACTOR LISTING
(Power Block Structures Only)

Unit Cost Factor	Cost/Unit
Landscaping with topsoil, $/acre	30,563.66
Cost of CPC B-88 LSA box & preparation for use	2,267.67
Cost of CPC B-25 LSA box & preparation for use	2,077.38
Cost of CPC B-12V 12 gauge LSA box & preparation for use	1,691.68
Cost of CPC B-144 LSA box & preparation for use	11,450.82
Cost of LSA drum & preparation for use	219.29
Cost of cask liner for CNSI 8 120A cask (resins)	8,414.66
Cost of cask liner for CNSI 8 120A cask (filters)	8,795.03
Decontamination of surfaces with vacuuming, $/square foot	0.90

APPENDIX C

DETAILED COST ANALYSIS

DECON

Table C
Oyster Creek Nuclear Generating Station
DECON Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-	-	-	-	1,300
1a.1.2	Notification of Cessation of Operations									a											
1a.1.3	Remove fuel & source material									n/a											
1a.1.4	Notification of Permanent Defueling									a											
1a.1.5	Deactivate plant systems & process waste									a											
1a.1.6	Prepare and submit PSDAR	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
1a.1.7	Review plant dwgs & specs.	-	-	-	-	-	-	550	83	633	633	-	-	-	-	-	-	-	-	-	4,600
1a.1.8	Perform detailed rad survey									a											
1a.1.9	Estimate by-product inventory	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1a.1.10	End product description	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	Detailed by-product inventory	-	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-	-	-	-	1,300
1a.1.12	Define major work sequence	-	-	-	-	-	-	897	135	1,032	1,032	-	-	-	-	-	-	-	-	-	7,500
1a.1.13	Perform SER and EA	-	-	-	-	-	-	371	56	427	427	-	-	-	-	-	-	-	-	-	3,100
1a.1.14	Perform Site-Specific Cost Study	-	-	-	-	-	-	598	90	688	688	-	-	-	-	-	-	-	-	-	5,000
1a.1.15	Prepare/submit License Termination Plan	-	-	-	-	-	-	490	74	564	564	-	-	-	-	-	-	-	-	-	4,096
1a.1.16	Receive NRC approval of termination plan									a											
Activity Specifications																					
1a.1.17.1	Plant & temporary facilities	-	-	-	-	-	-	589	88	677	609	-	68	-	-	-	-	-	-	-	4,920
1a.1.17.2	Plant systems	-	-	-	-	-	-	499	75	573	516	-	57	-	-	-	-	-	-	-	4,167
1a.1.17.3	NSSS Decontamination Flush	-	-	-	-	-	-	60	9	69	69	-	-	-	-	-	-	-	-	-	500
1a.1.17.4	Reactor internals	-	-	-	-	-	-	850	127	977	977	-	-	-	-	-	-	-	-	-	7,100
1a.1.17.5	Reactor vessel	-	-	-	-	-	-	778	117	894	894	-	-	-	-	-	-	-	-	-	6,500
1a.1.17.6	Sacrificial shield	-	-	-	-	-	-	60	9	69	69	-	-	-	-	-	-	-	-	-	500
1a.1.17.7	Moisture separators/reheaters	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1a.1.17.8	Reinforced concrete	-	-	-	-	-	-	191	29	220	110	-	110	-	-	-	-	-	-	-	1,600
1a.1.17.9	Main Turbine	-	-	-	-	-	-	250	37	287	287	-	-	-	-	-	-	-	-	-	2,088
1a.1.17.10	Main Condensers	-	-	-	-	-	-	250	37	287	287	-	-	-	-	-	-	-	-	-	2,088
1a.1.17.11	Pressure suppression structure	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
1a.1.17.12	Drywell	-	-	-	-	-	-	191	29	220	220	-	-	-	-	-	-	-	-	-	1,600
1a.1.17.13	Plant structures & buildings	-	-	-	-	-	-	373	56	429	215	-	215	-	-	-	-	-	-	-	3,120
1a.1.17.14	Waste management	-	-	-	-	-	-	550	83	633	633	-	-	-	-	-	-	-	-	-	4,600
1a.1.17.15	Facility & site closeout	-	-	-	-	-	-	108	16	124	62	-	62	-	-	-	-	-	-	-	900
1a.1.17	Total	-	-	-	-	-	-	5,107	766	5,873	5,361	-	512	-	-	-	-	-	-	-	42,683
Planning & Site Preparations																					
1a.1.18	Prepare dismantling sequence	-	-	-	-	-	-	287	43	330	330	-	-	-	-	-	-	-	-	-	2,400
1a.1.19	Plant prep. & temp. svces	-	-	-	-	-	-	2,800	420	3,220	3,220	-	-	-	-	-	-	-	-	-	-
1a.1.20	Design water clean-up system	-	-	-	-	-	-	168	25	193	193	-	-	-	-	-	-	-	-	-	1,400
1a.1.21	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,200	330	2,530	2,530	-	-	-	-	-	-	-	-	-	-
1a.1.22	Procure casks/liners & containers	-	-	-	-	-	-	147	22	169	169	-	-	-	-	-	-	-	-	-	1,230
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	14,406	2,161	16,566	16,055	-	512	-	-	-	-	-	-	-	78,609
Period 1a Additional Costs																					
1a.2.1	ISFSI Expansion	-	-	-	-	-	-	6,000	900	6,900	-	6,900	-	-	-	-	-	-	-	-	-
1a.2	Subtotal Period 1a Additional Costs	-	-	-	-	-	-	6,000	900	6,900	-	6,900	-	-	-	-	-	-	-	-	-

Table C
Oyster Creek Nuclear Generating Station
DECON Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	10,978	1,647	12,624	-	12,624	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	10,978	1,647	12,624	-	12,624	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	2,227	223	2,450	2,450	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	469	-	-	-	-	-	117	586	586	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	462	-	-	-	-	-	69	531	531	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	14	10	-	35	-	12	70	70	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,918	288	2,206	2,206	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	769	77	846	846	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	564	56	621	-	621	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M Costs	-	-	-	-	-	-	309	46	355	355	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	89	13	103	-	103	-	-	-	-	-	-	-	-	-
1a.4.12	Security Staff Cost	-	-	-	-	-	-	8,441	1,266	9,707	9,707	-	-	-	-	-	-	-	-	-	157,471
1a.4.13	Utility Staff Cost	-	-	-	-	-	-	33,041	4,956	37,997	37,997	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	931	14	10	-	35	48,122	7,238	56,350	54,749	1,601	-	-	610	-	-	-	12,190	20	580,871
1a.0	TOTAL PERIOD 1a COST	-	931	14	10	-	35	79,506	11,946	92,441	70,804	21,126	512	-	610	-	-	-	12,190	20	659,480
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b.1.1.1	Plant systems	-	-	-	-	-	-	566	85	651	586	-	65	-	-	-	-	-	-	-	4,733
1b.1.1.2	NSSS Decontamination Flush	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.3	Reactor internals	-	-	-	-	-	-	479	72	550	550	-	-	-	-	-	-	-	-	-	4,000
1b.1.1.4	Remaining buildings	-	-	-	-	-	-	162	24	186	46	-	139	-	-	-	-	-	-	-	1,350
1b.1.1.5	CRD housings & NIs	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.6	Incore instrumentation	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1b.1.1.7	Removal primary containment	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
1b.1.1.8	Reactor vessel	-	-	-	-	-	-	434	65	499	499	-	-	-	-	-	-	-	-	-	3,630
1b.1.1.9	Facility closeout	-	-	-	-	-	-	144	22	165	83	-	83	-	-	-	-	-	-	-	1,200
1b.1.1.10	Sacrificial shield	-	-	-	-	-	-	144	22	165	165	-	-	-	-	-	-	-	-	-	1,200
1b.1.1.11	Reinforced concrete	-	-	-	-	-	-	120	18	138	69	-	69	-	-	-	-	-	-	-	1,000
1b.1.1.12	Main Turbine	-	-	-	-	-	-	249	37	286	286	-	-	-	-	-	-	-	-	-	2,080
1b.1.1.13	Main Condensers	-	-	-	-	-	-	250	37	287	287	-	-	-	-	-	-	-	-	-	2,088
1b.1.1.14	Moisture separators & reheaters	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
1b.1.1.15	Radwaste building	-	-	-	-	-	-	327	49	376	338	-	38	-	-	-	-	-	-	-	2,730
1b.1.1.16	Reactor building	-	-	-	-	-	-	327	49	376	338	-	38	-	-	-	-	-	-	-	2,730
1b.1.1	Total	-	-	-	-	-	-	4,037	606	4,643	4,212	-	431	-	-	-	-	-	-	-	33,741
1b.1.2	Decon NSSS	1,105	-	-	-	-	-	-	552	1,657	1,657	-	-	-	-	-	-	-	-	1,067	-
1b.1	Subtotal Period 1b Activity Costs	1,105	-	-	-	-	-	4,037	1,158	6,300	5,869	-	431	-	-	-	-	-	-	1,067	33,741
Period 1b Additional Costs																					
1b.2.1	Spent fuel pool isolation	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
1b.2.2	Site Characterization	-	-	-	-	-	-	4,986	1,496	6,482	6,482	-	-	-	-	-	-	-	-	27,140	9,952

Table C
Oyster Creek Nuclear Generating Station
DECON Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1b Additional Costs (continued)																					
1b.2.3	Disposition of Liquid RCRA Waste (not Lead)	-	-	-	17	-	529	-	135	680	680	-	-	-	2,019	-	-	-	115,076	-	-
1b.2.4	Disposition of PCB Soil RCRA Waste (not Lead)	-	-	-	1,362	-	1,450	-	567	3,378	3,378	-	-	-	27,000	-	-	-	3,240,000	-	-
1b.2.5	Disposition Of Lead Inventory	-	-	-	26	756	-	-	117	899	899	-	-	328	-	-	-	-	232,673	-	-
1b.2.6	Asbestos Remediation	-	12,217	2	279	-	1,030	-	3,354	16,883	16,883	-	-	-	19,193	-	-	-	249,515	150,230	-
1b.2	Subtotal Period 1b Additional Costs	-	12,217	2	1,684	756	3,009	15,266	7,211	40,144	40,144	-	-	328	48,212	-	-	-	3,837,264	177,370	9,952
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	902	-	-	-	-	-	-	135	1,037	1,037	-	-	-	-	-	-	-	-	-	-
1b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,124	169	1,292	1,292	-	-	-	-	-	-	-	-	-	-
1b.3.3	Process decommissioning water waste	71	-	31	85	-	153	-	90	430	430	-	-	-	449	-	-	-	26,940	88	-
1b.3.4	Process decommissioning chemical flush waste	3	-	101	373	-	5,544	-	1,454	7,475	7,475	-	-	-	-	1,495	-	-	159,317	280	-
1b.3.5	Small tool allowance	-	186	-	-	-	-	-	28	213	213	-	-	-	-	-	-	-	-	-	-
1b.3.6	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
1b.3.7	Decon rig	1,500	-	-	-	-	-	-	225	1,725	1,725	-	-	-	-	-	-	-	-	-	-
1b.3.8	Spent Fuel Capital and Transfer	-	-	-	-	-	-	5,564	835	6,399	-	6,399	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	2,476	1,286	132	458	-	5,698	6,688	3,100	19,837	13,438	6,399	-	-	449	1,495	-	-	186,257	367	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	28	-	-	-	-	-	-	7	35	35	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	849	85	934	934	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	1,221	122	1,343	1,343	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	920	-	-	-	-	-	230	1,150	1,150	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	234	-	-	-	-	-	35	269	269	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	8	6	-	21	-	7	42	42	-	-	-	362	-	-	-	7,234	12	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	1,944	292	2,236	2,236	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	390	39	429	429	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	286	29	315	-	315	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M Costs	-	-	-	-	-	-	157	24	180	180	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	387	58	445	-	445	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	45	7	52	-	52	-	-	-	-	-	-	-	-	-
1b.4.13	Security Staff Cost	-	-	-	-	-	-	4,278	642	4,920	4,920	-	-	-	-	-	-	-	-	-	79,814
1b.4.14	DOC Staff Cost	-	-	-	-	-	-	5,599	840	6,439	6,439	-	-	-	-	-	-	-	-	-	64,486
1b.4.15	Utility Staff Cost	-	-	-	-	-	-	16,820	2,523	19,343	19,343	-	-	-	-	-	-	-	-	-	215,657
1b.4	Subtotal Period 1b Period-Dependent Costs	28	1,154	8	6	-	21	31,977	4,938	38,132	37,320	812	-	-	362	-	-	-	7,234	12	359,957
1b.0	TOTAL PERIOD 1b COST	3,609	14,657	142	2,148	756	8,727	57,968	16,406	104,413	96,772	7,210	431	328	49,023	1,495	-	-	4,030,755	178,816	403,650
PERIOD 1 TOTALS		3,609	15,588	156	2,158	756	8,762	137,473	28,352	196,854	167,576	28,336	943	328	49,633	1,495	-	-	4,042,945	178,836	1,063,130
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a.1.1.2	Recirculation Pumps & Motors	52	122	41	141	8	216	-	137	717	717	-	-	107	1,053	-	-	-	196,350	2,938	-
2a.1.1.3	CRDMs & NIs Removal	199	179	523	183	-	137	-	258	1,478	1,478	-	-	-	5,179	-	-	-	112,850	5,509	-
2a.1.1.4	Reactor Vessel Internals	163	3,054	7,122	2,158	-	11,058	244	10,257	34,055	34,055	-	-	-	1,252	918	918	-	309,830	26,675	1,199
2a.1.1.5	Reactor Vessel	98	6,613	2,130	1,718	-	2,333	244	7,174	20,310	20,310	-	-	-	14,674	-	-	-	1,573,112	26,675	1,199
2a.1.1	Totals	511	9,968	9,816	4,200	8	13,743	488	17,826	56,561	56,561	-	-	107	22,159	918	918	-	2,192,142	61,797	2,398

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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Removal of Major Equipment																					
2a.1.2	Main Turbine/Generator	-	374	1,869	451	1,622	263	-	657	5,236	5,236	-	-	76,676	3,843	-	-	-	3,668,086	5,691	-
2a.1.3	Main Condensers	-	1,125	1,297	313	1,125	183	-	672	4,714	4,714	-	-	53,200	2,666	-	-	-	2,545,038	17,138	-
Disposal of Plant Systems																					
New Radwaste Building System Components																					
2a.1.7.1	7EB	114	185	12	11	4	32	-	114	471	471	-	-	215	462	-	-	-	34,932	4,350	-
2a.1.7.2	N2G	-	13	0	0	1	1	-	4	18	18	-	-	40	8	-	-	-	2,090	202	-
2a.1.7.3	N2P	-	27	1	2	6	1	-	8	46	46	-	-	324	14	-	-	-	13,964	411	-
2a.1.7.4	N3A	-	77	5	4	5	10	-	23	123	123	-	-	237	140	-	-	-	17,648	1,160	-
2a.1.7.5	N3D	-	91	3	3	8	5	-	26	136	136	-	-	419	72	-	-	-	21,112	1,440	-
2a.1.7.6	N3I	-	19	0	0	0	1	-	5	26	26	-	-	19	12	-	-	-	1,460	308	-
2a.1.7.7	N3N	-	113	5	4	6	9	-	33	169	169	-	-	288	138	-	-	-	19,541	1,744	-
2a.1.7.8	N3P	-	29	2	2	2	4	-	9	47	47	-	-	118	53	-	-	-	7,792	439	-
2a.1.7.9	N3Q	-	20	0	1	1	1	-	5	28	28	-	-	67	12	-	-	-	3,381	309	-
2a.1.7.10	N3R	-	19	1	1	1	2	-	6	30	30	-	-	62	30	-	-	-	4,242	299	-
2a.1.7.11	N3S	-	29	1	1	3	2	-	8	44	44	-	-	158	25	-	-	-	7,828	454	-
2a.1.7.12	N3T	-	17	1	0	1	1	-	5	25	25	-	-	42	14	-	-	-	2,501	276	-
2a.1.7.13	N3U	-	126	20	18	6	55	-	51	275	275	-	-	317	801	-	-	-	58,171	1,957	-
2a.1.7.14	N3W	-	130	22	20	6	60	-	53	291	291	-	-	333	872	-	-	-	62,848	2,026	-
2a.1.7.15	N3Y	-	235	22	25	42	50	-	83	457	457	-	-	2,216	724	-	-	-	131,007	3,647	-
2a.1.7.16	N51	22	32	1	1	4	2	-	20	83	83	-	-	213	22	-	-	-	9,918	832	-
2a.1.7.17	N52	15	26	2	2	1	6	-	16	69	69	-	-	68	88	-	-	-	7,641	640	-
2a.1.7.18	N53	22	40	4	4	3	11	-	25	110	110	-	-	144	165	-	-	-	14,952	962	-
2a.1.7.19	N54	5	19	1	1	1	3	-	8	38	38	-	-	27	44	-	-	-	3,559	367	-
2a.1.7.20	N55	-	82	3	3	6	5	-	23	123	123	-	-	336	68	-	-	-	17,502	1,300	-
2a.1.7.21	N56	-	109	7	7	9	15	-	34	181	181	-	-	481	220	-	-	-	32,049	1,597	-
2a.1.7.22	N5A	38	48	2	3	4	5	-	34	135	135	-	-	226	81	-	-	-	13,609	1,321	-
2a.1.7.23	N5B	28	45	1	2	5	1	-	27	109	109	-	-	286	18	-	-	-	12,631	1,110	-
2a.1.7.24	N5C	-	20	2	1	1	3	-	6	33	33	-	-	49	49	-	-	-	4,789	304	-
2a.1.7.25	N5D	-	31	2	2	1	5	-	10	51	51	-	-	75	67	-	-	-	6,878	484	-
2a.1.7.26	N5E	-	21	2	1	1	4	-	7	35	35	-	-	49	52	-	-	-	4,983	317	-
2a.1.7.27	N5F	-	30	2	2	1	6	-	10	51	51	-	-	51	80	-	-	-	6,642	464	-
2a.1.7.28	N5G	1	15	0	0	0	1	-	5	23	23	-	-	23	15	-	-	-	1,797	242	-
2a.1.7.29	N5H	-	12	1	1	0	2	-	4	20	20	-	-	1	29	-	-	-	1,704	194	-
2a.1.7.30	N5I	10	18	1	1	0	2	-	10	42	42	-	-	26	22	-	-	-	2,322	442	-
2a.1.7.31	N5J	-	13	1	1	2	2	-	4	23	23	-	-	99	28	-	-	-	5,599	212	-
2a.1.7.32	N5K	-	17	1	1	1	1	-	5	25	25	-	-	56	16	-	-	-	3,223	256	-
2a.1.7.33	N5N	-	32	1	1	2	1	-	9	45	45	-	-	125	15	-	-	-	5,947	494	-
2a.1.7.34	N5O	-	81	4	4	11	5	-	24	130	130	-	-	579	80	-	-	-	28,042	1,264	-
2a.1.7.35	N5P	-	30	3	3	2	8	-	11	57	57	-	-	121	115	-	-	-	11,189	487	-
2a.1.7.36	N5Q	-	30	3	3	2	7	-	10	56	56	-	-	121	114	-	-	-	11,082	480	-
2a.1.7.37	N5S	-	72	8	12	38	11	-	29	171	171	-	-	2,012	159	-	-	-	90,750	1,167	-
2a.1.7.38	N5T	65	68	4	5	9	10	-	54	216	216	-	-	482	146	-	-	-	27,568	2,004	-
2a.1.7.39	N5U	65	69	4	5	9	10	-	55	217	217	-	-	483	147	-	-	-	27,630	2,019	-
2a.1.7.40	N5Y	16	27	1	1	2	3	-	16	66	66	-	-	124	44	-	-	-	7,504	653	-
2a.1.7.41	N5Z	16	27	1	1	2	3	-	16	66	66	-	-	124	44	-	-	-	7,504	653	-
2a.1.7.42	PPA	-	85	3	4	9	6	-	25	133	133	-	-	468	91	-	-	-	24,149	1,308	-
2a.1.7	Totals	417	2,230	161	163	223	368	-	932	4,494	4,494	-	-	11,707	5,395	-	-	-	779,680	40,595	-

Table C
Oyster Creek Nuclear Generating Station
DECON Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Old Radwaste Building System Components																					
2a.1.8.1	7BA	-	92	4	4	6	10	-	27	143	143	-	-	317	140	-	-	-	20,810	1,436	-
2a.1.8.2	7DA	-	54	6	6	1	18	-	20	105	105	-	-	56	263	-	-	-	17,183	836	-
2a.1.8.3	7FA	2	25	2	3	3	6	-	10	51	51	-	-	148	93	-	-	-	11,278	415	-
2a.1.8.4	PBA	114	170	18	16	10	46	-	117	493	493	-	-	544	688	-	-	-	60,422	4,293	-
2a.1.8.5	PDA	12	60	2	3	5	6	-	24	112	112	-	-	277	83	-	-	-	15,938	1,107	-
2a.1.8.6	PMA	-	14	1	1	1	1	-	4	21	21	-	-	32	18	-	-	-	2,350	217	-
2a.1.8.7	PRA	-	92	3	5	15	5	-	28	148	148	-	-	763	78	-	-	-	35,407	1,455	-
2a.1.8.8	PTK / PTP	-	15	0	0	1	0	-	4	20	20	-	-	28	1	-	-	-	1,211	232	-
2a.1.8	Totals	128	522	37	38	41	93	-	233	1,091	1,091	-	-	2,166	1,364	-	-	-	164,599	9,991	-
Turbine Building System Components																					
2a.1.9.1	7CA	182	298	34	30	22	81	-	197	842	842	-	-	1,163	1,174	-	-	-	113,971	6,303	-
2a.1.9.2	TB2	-	1,081	82	93	170	177	-	362	1,965	1,965	-	-	8,921	2,579	-	-	-	508,624	16,709	-
2a.1.9.3	TB23	-	5	0	0	1	0	-	1	8	8	-	-	40	1	-	-	-	1,711	83	-
2a.1.9.4	TB38	-	16	1	1	1	3	-	5	28	28	-	-	75	42	-	-	-	5,430	230	-
2a.1.9.5	TC2	-	1,753	373	399	524	919	-	844	4,813	4,813	-	-	27,433	13,399	-	-	-	1,873,979	27,653	-
2a.1.9.6	TE2	-	186	23	27	51	50	-	73	410	410	-	-	2,649	730	-	-	-	149,011	2,845	-
2a.1.9.7	TEE	-	365	13	22	72	19	-	111	603	603	-	-	3,794	277	-	-	-	169,779	5,611	-
2a.1.9.8	TEG	-	26	1	1	2	3	-	8	41	41	-	-	89	43	-	-	-	6,078	382	-
2a.1.9.9	TP2	-	192	17	19	40	34	-	67	368	368	-	-	2,092	490	-	-	-	112,797	2,999	-
2a.1.9.10	TP3	-	126	14	14	10	37	-	46	248	248	-	-	546	561	-	-	-	53,095	2,029	-
2a.1.9.11	TPE	-	115	15	13	8	36	-	42	229	229	-	-	408	541	-	-	-	46,636	1,789	-
2a.1.9	Totals	182	4,162	573	620	901	1,360	-	1,757	9,554	9,554	-	-	47,212	19,838	-	-	-	3,041,110	66,633	-
2a.1.12	Scaffolding in support of decommissioning	-	1,076	27	7	22	8	-	278	1,419	1,419	-	-	1,057	112	-	-	-	53,901	19,311	-
2a.1	Subtotal Period 2a Activity Costs	1,237	19,457	13,779	5,792	3,944	16,018	488	22,355	83,070	83,070	-	-	192,124	55,377	918	918	-	12,444,560	221,157	2,398
Period 2a Collateral Costs																					
2a.3.1	Process decommissioning water waste	161	-	72	195	-	352	-	205	985	985	-	-	-	1,031	-	-	-	61,862	201	-
2a.3.2	Process decommissioning chemical flush waste	1	-	26	97	-	235	-	76	435	435	-	-	-	388	-	-	-	41,295	73	-
2a.3.3	Small tool allowance	-	269	-	-	-	-	-	40	309	278	-	31	-	-	-	-	-	-	-	-
2a.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	13,835	2,075	15,910	-	15,910	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	162	269	98	291	-	587	13,835	2,397	17,639	1,698	15,910	31	-	1,419	-	-	-	103,157	274	-
Period 2a Period-Dependent Costs																					
2a.4.1	Decon supplies	69	-	-	-	-	-	-	17	87	87	-	-	-	-	-	-	-	-	-	-
2a.4.2	Insurance	-	-	-	-	-	-	1,684	168	1,852	1,852	-	-	-	-	-	-	-	-	-	-
2a.4.3	Property taxes	-	-	-	-	-	-	2,422	242	2,665	2,398	-	266	-	-	-	-	-	-	-	-
2a.4.4	Health physics supplies	-	1,567	-	-	-	-	-	392	1,958	1,958	-	-	-	-	-	-	-	-	-	-
2a.4.5	Heavy equipment rental	-	2,533	-	-	-	-	-	380	2,913	2,913	-	-	-	-	-	-	-	-	-	-
2a.4.6	Disposal of DAW generated	-	-	102	72	-	253	-	84	511	511	-	-	-	4,416	-	-	-	88,314	144	-
2a.4.7	Plant energy budget	-	-	-	-	-	-	2,296	344	2,641	2,641	-	-	-	-	-	-	-	-	-	-
2a.4.8	NRC Fees	-	-	-	-	-	-	904	90	994	994	-	-	-	-	-	-	-	-	-	-
2a.4.9	Site O&M Costs	-	-	-	-	-	-	390	58	448	448	-	-	-	-	-	-	-	-	-	-
2a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	962	144	1,106	-	1,106	-	-	-	-	-	-	-	-	-
2a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	113	17	130	-	130	-	-	-	-	-	-	-	-	-
2a.4.12	Security Staff Cost	-	-	-	-	-	-	8,959	1,344	10,303	10,303	-	-	-	-	-	-	-	-	-	166,257
2a.4.13	DOC Staff Cost	-	-	-	-	-	-	17,165	2,575	19,740	19,740	-	-	-	-	-	-	-	-	-	199,771
2a.4.14	Utility Staff Cost	-	-	-	-	-	-	29,498	4,425	33,923	33,923	-	-	-	-	-	-	-	-	-	371,943

Table C
Oyster Creek Nuclear Generating Station
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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
2a.4	Subtotal Period 2a Period-Dependent Costs	69	4,099	102	72	-	253	64,394	10,282	79,270	77,768	1,236	266	-	4,416	-	-	-	88,314	144	737,971
2a.0	TOTAL PERIOD 2a COST	1,469	23,825	13,979	6,156	3,944	16,857	78,716	35,034	179,979	162,536	17,146	297	192,124	61,211	918	918	-	12,636,030	221,574	740,369
PERIOD 2b - Site Decontamination																					
Period 2b Direct Decommissioning Activities																					
New Radwaste Building System Components																					
2b.1.3.1	N38	-	194	12	11	19	23	-	60	319	319	-	-	1,005	337	-	-	-	59,967	2,944	-
2b.1.3.2	N48	-	99	4	4	8	7	-	29	151	151	-	-	406	107	-	-	-	22,600	1,507	-
2b.1.3.3	N4A	15	34	3	3	2	9	-	19	85	85	-	-	109	127	-	-	-	11,494	701	-
2b.1.3.4	N4B	12	32	3	3	2	7	-	17	76	76	-	-	98	109	-	-	-	10,011	669	-
2b.1.3.5	N4D	-	101	7	5	4	15	-	31	163	163	-	-	210	217	-	-	-	20,822	1,539	-
2b.1.3.6	N4E	-	8	0	0	0	0	-	2	10	10	-	-	11	5	-	-	-	736	121	-
2b.1.3.7	N4F	-	21	1	1	1	3	-	7	34	34	-	-	51	41	-	-	-	4,416	330	-
2b.1.3.8	N4H	-	25	2	2	4	3	-	8	44	44	-	-	187	49	-	-	-	10,386	417	-
2b.1.3.9	N4K	-	27	2	1	2	3	-	8	43	43	-	-	129	41	-	-	-	7,565	417	-
2b.1.3.10	N4L	-	40	1	1	3	3	-	11	59	59	-	-	135	37	-	-	-	7,564	628	-
2b.1.3.11	N5R	-	87	3	5	18	4	-	27	144	144	-	-	967	53	-	-	-	42,284	1,364	-
2b.1.3.12	N5V	65	68	7	7	6	19	-	57	230	230	-	-	309	295	-	-	-	28,625	2,009	-
2b.1.3.13	N5W	-	11	0	0	0	0	-	3	13	13	-	-	9	0	-	-	-	405	169	-
2b.1.3.14	N5X	84	85	3	4	15	3	-	67	262	262	-	-	786	48	-	-	-	34,564	2,536	-
2b.1.3	Totals	176	831	47	50	84	100	-	346	1,633	1,633	-	-	4,412	1,465	-	-	-	261,438	15,352	-
Old Radwaste Building System Components																					
2b.1.4.1	ORW Pre D&D Desludge and Decon	-	229	-	-	-	-	-	34	263	263	-	-	-	-	-	-	-	-	3,197	-
2b.1.4.2	PRD	-	17	0	1	3	0	-	5	26	26	-	-	143	6	-	-	-	6,156	274	-
2b.1.4.3	PSB	-	157	7	9	18	15	-	48	253	253	-	-	950	214	-	-	-	50,690	2,440	-
2b.1.4.4	PTA	-	43	3	3	5	6	-	14	74	74	-	-	276	82	-	-	-	15,879	686	-
2b.1.4.5	PUA	-	233	15	13	16	32	-	72	381	381	-	-	860	459	-	-	-	61,058	3,599	-
2b.1.4.6	PUU	-	157	12	15	28	27	-	54	292	292	-	-	1,441	413	-	-	-	80,833	2,504	-
2b.1.4.7	PVA	-	9	0	0	0	0	-	2	12	12	-	-	12	1	-	-	-	524	148	-
2b.1.4.8	UAB	-	338	8	13	41	13	-	97	510	510	-	-	2,148	188	-	-	-	97,655	5,225	-
2b.1.4.9	UAS	-	233	7	12	41	8	-	69	369	369	-	-	2,128	128	-	-	-	93,445	3,622	-
2b.1.4	Totals	-	1,417	51	65	152	100	-	394	2,180	2,180	-	-	7,959	1,490	-	-	-	406,240	21,696	-
Turbine Building System Components																					
2b.1.5.1	TD2	-	67	4	4	5	9	-	21	110	110	-	-	241	130	-	-	-	17,177	1,004	-
2b.1.5.2	TF2	-	364	51	64	154	95	-	152	879	879	-	-	8,047	1,384	-	-	-	405,420	5,629	-
2b.1.5.3	TFG	-	26	1	1	3	1	-	7	39	39	-	-	134	14	-	-	-	6,251	414	-
2b.1.5.4	TG2	-	264	42	55	114	95	-	119	689	689	-	-	5,957	1,383	-	-	-	320,296	4,199	-
2b.1.5.5	TH2	-	515	120	130	138	324	-	262	1,490	1,490	-	-	7,240	4,729	-	-	-	562,006	8,167	-
2b.1.5.6	TKA	-	24	1	1	1	2	-	7	34	34	-	-	47	24	-	-	-	3,253	350	-
2b.1.5.7	TL2	-	112	11	9	7	24	-	37	199	199	-	-	358	344	-	-	-	34,042	1,692	-
2b.1.5.8	TMA	-	68	6	7	13	12	-	24	129	129	-	-	690	178	-	-	-	38,125	1,051	-
2b.1.5.9	TN2	-	359	31	36	62	70	-	125	683	683	-	-	3,260	1,023	-	-	-	190,382	5,575	-
2b.1.5.10	TO2	-	194	-	-	-	-	-	29	223	-	-	223	-	-	-	-	-	-	3,221	-
2b.1.5.11	TOA	-	99	4	6	18	6	-	30	162	162	-	-	917	84	-	-	-	42,017	1,497	-
2b.1.5.12	TOCR	-	74	5	9	30	6	-	26	150	150	-	-	1,590	87	-	-	-	69,536	1,062	-
2b.1.5.13	TOR	-	72	6	7	14	13	-	25	137	137	-	-	717	185	-	-	-	39,614	1,139	-

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Turbine Building System Components (continued)																					
2b.1.5.14	TOV	-	19	0	1	2	0	-	5	28	28	-	-	90	6	-	-	-	4,042	293	-
2b.1.5.15	TOW	-	115	8	14	45	12	-	42	236	236	-	-	2,346	181	-	-	-	105,569	1,765	-
2b.1.5.16	TOX / TOY	-	32	1	1	2	1	-	9	46	46	-	-	106	16	-	-	-	5,216	488	-
2b.1.5.17	TS2	-	225	29	33	52	69	-	89	496	496	-	-	2,704	1,009	-	-	-	167,033	3,439	-
2b.1.5.18	TTA	-	67	6	7	13	13	-	24	130	130	-	-	675	194	-	-	-	38,390	1,085	-
2b.1.5.19	TU2	-	210	9	13	35	16	-	65	347	347	-	-	1,825	234	-	-	-	87,369	3,270	-
2b.1.5	Totals	-	2,906	334	395	705	769	-	1,098	6,207	5,984	-	223	36,944	11,206	-	-	-	2,135,738	45,340	-
Augmented Offgas System Components																					
2b.1.6.1	AY8	-	161	13	14	20	33	-	55	297	297	-	-	1,044	475	-	-	-	69,386	2,486	-
2b.1.6.2	AYA	-	34	3	4	7	8	-	12	69	69	-	-	384	110	-	-	-	21,817	527	-
2b.1.6.3	AYB	-	32	2	2	4	4	-	10	53	53	-	-	208	51	-	-	-	11,355	504	-
2b.1.6.4	AYC	-	82	4	6	17	7	-	26	141	141	-	-	899	97	-	-	-	41,912	1,279	-
2b.1.6.5	AYE	-	28	2	1	1	4	-	8	44	44	-	-	43	52	-	-	-	4,754	428	-
2b.1.6.6	AZ8	-	61	4	4	9	7	-	19	104	104	-	-	492	103	-	-	-	25,832	941	-
2b.1.6.7	AZA	-	14	1	0	0	1	-	4	20	20	-	-	24	15	-	-	-	1,797	215	-
2b.1.6.8	AZC	-	117	4	6	20	6	-	35	188	188	-	-	1,046	86	-	-	-	47,345	1,791	-
2b.1.6.9	AZD	-	20	1	1	1	2	-	6	30	30	-	-	40	31	-	-	-	3,402	307	-
2b.1.6.10	AZE	-	19	1	1	1	2	-	5	29	29	-	-	39	27	-	-	-	3,151	295	-
2b.1.6.11	AZF	-	17	1	1	1	2	-	5	27	27	-	-	65	22	-	-	-	3,914	274	-
2b.1.6.12	AZI	-	33	1	2	6	1	-	10	54	54	-	-	322	19	-	-	-	14,113	526	-
2b.1.6	Totals	-	618	36	43	88	75	-	196	1,056	1,056	-	-	4,607	1,088	-	-	-	248,777	9,574	-
Miscellaneous System Components																					
2b.1.7.1	BAA	-	295	19	23	50	38	-	96	520	520	-	-	2,608	547	-	-	-	136,965	4,556	-
2b.1.7.2	BBA	-	100	6	11	39	9	-	35	200	200	-	-	2,039	124	-	-	-	89,851	1,559	-
2b.1.7.3	BDA	-	12	0	0	0	0	-	3	17	17	-	-	21	5	-	-	-	1,132	190	-
2b.1.7.4	CAA	-	694	27	52	185	32	-	220	1,211	1,211	-	-	9,683	489	-	-	-	419,874	10,902	-
2b.1.7.5	DAA	-	72	3	3	5	6	-	21	110	110	-	-	277	86	-	-	-	16,118	1,145	-
2b.1.7.6	DAC	-	172	5	7	21	8	-	50	263	263	-	-	1,094	117	-	-	-	51,066	2,672	-
2b.1.7.7	DGB	-	82	-	-	-	-	-	12	94	-	-	94	-	-	-	-	-	-	1,336	-
2b.1.7.8	DOT	-	14	-	-	-	-	-	2	16	-	-	16	-	-	-	-	-	-	223	-
2b.1.7.9	DPH	-	95	-	-	-	-	-	14	109	-	-	109	-	-	-	-	-	-	1,527	-
2b.1.7.10	DWF	-	22	-	-	-	-	-	3	25	-	-	25	-	-	-	-	-	-	360	-
2b.1.7.11	FWP	-	127	-	-	-	-	-	19	146	-	-	146	-	-	-	-	-	-	2,018	-
2b.1.7.12	INTAKE STRUCTURE	-	199	-	-	-	-	-	30	229	-	-	229	-	-	-	-	-	-	3,218	-
2b.1.7.13	MAA	-	142	11	13	19	27	-	48	260	260	-	-	1,013	392	-	-	-	63,370	2,192	-
2b.1.7.14	MBA	-	51	3	3	6	7	-	16	87	87	-	-	290	107	-	-	-	17,813	769	-
2b.1.7.15	MBS / MBT	-	38	1	1	1	2	-	10	54	54	-	-	71	32	-	-	-	4,701	577	-
2b.1.7.16	MS	-	40	-	-	-	-	-	6	46	-	-	46	-	-	-	-	-	-	676	-
2b.1.7.17	NMB ROOF	-	20	-	-	-	-	-	3	22	-	-	22	-	-	-	-	-	-	312	-
2b.1.7.18	OB	-	292	-	-	-	-	-	44	336	-	-	336	-	-	-	-	-	-	4,806	-
2b.1.7.19	PTB	-	43	-	-	-	-	-	6	49	-	-	49	-	-	-	-	-	-	688	-
2b.1.7.20	RSF ROOF	-	29	0	1	3	1	-	8	42	42	-	-	166	8	-	-	-	7,167	452	-
2b.1.7.21	UYARD	-	1,807	46	52	81	110	-	504	2,599	2,599	-	-	4,250	1,645	-	-	-	263,340	21,795	-
2b.1.7.22	WAA	-	166	8	10	17	19	-	51	271	271	-	-	878	275	-	-	-	51,268	2,492	-
2b.1.7.23	WHS	-	19	-	-	-	-	-	3	22	-	-	22	-	-	-	-	-	-	318	-
2b.1.7.24	YARD AREAS	-	351	-	-	-	-	-	53	404	-	-	404	-	-	-	-	-	-	5,688	-
2b.1.7.25	YDA / YFA / YLA	-	2	0	0	0	0	-	1	3	3	-	-	18	1	-	-	-	796	30	-
2b.1.7	Totals	-	4,885	130	176	428	258	-	1,259	7,136	5,637	-	1,500	22,409	3,827	-	-	-	1,123,463	70,499	-

Table C
Oyster Creek Nuclear Generating Station
DECON Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
2b.1.8	Scaffolding in support of decommissioning	-	1,345	34	9	28	10	-	348	1,774	1,774	-	-	1,321	140	-	-	-	67,377	24,139	-
Decontamination of Site Buildings																					
2b.1.9.1	New Radwaste Building - Systems Removal	0	167	103	156	0	233	-	134	794	794	-	-	6	4,340	-	-	-	382,187	2,526	-
2b.1.9.2	Old Radwaste Building - Systems Removal	0	4	11	17	0	25	-	11	68	68	-	-	6	461	-	-	-	40,787	73	-
2b.1.9.3	Turbine Building - Systems Removal	-	469	249	376	-	561	-	339	1,993	1,993	-	-	-	10,447	-	-	-	919,350	6,185	-
2b.1.9.4	Augmented Off Gas - Decon	40	258	30	45	1	67	-	112	554	554	-	-	45	1,256	-	-	-	112,340	4,323	-
2b.1.9.5	LLRW Storage - Decon	23	83	18	27	-	41	-	48	240	240	-	-	-	758	-	-	-	66,660	1,490	-
2b.1.9.6	Miscellaneous Buildings - Decon	22	110	18	27	-	40	-	54	271	271	-	-	-	745	-	-	-	65,556	1,886	-
2b.1.9.7	New Radwaste Building - Decon	105	980	115	175	4	259	-	401	2,040	2,040	-	-	235	4,829	-	-	-	434,128	15,639	-
2b.1.9.8	Old Radwaste Building - Decon	-	912	474	718	3	1,070	-	651	3,828	3,828	-	-	152	19,923	-	-	-	1,759,171	10,889	-
2b.1.9.9	Stack/Exhaust Tunnels - Remove & Decon	170	1,105	72	110	-	163	-	426	2,046	2,046	-	-	-	3,043	-	-	-	267,756	18,826	-
2b.1.9.10	Turbine Building 0ft - Decon	150	1,123	113	171	22	251	-	459	2,288	2,288	-	-	1,144	4,660	-	-	-	454,804	18,446	-
2b.1.9.11	Turbine Building 23ft - Decon	105	797	86	130	21	190	-	330	1,660	1,660	-	-	1,109	3,527	-	-	-	353,718	13,021	-
2b.1.9.12	Turbine Building 46ft - Decon	65	276	51	77	-	115	-	147	731	731	-	-	-	2,146	-	-	-	188,826	4,839	-
2b.1.9.13	Drywell - Decon	5	814	458	523	-	1,263	-	646	3,707	3,707	-	-	-	19,950	-	-	-	1,351,210	11,073	-
2b.1.9.14	Drywell - Liner Removal	2,320	1,335	74	105	422	71	-	1,598	5,924	5,924	-	-	22,108	1,022	-	-	-	956,216	53,760	-
2b.1.9.15	RB0 - Torus Removal	3,110	1,531	110	156	626	105	-	2,092	7,728	7,728	-	-	32,774	1,515	-	-	-	1,417,560	67,988	-
2b.1.9.16	Reactor Building - Systems Removal	-	7	18	27	-	40	-	17	108	108	-	-	-	736	-	-	-	64,800	111	-
2b.1.9.17	Reactor Building -19ft - Decon	65	504	51	78	39	108	-	208	1,053	1,053	-	-	2,052	1,994	-	-	-	255,644	8,152	-
2b.1.9.18	Reactor Building 119ft - Decon	513	655	27	40	30	54	-	447	1,765	1,765	-	-	1,563	980	-	-	-	147,532	17,352	-
2b.1.9.19	Reactor Building 23ft - Decon	48	288	38	57	-	85	-	130	647	647	-	-	-	1,591	-	-	-	140,034	4,847	-
2b.1.9.20	Reactor Building 51ft - Decon	53	302	42	64	-	95	-	140	696	696	-	-	-	1,775	-	-	-	156,192	5,106	-
2b.1.9.21	Reactor Building 75ft - Decon	18	161	14	21	-	32	-	62	308	308	-	-	-	594	-	-	-	52,272	2,605	-
2b.1.9	Totals	6,811	11,882	2,171	3,100	1,168	4,867	-	8,450	38,448	38,448	-	-	61,196	86,292	-	-	-	9,586,742	269,137	-
2b.1	Subtotal Period 2b Activity Costs	6,987	23,884	2,804	3,839	2,653	6,178	-	12,090	58,435	56,712	-	1,723	138,847	105,508	-	-	-	13,829,770	455,736	-
Period 2b Additional Costs																					
2b.2.1	Contaminated Soil Removal	-	111	2	500	-	5,702	-	1,529	7,844	7,844	-	-	-	106,200	-	-	-	8,071,193	834	-
2b.2	Subtotal Period 2b Additional Costs	-	111	2	500	-	5,702	-	1,529	7,844	7,844	-	-	-	106,200	-	-	-	8,071,193	834	-
Period 2b Collateral Costs																					
2b.3.1	Process decommissioning water waste	171	-	79	213	-	386	-	222	1,072	1,072	-	-	-	1,130	-	-	-	67,806	220	-
2b.3.2	Process decommissioning chemical flush waste	0	-	1	5	-	12	-	4	22	22	-	-	-	20	-	-	-	2,118	4	-
2b.3.3	Small tool allowance	-	527	-	-	-	-	-	79	606	606	-	-	-	-	-	-	-	-	-	-
2b.3.4	Decommissioning Equipment Disposition	-	-	155	49	127	44	-	53	427	427	-	-	6,000	635	-	-	-	305,961	88	-
2b.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	30,040	4,506	34,546	-	34,546	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	171	527	236	267	127	441	30,040	4,864	36,673	2,126	34,546	-	6,000	1,785	-	-	-	375,885	312	-
Period 2b Period-Dependent Costs																					
2b.4.1	Decon supplies	1,864	-	-	-	-	-	-	466	2,330	2,330	-	-	-	-	-	-	-	-	-	-
2b.4.2	Insurance	-	-	-	-	-	-	1,700	170	1,870	1,870	-	-	-	-	-	-	-	-	-	-
2b.4.3	Property taxes	-	-	-	-	-	-	2,963	296	3,260	3,260	-	-	-	-	-	-	-	-	-	-
2b.4.4	Health physics supplies	-	3,279	-	-	-	-	-	820	4,099	4,099	-	-	-	-	-	-	-	-	-	-
2b.4.5	Heavy equipment rental	-	5,456	-	-	-	-	-	818	6,274	6,274	-	-	-	-	-	-	-	-	-	-
2b.4.6	Disposal of DAW generated	-	-	184	130	-	456	-	152	923	923	-	-	-	7,979	-	-	-	159,584	260	-
2b.4.7	Plant energy budget	-	-	-	-	-	-	3,937	591	4,528	4,528	-	-	-	-	-	-	-	-	-	-
2b.4.8	NRC Fees	-	-	-	-	-	-	1,963	196	2,160	2,160	-	-	-	-	-	-	-	-	-	-
2b.4.9	Site O&M Costs	-	-	-	-	-	-	846	127	973	973	-	-	-	-	-	-	-	-	-	-
2b.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	2,089	313	2,402	-	2,402	-	-	-	-	-	-	-	-	-

Table C
Oyster Creek Nuclear Generating Station
DECON Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 2b Period-Dependent Costs (continued)																					
2b.4.11	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	530	80	610	610	-	-	-	-	-	-	-	-	-	-
2b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	245	37	282	-	282	-	-	-	-	-	-	-	-	-
2b.4.13	Security Staff Cost	-	-	-	-	-	-	19,457	2,919	22,375	22,375	-	-	-	-	-	-	-	-	-	361,067
2b.4.14	DOC Staff Cost	-	-	-	-	-	-	35,864	5,380	41,244	41,244	-	-	-	-	-	-	-	-	-	416,726
2b.4.15	Utility Staff Cost	-	-	-	-	-	-	61,585	9,238	70,823	70,823	-	-	-	-	-	-	-	-	-	773,511
2b.4	Subtotal Period 2b Period-Dependent Costs	1,864	8,735	184	130	-	456	131,180	21,602	164,152	161,468	2,684	-	-	7,979	-	-	-	159,584	260	1,551,304
2b.0	TOTAL PERIOD 2b COST	9,022	33,257	3,226	4,736	2,780	12,778	161,220	40,085	267,104	228,151	37,230	1,723	144,847	221,472	-	-	-	22,436,440	457,143	1,551,304
PERIOD 2d - Decontamination Following Wet Fuel Storage																					
Period 2d Direct Decommissioning Activities																					
2d.1.1	Remove spent fuel racks	608	64	142	226	-	744	-	554	2,338	2,338	-	-	-	10,858	-	-	-	615,095	1,071	-
Disposal of Plant Systems																					
Drywell System Components																					
2d.1.2.1	IAA/IAC	471	380	288	232	79	704	-	582	2,737	2,737	-	-	4,134	10,243	-	-	-	749,934	7,409	-
2d.1.2.2	IBA	113	189	27	25	8	76	-	131	570	570	-	-	438	1,113	-	-	-	80,901	3,998	-
2d.1.2.3	ICA	165	303	50	42	21	123	-	203	907	907	-	-	1,098	1,789	-	-	-	146,198	6,483	-
2d.1.2.4	IEA	-	78	16	16	10	47	-	37	205	205	-	-	498	687	-	-	-	59,174	1,354	-
2d.1.2.5	RC6	-	74	2	3	7	4	-	21	111	111	-	-	373	58	-	-	-	18,457	1,134	-
2d.1.2	Totals	749	1,024	384	319	125	955	-	974	4,529	4,529	-	-	6,541	13,891	-	-	-	1,054,664	20,378	-
Reactor Building System Components																					
2d.1.3.1	RB1	-	228	14	18	38	29	-	74	400	400	-	-	2,009	419	-	-	-	105,353	3,451	-
2d.1.3.2	RBB	-	119	7	9	20	14	-	38	208	208	-	-	1,062	211	-	-	-	55,076	1,828	-
2d.1.3.3	RBC	-	122	8	10	23	17	-	40	220	220	-	-	1,203	243	-	-	-	62,657	1,882	-
2d.1.3.4	RBE	-	160	9	10	21	17	-	50	267	267	-	-	1,094	249	-	-	-	58,612	2,475	-
2d.1.3.5	RBF	-	135	20	18	8	53	-	53	288	288	-	-	441	774	-	-	-	61,571	2,161	-
2d.1.3.6	RBO	-	590	45	70	185	90	-	213	1,193	1,193	-	-	9,702	1,312	-	-	-	468,326	9,941	-
2d.1.3.7	RBS	-	274	37	39	37	99	-	108	594	594	-	-	1,923	1,445	-	-	-	159,975	4,412	-
2d.1.3.8	RBSW	-	135	4	7	24	5	-	40	214	214	-	-	1,258	73	-	-	-	55,258	2,080	-
2d.1.3.9	RC1/RC3	-	5	0	0	0	0	-	1	6	6	-	-	14	1	-	-	-	583	73	-
2d.1.3.10	RC7	-	90	8	9	15	18	-	32	172	172	-	-	797	266	-	-	-	47,464	1,323	-
2d.1.3.11	RCA	-	53	5	4	1	12	-	17	92	92	-	-	77	170	-	-	-	12,751	829	-
2d.1.3.12	RCB	-	79	4	4	7	9	-	24	128	128	-	-	374	137	-	-	-	22,891	1,211	-
2d.1.3.13	RCD	-	397	23	28	61	45	-	126	680	680	-	-	3,212	659	-	-	-	167,841	6,084	-
2d.1.3.14	RCG	-	76	9	10	15	22	-	29	161	161	-	-	761	322	-	-	-	49,171	1,207	-
2d.1.3.15	RCJ	-	83	4	5	9	9	-	25	135	135	-	-	468	129	-	-	-	26,309	1,281	-
2d.1.3.16	RCM	-	123	12	13	19	29	-	44	239	239	-	-	987	425	-	-	-	64,171	1,941	-
2d.1.3.17	RCN	-	272	17	17	29	36	-	86	456	456	-	-	1,510	517	-	-	-	90,705	4,175	-
2d.1.3.18	RCS	-	98	20	18	7	56	-	44	243	243	-	-	342	814	-	-	-	60,078	1,557	-
2d.1.3.19	RCT	-	63	4	4	6	9	-	20	107	107	-	-	306	137	-	-	-	20,185	977	-
2d.1.3.20	RD8	-	98	77	74	24	225	-	103	601	601	-	-	1,250	3,286	-	-	-	236,914	1,680	-
2d.1.3.21	RDM	-	54	3	2	4	5	-	16	83	83	-	-	186	71	-	-	-	11,617	806	-
2d.1.3.22	REC	-	244	11	14	30	23	-	74	396	396	-	-	1,571	331	-	-	-	82,567	3,681	-
2d.1.3.23	REF	-	113	28	24	8	75	-	54	302	302	-	-	422	1,086	-	-	-	78,740	1,775	-
2d.1.3.24	REH/REI	-	136	7	9	21	15	-	43	230	230	-	-	1,078	212	-	-	-	55,804	2,109	-
2d.1.3.25	REL	-	241	25	28	44	59	-	88	486	486	-	-	2,281	866	-	-	-	141,749	3,766	-

Table C
Oyster Creek Nuclear Generating Station
DECON Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Reactor Building System Components (continued)																					
2d.1.3.26	REM	-	64	3	4	8	6	-	20	105	105	-	-	439	85	-	-	-	22,669	994	-
2d.1.3.27	REO	-	138	27	27	15	77	-	63	346	346	-	-	773	1,121	-	-	-	94,897	2,207	-
2d.1.3.28	REQ	-	190	20	18	15	49	-	67	359	359	-	-	774	717	-	-	-	72,168	2,993	-
2d.1.3.29	RER	28	64	6	5	2	16	-	36	158	158	-	-	94	238	-	-	-	17,349	1,350	-
2d.1.3.30	RET	18	48	2	2	3	3	-	23	99	99	-	-	147	50	-	-	-	8,803	1,062	-
2d.1.3.31	REW	-	32	1	1	2	1	-	9	46	46	-	-	129	15	-	-	-	6,094	498	-
2d.1.3.32	REX	-	35	1	1	3	1	-	10	51	51	-	-	147	16	-	-	-	6,875	550	-
2d.1.3.33	REY	-	40	2	2	2	5	-	12	63	63	-	-	107	73	-	-	-	8,463	619	-
2d.1.3.34	RFB	-	180	10	12	25	19	-	56	303	303	-	-	1,295	283	-	-	-	68,684	2,813	-
2d.1.3.35	RFC	39	119	15	11	4	33	-	62	283	283	-	-	185	483	-	-	-	35,025	2,413	-
2d.1.3.36	RFF	-	126	6	7	14	12	-	38	202	202	-	-	728	169	-	-	-	39,127	1,945	-
2d.1.3.37	RFH	-	171	32	26	7	79	-	71	386	386	-	-	386	1,156	-	-	-	81,383	2,669	-
2d.1.3.38	RFJ	-	149	29	25	7	77	-	64	352	352	-	-	386	1,128	-	-	-	79,658	2,339	-
2d.1.3.39	RFL	-	96	3	4	13	3	-	28	147	147	-	-	702	45	-	-	-	31,087	1,528	-
2d.1.3.40	RFN	-	130	6	7	18	11	-	39	211	211	-	-	942	153	-	-	-	46,967	2,023	-
2d.1.3.41	RFQ	-	189	5	6	15	10	-	53	278	278	-	-	777	142	-	-	-	39,606	2,842	-
2d.1.3.42	RGC	-	100	3	4	11	5	-	29	152	152	-	-	580	75	-	-	-	27,852	1,562	-
2d.1.3.43	RGD	-	282	41	45	49	110	-	116	642	642	-	-	2,567	1,600	-	-	-	194,860	4,497	-
2d.1.3.44	RGI	-	60	1	2	7	2	-	17	90	90	-	-	388	23	-	-	-	17,054	956	-
2d.1.3.45	RGL	-	70	3	4	9	5	-	21	112	112	-	-	474	71	-	-	-	23,263	1,105	-
2d.1.3.46	RGP	-	32	1	1	4	1	-	9	48	48	-	-	221	14	-	-	-	9,781	495	-
2d.1.3.47	RGR	-	214	10	12	24	21	-	65	346	346	-	-	1,278	306	-	-	-	69,247	3,298	-
2d.1.3.48	RGU	-	96	2	3	9	4	-	27	142	142	-	-	473	63	-	-	-	22,804	1,504	-
2d.1.3.49	RH1	-	57	2	2	5	3	-	16	86	86	-	-	280	51	-	-	-	14,241	877	-
2d.1.3.50	RH2	-	42	3	4	8	6	-	14	77	77	-	-	441	94	-	-	-	23,218	659	-
2d.1.3.51	RH3 / RH4 / RH6	-	142	5	5	8	9	-	40	210	210	-	-	444	130	-	-	-	25,468	2,168	-
2d.1.3.52	RHA	14	32	2	2	1	6	-	17	74	74	-	-	41	93	-	-	-	6,930	703	-
2d.1.3.53	RHJ	-	51	1	2	5	3	-	14	75	75	-	-	239	37	-	-	-	11,796	788	-
2d.1.3.54	RHL	-	33	1	1	2	2	-	9	48	48	-	-	92	25	-	-	-	5,176	498	-
2d.1.3.55	RHX	-	61	3	3	7	5	-	18	97	97	-	-	349	79	-	-	-	18,642	934	-
2d.1.3.56	RHY	-	55	1	2	7	2	-	16	82	82	-	-	343	23	-	-	-	15,246	863	-
2d.1.3.57	RMCC	-	98	6	7	15	13	-	32	170	170	-	-	771	187	-	-	-	41,956	1,476	-
2d.1.3	Totals	99	7,184	650	702	980	1,571	-	2,556	13,742	13,742	-	-	51,322	22,900	-	-	-	3,382,757	113,936	-
Miscellaneous System Components																					
2d.1.8.1	GAA / GCA	-	23	-	-	-	-	-	3	26	-	-	26	-	-	-	-	-	-	368	-
2d.1.8	Totals	-	23	-	-	-	-	-	3	26	-	-	26	-	-	-	-	-	-	368	-
Decontamination of Site Buildings																					
2d.1.9.1	Reactor Building 91ft - Decon	38	251	30	46	-	68	-	109	542	542	-	-	-	1,267	-	-	-	111,534	4,179	-
2d.1.9	Totals	38	251	30	46	-	68	-	109	542	542	-	-	-	1,267	-	-	-	111,534	4,179	-
2d.1.10	Scaffolding in support of decommissioning	-	269	7	2	6	2	-	70	355	355	-	-	264	28	-	-	-	13,475	4,828	-
2d.1	Subtotal Period 2d Activity Costs	1,494	8,815	1,213	1,294	1,110	3,340	-	4,266	21,532	21,506	-	26	58,127	48,944	-	-	-	5,177,526	144,759	-
Period 2d Additional Costs																					
2d.2.1	License Termination Survey Planning	-	-	-	-	-	-	1,948	584	2,532	2,532	-	-	-	-	-	-	-	-	-	12,480
2d.2	Subtotal Period 2d Additional Costs	-	-	-	-	-	-	1,948	584	2,532	2,532	-	-	-	-	-	-	-	-	-	12,480

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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2d Collateral Costs																					
2d.3.1	Process decommissioning water waste	63	-	29	79	-	144	-	82	397	397	-	-	-	420	-	-	-	25,229	82	-
2d.3.2	Process decommissioning chemical flush waste	4	-	116	429	-	1,041	-	338	1,927	1,927	-	-	-	1,718	-	-	-	183,018	321	-
2d.3.3	Small tool allowance	-	168	-	-	-	-	-	25	193	193	-	-	-	-	-	-	-	-	-	-
2d.3.4	Decommissioning Equipment Disposition	-	-	155	49	127	44	-	53	427	427	-	-	6,000	635	-	-	-	305,961	88	-
2d.3	Subtotal Period 2d Collateral Costs	66	168	300	557	127	1,228	-	498	2,945	2,945	-	-	6,000	2,773	-	-	-	514,208	492	-
Period 2d Period-Dependent Costs																					
2d.4.1	Decon supplies	110	-	-	-	-	-	-	28	138	138	-	-	-	-	-	-	-	-	-	-
2d.4.2	Insurance	-	-	-	-	-	-	566	57	622	622	-	-	-	-	-	-	-	-	-	-
2d.4.3	Property taxes	-	-	-	-	-	-	986	99	1,084	1,084	-	-	-	-	-	-	-	-	-	-
2d.4.4	Health physics supplies	-	1,051	-	-	-	-	-	263	1,314	1,314	-	-	-	-	-	-	-	-	-	-
2d.4.5	Heavy equipment rental	-	1,966	-	-	-	-	-	295	2,261	2,261	-	-	-	-	-	-	-	-	-	-
2d.4.6	Disposal of DAW generated	-	-	71	50	-	175	-	58	355	355	-	-	-	3,067	-	-	-	61,346	100	-
2d.4.7	Plant energy budget	-	-	-	-	-	-	757	114	870	870	-	-	-	-	-	-	-	-	-	-
2d.4.8	NRC Fees	-	-	-	-	-	-	707	71	778	778	-	-	-	-	-	-	-	-	-	-
2d.4.9	Site O&M Costs	-	-	-	-	-	-	305	46	351	351	-	-	-	-	-	-	-	-	-	-
2d.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	382	57	440	440	-	-	-	-	-	-	-	-	-	-
2d.4.11	ISFSI Operating Costs	-	-	-	-	-	-	88	13	101	-	101	-	-	-	-	-	-	-	-	-
2d.4.12	Security Staff Cost	-	-	-	-	-	-	3,793	569	4,363	4,363	-	-	-	-	-	-	-	-	-	68,400
2d.4.13	DOC Staff Cost	-	-	-	-	-	-	8,929	1,339	10,268	10,268	-	-	-	-	-	-	-	-	-	102,857
2d.4.14	Utility Staff Cost	-	-	-	-	-	-	16,312	2,447	18,759	18,759	-	-	-	-	-	-	-	-	-	196,457
2d.4	Subtotal Period 2d Period-Dependent Costs	110	3,017	71	50	-	175	32,826	5,455	41,704	41,603	101	-	-	3,067	-	-	-	61,346	100	367,714
2d.0	TOTAL PERIOD 2d COST	1,671	12,000	1,583	1,901	1,237	4,744	34,773	10,803	68,713	68,585	101	26	64,127	54,784	-	-	-	5,753,080	145,351	380,194
PERIOD 2f - License Termination																					
Period 2f Direct Decommissioning Activities																					
2f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	161	48	210	210	-	-	-	-	-	-	-	-	-	-
2f.1.2	Terminate license									a											
2f.1	Subtotal Period 2f Activity Costs	-	-	-	-	-	-	161	48	210	210	-	-	-	-	-	-	-	-	-	-
Period 2f Additional Costs																					
2f.2.1	License Termination Survey	-	-	-	-	-	-	8,201	2,460	10,661	10,661	-	-	-	-	-	-	-	-	118,801	6,240
2f.2	Subtotal Period 2f Additional Costs	-	-	-	-	-	-	8,201	2,460	10,661	10,661	-	-	-	-	-	-	-	-	118,801	6,240
Period 2f Collateral Costs																					
2f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,124	169	1,292	1,292	-	-	-	-	-	-	-	-	-	-
2f.3	Subtotal Period 2f Collateral Costs	-	-	-	-	-	-	1,124	169	1,292	1,292	-	-	-	-	-	-	-	-	-	-
Period 2f Period-Dependent Costs																					
2f.4.1	Insurance	-	-	-	-	-	-	432	43	475	475	-	-	-	-	-	-	-	-	-	-
2f.4.2	Property taxes	-	-	-	-	-	-	753	75	828	828	-	-	-	-	-	-	-	-	-	-
2f.4.3	Health physics supplies	-	805	-	-	-	-	-	201	1,006	1,006	-	-	-	-	-	-	-	-	-	-
2f.4.4	Disposal of DAW generated	-	-	8	6	-	20	-	7	41	41	-	-	-	355	-	-	-	7,097	12	-
2f.4.5	Plant energy budget	-	-	-	-	-	-	289	43	332	332	-	-	-	-	-	-	-	-	-	-
2f.4.6	NRC Fees	-	-	-	-	-	-	579	58	637	637	-	-	-	-	-	-	-	-	-	-
2f.4.7	Site O&M Costs	-	-	-	-	-	-	233	35	268	268	-	-	-	-	-	-	-	-	-	-
2f.4.8	ISFSI Operating Costs	-	-	-	-	-	-	67	10	78	-	78	-	-	-	-	-	-	-	-	-
2f.4.9	Security Staff Cost	-	-	-	-	-	-	2,836	425	3,262	3,262	-	-	-	-	-	-	-	-	-	51,071

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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2f Period-Dependent Costs (continued)																					
2f.4.10	DOC Staff Cost	-	-	-	-	-	-	5,156	773	5,929	5,929	-	-	-	-	-	-	-	-	-	57,357
2f.4.11	Utility Staff Cost	-	-	-	-	-	-	7,221	1,083	8,304	8,304	-	-	-	-	-	-	-	-	-	80,929
2f.4	Subtotal Period 2f Period-Dependent Costs	-	805	8	6	-	20	17,567	2,755	21,160	21,083	78	-	-	355	-	-	-	7,097	12	189,357
2f.0	TOTAL PERIOD 2f COST	-	805	8	6	-	20	27,053	5,432	33,324	33,246	78	-	-	355	-	-	-	7,097	118,812	195,597
PERIOD 2 TOTALS		12,162	69,886	18,796	12,799	7,960	34,399	301,763	91,353	549,119	492,518	54,555	2,046	401,099	337,822	918	918	-	40,832,640	942,880	2,867,465
PERIOD 3b - Site Restoration																					
Period 3b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
3b.1.1.1	Stack/Exhaust Tunnels - Remove & Decon	-	1,038	-	-	-	-	-	156	1,193	-	-	1,193	-	-	-	-	-	-	1,911	-
3b.1.1.2	Administration Building	-	506	-	-	-	-	-	76	582	-	-	582	-	-	-	-	-	-	6,477	-
3b.1.1.3	Augmented Off Gas Building	-	338	-	-	-	-	-	51	388	-	-	388	-	-	-	-	-	-	3,399	-
3b.1.1.4	Chlorination Building	-	32	-	-	-	-	-	5	36	-	-	36	-	-	-	-	-	-	407	-
3b.1.1.5	Diesel Generator Building	-	137	-	-	-	-	-	21	157	-	-	157	-	-	-	-	-	-	1,268	-
3b.1.1.6	Dilution Structure	-	178	-	-	-	-	-	27	205	-	-	205	-	-	-	-	-	-	1,758	-
3b.1.1.7	Domestic Water Facility	-	11	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	147	-
3b.1.1.8	Fire Pump House	-	4	-	-	-	-	-	1	5	-	-	5	-	-	-	-	-	-	54	-
3b.1.1.9	Fresh Water Pump House	-	22	-	-	-	-	-	3	26	-	-	26	-	-	-	-	-	-	293	-
3b.1.1.10	Heating Boiler House	-	41	-	-	-	-	-	6	48	-	-	48	-	-	-	-	-	-	546	-
3b.1.1.11	Intake Structure	-	632	-	-	-	-	-	95	727	-	-	727	-	-	-	-	-	-	6,322	-
3b.1.1.12	Low Level Radwaste Storage	-	444	-	-	-	-	-	67	511	-	-	511	-	-	-	-	-	-	5,435	-
3b.1.1.13	Machine Shop	-	226	-	-	-	-	-	34	260	-	-	260	-	-	-	-	-	-	2,858	-
3b.1.1.14	Main Gate Security	-	101	-	-	-	-	-	15	116	-	-	116	-	-	-	-	-	-	1,059	-
3b.1.1.15	Maintenance Building	-	326	-	-	-	-	-	49	375	-	-	375	-	-	-	-	-	-	4,274	-
3b.1.1.16	Materials Warehouse	-	879	-	-	-	-	-	132	1,011	-	-	1,011	-	-	-	-	-	-	8,908	-
3b.1.1.17	Miscellaneous Structures	-	617	-	-	-	-	-	93	710	-	-	710	-	-	-	-	-	-	6,565	-
3b.1.1.18	New Radwaste Building	-	745	-	-	-	-	-	112	857	-	-	857	-	-	-	-	-	-	8,009	-
3b.1.1.19	New Sample Pump House	-	9	-	-	-	-	-	1	11	-	-	11	-	-	-	-	-	-	128	-
3b.1.1.20	Office Building	-	374	-	-	-	-	-	56	430	-	-	430	-	-	-	-	-	-	4,459	-
3b.1.1.21	Old Radwaste Building	-	680	-	-	-	-	-	102	782	-	-	782	-	-	-	-	-	-	6,852	-
3b.1.1.22	Plant Engineering	-	170	-	-	-	-	-	25	195	-	-	195	-	-	-	-	-	-	1,784	-
3b.1.1.23	Pretreatment Building	-	31	-	-	-	-	-	5	35	-	-	35	-	-	-	-	-	-	420	-
3b.1.1.24	Reactor Building	-	6,127	-	-	-	-	-	919	7,046	-	-	7,046	-	-	-	-	-	-	61,454	-
3b.1.1.25	Sample Pool	-	15	-	-	-	-	-	2	18	-	-	18	-	-	-	-	-	-	180	-
3b.1.1.26	Security Modifications	-	1,256	-	-	-	-	-	188	1,444	-	-	1,444	-	-	-	-	-	-	10,330	-
3b.1.1.27	Site Emergency Building	-	316	-	-	-	-	-	47	363	-	-	363	-	-	-	-	-	-	3,285	-
3b.1.1.28	Tank Pads & Misc. Yard	-	772	-	-	-	-	-	116	887	-	-	887	-	-	-	-	-	-	8,326	-
3b.1.1.29	Turbine Building	-	4,209	-	-	-	-	-	631	4,840	-	-	4,840	-	-	-	-	-	-	41,424	-
3b.1.1.30	Turbine Pedestal	-	574	-	-	-	-	-	86	660	-	-	660	-	-	-	-	-	-	5,050	-
3b.1.1	Totals	-	20,808	-	-	-	-	-	3,121	23,929	-	-	23,929	-	-	-	-	-	-	203,381	-
Site Closeout Activities																					
3b.1.2	Remove Rubble	-	798	-	-	-	-	-	120	917	-	-	917	-	-	-	-	-	-	4,211	-
3b.1.3	Grade & landscape site	-	634	-	-	-	-	-	95	729	-	-	729	-	-	-	-	-	-	1,304	-
3b.1.4	Final report to NRC	-	-	-	-	-	-	187	28	215	215	-	-	-	-	-	-	-	-	-	1,560
3b.1	Subtotal Period 3b Activity Costs	-	22,240	-	-	-	-	187	3,364	25,790	215	-	25,576	-	-	-	-	-	-	208,896	1,560

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															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 3b Additional Costs																					
3b.2.1	Concrete Crushing	-	756	-	-	-	-	9	115	880	-	-	880	-	-	-	-	-	-	3,219	-
3b.2.2	Install Cofferdams - Intake & Dilution	-	975	-	-	-	-	-	146	1,122	-	-	1,122	-	-	-	-	-	-	8,296	-
3b.2	Subtotal Period 3b Additional Costs	-	1,732	-	-	-	-	9	261	2,002	-	-	2,002	-	-	-	-	-	-	11,516	-
Period 3b Collateral Costs																					
3b.3.1	Small tool allowance	-	264	-	-	-	-	-	40	304	-	-	304	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	-	264	-	-	-	-	-	40	304	-	-	304	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Insurance	-	-	-	-	-	-	891	89	980	-	980	-	-	-	-	-	-	-	-	-
3b.4.2	Property taxes	-	-	-	-	-	-	1,552	155	1,708	-	1,708	-	-	-	-	-	-	-	-	-
3b.4.3	Heavy equipment rental	-	4,438	-	-	-	-	-	666	5,104	-	-	5,104	-	-	-	-	-	-	-	-
3b.4.4	Plant energy budget	-	-	-	-	-	-	298	45	343	-	-	343	-	-	-	-	-	-	-	-
3b.4.5	NRC ISFSI Fees	-	-	-	-	-	-	334	33	368	-	368	-	-	-	-	-	-	-	-	-
3b.4.6	ISFSI Operating Costs	-	-	-	-	-	-	139	21	160	-	160	-	-	-	-	-	-	-	-	-
3b.4.7	Site O&M Cost	-	-	-	-	-	-	480	72	552	-	-	552	-	-	-	-	-	-	-	-
3b.4.8	Security Staff Cost	-	-	-	-	-	-	5,848	877	6,725	0	5,649	1,076	-	-	-	-	-	-	-	105,300
3b.4.9	DOC Staff Cost	-	-	-	-	-	-	10,204	1,531	11,735	-	-	11,735	-	-	-	-	-	-	-	110,160
3b.4.10	Utility Staff Cost	-	-	-	-	-	-	7,702	1,155	8,857	0	1,949	6,909	-	-	-	-	-	-	-	88,290
3b.4	Subtotal Period 3b Period-Dependent Costs	-	4,438	-	-	-	-	27,449	4,644	36,531	0	10,813	25,718	-	-	-	-	-	-	-	303,750
3b.0	TOTAL PERIOD 3b COST	-	28,674	-	-	-	-	27,644	8,309	64,627	215	10,813	53,600	-	-	-	-	-	-	220,412	305,310
PERIOD 3c - Fuel Storage Operations/Shipping																					
Period 3c Direct Decommissioning Activities																					
Period 3c Collateral Costs																					
3c.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	9,500	1,425	10,925	-	10,925	-	-	-	-	-	-	-	-	-
3c.3	Subtotal Period 3c Collateral Costs	-	-	-	-	-	-	9,500	1,425	10,925	-	10,925	-	-	-	-	-	-	-	-	-
Period 3c Period-Dependent Costs																					
3c.4.1	Insurance	-	-	-	-	-	-	4,691	469	5,160	-	5,160	-	-	-	-	-	-	-	-	-
3c.4.2	Property taxes	-	-	-	-	-	-	8,175	818	8,993	-	8,993	-	-	-	-	-	-	-	-	-
3c.4.4	NRC ISFSI Fees	-	-	-	-	-	-	2,432	243	2,675	-	2,675	-	-	-	-	-	-	-	-	-
3c.4.5	ISFSI Operating Costs	-	-	-	-	-	-	732	110	842	-	842	-	-	-	-	-	-	-	-	-
3c.4.6	Security Staff Cost	-	-	-	-	-	-	25,904	3,886	29,790	-	29,790	-	-	-	-	-	-	-	-	460,697
3c.4.7	Utility Staff Cost	-	-	-	-	-	-	9,385	1,408	10,793	-	10,793	-	-	-	-	-	-	-	-	115,174
3c.4	Subtotal Period 3c Period-Dependent Costs	-	-	-	-	-	-	51,319	6,933	58,252	-	58,252	-	-	-	-	-	-	-	-	575,871
3c.0	TOTAL PERIOD 3c COST	-	-	-	-	-	-	60,819	8,358	69,177	-	69,177	-	-	-	-	-	-	-	-	575,871
PERIOD 3d - GTCC shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d.1.1.1	Vessel & Internals GTCC Disposal	-	-	500	-	-	4,450	-	717	5,667	5,667	-	-	-	-	-	-	1,428	282,300	-	-
3d.1.1	Totals	-	-	500	-	-	4,450	-	717	5,667	5,667	-	-	-	-	-	-	1,428	282,300	-	-
3d.1	Subtotal Period 3d Activity Costs	-	-	500	-	-	4,450	-	717	5,667	5,667	-	-	-	-	-	-	1,428	282,300	-	-

Table C
Oyster Creek Nuclear Generating Station
DECON Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 3d Period-Dependent Costs																					
3d.4.1	Insurance	-	-	-	-	-	-	22	2	24	-	24	-	-	-	-	-	-	-	-	-
3d.4.2	Property taxes	-	-	-	-	-	-	38	4	42	-	42	-	-	-	-	-	-	-	-	-
3d.4.4	ISFSI Operating Costs	-	-	-	-	-	-	3	1	4	-	4	-	-	-	-	-	-	-	-	-
3d.4.5	Security Staff Cost	-	-	-	-	-	-	121	18	140	-	140	-	-	-	-	-	-	-	-	2,160
3d.4.6	Utility Staff Cost	-	-	-	-	-	-	44	7	51	-	51	-	-	-	-	-	-	-	-	540
3d.4	Subtotal Period 3d Period-Dependent Costs	-	-	-	-	-	-	229	31	261	-	261	-	-	-	-	-	-	-	-	2,700
3d.0	TOTAL PERIOD 3d COST	-	-	500	-	-	4,450	229	749	5,928	5,667	261	-	-	-	-	-	1,428	282,300	-	2,700
PERIOD 3e - ISFSI Decontamination																					
Period 3e Direct Decommissioning Activities																					
Period 3e Additional Costs																					
3e.2.1	ISFSI License Termination	-	2,690	-	-	-	1,587	1,411	1,281	6,969	-	6,969	-	-	19,521	-	-	-	2,578,520	-	-
3e.2.2	ISFSI License Termination - Cascading Costs	-	1,517	-	-	-	-	536	308	2,362	-	2,362	-	-	-	-	-	-	-	-	-
3e.2	Subtotal Period 3e Additional Costs	-	4,207	-	-	-	1,587	1,947	1,589	9,330	-	9,330	-	-	19,521	-	-	-	2,578,520	-	-
Period 3e Collateral Costs																					
3e.3.1	Small tool allowance	-	54	-	-	-	-	-	8	63	-	63	-	-	-	-	-	-	-	-	-
3e.3	Subtotal Period 3e Collateral Costs	-	54	-	-	-	-	-	8	63	-	63	-	-	-	-	-	-	-	-	-
Period 3e Period-Dependent Costs																					
3e.4.1	Insurance	-	-	-	-	-	-	652	65	717	-	717	-	-	-	-	-	-	-	-	-
3e.4.2	Property taxes	-	-	-	-	-	-	1,136	114	1,250	-	1,250	-	-	-	-	-	-	-	-	-
3e.4.4	Security Staff Cost	-	-	-	-	-	-	966	145	1,111	-	1,111	-	-	-	-	-	-	-	-	17,193
3e.4.5	Utility Staff Cost	-	-	-	-	-	-	1,091	164	1,255	-	1,255	-	-	-	-	-	-	-	-	13,043
3e.4	Subtotal Period 3e Period-Dependent Costs	-	-	-	-	-	-	3,845	487	4,333	-	4,333	-	-	-	-	-	-	-	-	30,236
3e.0	TOTAL PERIOD 3e COST	-	4,262	-	-	-	1,587	5,792	2,084	13,726	-	13,726	-	-	19,521	-	-	-	2,578,520	-	30,236
PERIOD 3f - ISFSI Site Restoration																					
Period 3f Direct Decommissioning Activities																					
Period 3f Additional Costs																					
3f.2.1	ISFSI Site Restoration	-	144	-	-	-	-	6	22	172	-	172	-	-	-	-	-	-	-	-	-
3f.2	Subtotal Period 3f Additional Costs	-	144	-	-	-	-	6	22	172	-	172	-	-	-	-	-	-	-	-	-
Period 3f Collateral Costs																					
3f.3.1	Small tool allowance	-	1	-	-	-	-	-	0	1	-	1	-	-	-	-	-	-	-	-	-
3f.3	Subtotal Period 3f Collateral Costs	-	1	-	-	-	-	-	0	1	-	1	-	-	-	-	-	-	-	-	-
Period 3f Period-Dependent Costs																					
3f.4.2	Property taxes	-	-	-	-	-	-	36	4	39	-	39	-	-	-	-	-	-	-	-	-
3f.4.4	Security Staff Cost	-	-	-	-	-	-	30	5	35	-	35	-	-	-	-	-	-	-	-	539
3f.4.5	Utility Staff Cost	-	-	-	-	-	-	28	4	32	-	32	-	-	-	-	-	-	-	-	334
3f.4	Subtotal Period 3f Period-Dependent Costs	-	-	-	-	-	-	94	12	106	-	106	-	-	-	-	-	-	-	-	873
3f.0	TOTAL PERIOD 3f COST	-	144	-	-	-	-	100	35	279	-	279	-	-	-	-	-	-	-	-	873

Table C
Oyster Creek Nuclear Generating Station
DECON Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
PERIOD 3 TOTALS		-	33,080	500	-	-	6,037	94,585	19,535	153,737	5,882	94,255	53,600	-	19,521	-	-	1,428	2,860,820	220,412	914,990
TOTAL COST TO DECOMMISSION		15,771	118,554	19,453	14,957	8,717	49,198	533,821	139,240	899,710	665,975	177,146	56,589	401,427	406,975	2,413	918	1,428	47,736,400	1,342,127	4,845,585

TOTAL COST TO DECOMMISSION WITH 18.31% CONTINGENCY:	**$899,710**	**thousands of 2011 dollars**
TOTAL NRC LICENSE TERMINATION COST IS 74.02% OR:	**$665,975**	**thousands of 2011 dollars**
SPENT FUEL MANAGEMENT COST IS 19.69% OR:	**$177,146**	**thousands of 2011 dollars**
NON-NUCLEAR DEMOLITION COST IS 6.29% OR:	**$56,589**	**thousands of 2011 dollars**
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	**410,307**	**cubic feet**
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	**1,428**	**cubic feet**
TOTAL SCRAP METAL REMOVED:	**24,334**	**tons**
TOTAL CRAFT LABOR REQUIREMENTS:	**1,342,127**	**man-hours**

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

APPENDIX D

DETAILED COST ANALYSIS

DELAYED DECON

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	SAFSTOR site characterization survey	-	-	-	-	-	-	434	130	564	564	-	-	-	-	-	-	-	-	-	-
1a.1.2	Prepare preliminary decommissioning cost	-	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-	-	-	-	1,300
1a.1.3	Notification of Cessation of Operations									a											
1a.1.4	Remove fuel & source material									n/a											
1a.1.5	Notification of Permanent Defueling									a											
1a.1.6	Deactivate plant systems & process waste									a											
1a.1.7	Prepare and submit PSDAR	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
1a.1.8	Review plant dwgs & specs.	-	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-	-	-	-	1,300
1a.1.9	Perform detailed rad survey									a											
1a.1.10	Estimate by-product inventory	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	End product description	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1a.1.12	Detailed by-product inventory	-	-	-	-	-	-	179	27	206	206	-	-	-	-	-	-	-	-	-	1,500
1a.1.13	Define major work sequence	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1a.1.14	Perform SER and EA	-	-	-	-	-	-	371	56	427	427	-	-	-	-	-	-	-	-	-	3,100
1a.1.15	Perform Site-Specific Cost Study	-	-	-	-	-	-	598	90	688	688	-	-	-	-	-	-	-	-	-	5,000
Activity Specifications																					
1a.1.16.1	Prepare plant and facilities for SAFSTOR	-	-	-	-	-	-	589	88	677	677	-	-	-	-	-	-	-	-	-	4,920
1a.1.16.2	Plant systems	-	-	-	-	-	-	499	75	573	573	-	-	-	-	-	-	-	-	-	4,167
1a.1.16.3	Plant structures and buildings	-	-	-	-	-	-	373	56	429	429	-	-	-	-	-	-	-	-	-	3,120
1a.1.16.4	Waste management	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
1a.1.16.5	Facility and site dormancy	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
1a.1.16	Total	-	-	-	-	-	-	1,939	291	2,230	2,230	-	-	-	-	-	-	-	-	-	16,207
Detailed Work Procedures																					
1a.1.17.1	Plant systems	-	-	-	-	-	-	142	21	163	163	-	-	-	-	-	-	-	-	-	1,183
1a.1.17.2	Facility closeout & dormancy	-	-	-	-	-	-	144	22	165	165	-	-	-	-	-	-	-	-	-	1,200
1a.1.17	Total	-	-	-	-	-	-	285	43	328	328	-	-	-	-	-	-	-	-	-	2,383
1a.1.18	Procure vacuum drying system	-	-	-	-	-	-	12	2	14	14	-	-	-	-	-	-	-	-	-	100
1a.1.19	Drain/de-energize non-cont. systems									a											
1a.1.20	Drain & dry NSSS									a											
1a.1.21	Drain/de-energize contaminated systems									a											
1a.1.22	Decon/secure contaminated systems									a											
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	4,728	774	5,503	5,503	-	-	-	-	-	-	-	-	-	35,890
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	2,227	223	2,450	2,450	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	469	-	-	-	-	-	117	586	586	-	-	-	-	-	-	-	-	-	-
1a.4.4	Heavy equipment rental	-	462	-	-	-	-	-	69	531	531	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	14	10	-	35	-	12	70	70	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,918	288	2,206	2,206	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	769	77	846	846	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	564	56	621	-	621	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M Costs	-	-	-	-	-	-	309	46	355	355	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 1a Period-Dependent Costs (continued)																					
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	89	13	103	-	103	-	-	-	-	-	-	-	-	-
1a.4.12	Security Staff Cost	-	-	-	-	-	-	8,441	1,266	9,707	9,707	-	-	-	-	-	-	-	-	-	157,471
1a.4.13	Utility Staff Cost	-	-	-	-	-	-	33,041	4,956	37,997	37,997	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	931	14	10	-	35	48,122	7,238	56,350	54,749	1,601	-	-	610	-	-	-	12,190	20	580,871
1a.0	TOTAL PERIOD 1a COST	-	931	14	10	-	35	52,851	8,013	61,853	60,252	1,601	-	-	610	-	-	-	12,190	20	616,761
PERIOD 1b - SAFSTOR Limited DECON Activities																					
Period 1b Direct Decommissioning Activities																					
Decontamination of Site Buildings																					
1b.1.1.1	New Radwaste Building - Systems Removal	0	-	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	1	-
1b.1.1.2	Old Radwaste Building - Systems Removal	0	-	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	1	-
1b.1.1.3	Augmented Off Gas - Decon	2	-	-	-	-	-	-	1	3	3	-	-	-	-	-	-	-	-	33	-
1b.1.1.4	Stack/Exhaust Tunnels - Remove & Decon	54	-	-	-	-	-	-	27	81	81	-	-	-	-	-	-	-	-	849	-
1b.1.1.5	Turbine Building 0ft - Decon	10	-	-	-	-	-	-	5	15	15	-	-	-	-	-	-	-	-	137	-
1b.1.1.6	Drywell - Liner Removal	2,063	-	-	-	-	-	-	1,031	3,094	3,094	-	-	-	-	-	-	-	-	28,819	-
1b.1.1.7	RB0 - Torus Removal	2,765	-	-	-	-	-	-	1,383	4,148	4,148	-	-	-	-	-	-	-	-	38,634	-
1b.1.1.8	Reactor Building -19ft - Decon	7	-	-	-	-	-	-	3	10	10	-	-	-	-	-	-	-	-	96	-
1b.1.1.9	Reactor Building 119ft - Decon	429	-	-	-	-	-	-	215	644	644	-	-	-	-	-	-	-	-	5,996	-
1b.1.1	Totals	5,330	-	-	-	-	-	-	2,665	7,996	7,996	-	-	-	-	-	-	-	-	74,565	-
1b.1	Subtotal Period 1b Activity Costs	5,330	-	-	-	-	-	-	2,665	7,996	7,996	-	-	-	-	-	-	-	-	74,565	-
Period 1b Additional Costs																					
1b.2.1	Spent fuel pool isolation	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
1b.2	Subtotal Period 1b Additional Costs	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	902	-	-	-	-	-	-	135	1,037	1,037	-	-	-	-	-	-	-	-	-	-
1b.3.2	Process decommissioning water waste	288	-	127	343	-	620	-	363	1,742	1,742	-	-	-	1,817	-	-	-	109,041	354	-
1b.3.4	Small tool allowance	-	100	-	-	-	-	-	15	115	115	-	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	1,190	100	127	343	-	620	-	514	2,894	2,894	-	-	-	1,817	-	-	-	109,041	354	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	1,056	-	-	-	-	-	-	264	1,320	1,320	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	418	42	459	459	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	601	60	661	661	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	442	-	-	-	-	-	111	553	553	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	115	-	-	-	-	-	17	132	132	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	4	3	-	9	-	3	19	19	-	-	-	164	-	-	-	3,277	5	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	478	72	550	550	-	-	-	-	-	-	-	-	-	-
1b.4.8	NRC Fees	-	-	-	-	-	-	192	19	211	211	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	141	14	155	-	155	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M Costs	-	-	-	-	-	-	77	12	89	89	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	190	29	219	-	219	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	22	3	26	-	26	-	-	-	-	-	-	-	-	-
1b.4.13	Security Staff Cost	-	-	-	-	-	-	2,104	316	2,420	2,420	-	-	-	-	-	-	-	-	-	39,260
1b.4.14	Utility Staff Cost	-	-	-	-	-	-	8,238	1,236	9,473	9,473	-	-	-	-	-	-	-	-	-	105,560
1b.4	Subtotal Period 1b Period-Dependent Costs	1,056	558	4	3	-	9	12,461	2,196	16,286	15,887	399	-	-	164	-	-	-	3,277	5	144,820

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
1b.0	TOTAL PERIOD 1b COST	7,576	658	131	346	-	630	22,740	6,917	38,998	38,599	399	-	-	1,981	-	-	-	112,319	74,925	144,820
PERIOD 1c - Preparations for SAFSTOR Dormancy																					
Period 1c Direct Decommissioning Activities																					
1c.1.1	Prepare support equipment for storage	-	489	-	-	-	-	-	73	562	562	-	-	-	-	-	-	-	-	3,000	-
1c.1.2	Install containment pressure equal. lines	-	51	-	-	-	-	-	8	59	59	-	-	-	-	-	-	-	-	700	-
1c.1.3	Interim survey prior to dormancy	-	-	-	-	-	-	733	220	953	953	-	-	-	-	-	-	-	-	12,166	-
1c.1.4	Secure building accesses									a											
1c.1.5	Prepare & submit interim report	-	-	-	-	-	-	70	10	80	80	-	-	-	-	-	-	-	-	-	583
1c.1	Subtotal Period 1c Activity Costs	-	540	-	-	-	-	803	311	1,654	1,654	-	-	-	-	-	-	-	-	15,866	583
Period 1c Collateral Costs																					
1c.3.1	Process decommissioning water waste	238	-	105	284	-	513	-	300	1,440	1,440	-	-	-	1,503	-	-	-	90,169	293	-
1c.3.3	Small tool allowance	-	5	-	-	-	-	-	1	6	6	-	-	-	-	-	-	-	-	-	-
1c.3	Subtotal Period 1c Collateral Costs	238	5	105	284	-	513	-	301	1,446	1,446	-	-	-	1,503	-	-	-	90,169	293	-
Period 1c Period-Dependent Costs																					
1c.4.1	Insurance	-	-	-	-	-	-	418	42	459	459	-	-	-	-	-	-	-	-	-	-
1c.4.2	Property taxes	-	-	-	-	-	-	601	60	661	661	-	-	-	-	-	-	-	-	-	-
1c.4.3	Health physics supplies	-	187	-	-	-	-	-	47	234	234	-	-	-	-	-	-	-	-	-	-
1c.4.4	Heavy equipment rental	-	115	-	-	-	-	-	17	132	132	-	-	-	-	-	-	-	-	-	-
1c.4.5	Disposal of DAW generated	-	-	4	2	-	9	-	3	18	18	-	-	-	152	-	-	-	3,039	5	-
1c.4.6	Plant energy budget	-	-	-	-	-	-	478	72	550	550	-	-	-	-	-	-	-	-	-	-
1c.4.7	NRC Fees	-	-	-	-	-	-	192	19	211	211	-	-	-	-	-	-	-	-	-	-
1c.4.8	Emergency Planning Fees	-	-	-	-	-	-	141	14	155	-	155	-	-	-	-	-	-	-	-	-
1c.4.9	Site O&M Costs	-	-	-	-	-	-	77	12	89	89	-	-	-	-	-	-	-	-	-	-
1c.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	190	29	219	-	219	-	-	-	-	-	-	-	-	-
1c.4.11	ISFSI Operating Costs	-	-	-	-	-	-	22	3	26	-	26	-	-	-	-	-	-	-	-	-
1c.4.12	Security Staff Cost	-	-	-	-	-	-	2,104	316	2,420	2,420	-	-	-	-	-	-	-	-	-	39,260
1c.4.13	Utility Staff Cost	-	-	-	-	-	-	8,238	1,236	9,473	9,473	-	-	-	-	-	-	-	-	-	105,560
1c.4	Subtotal Period 1c Period-Dependent Costs	-	302	4	2	-	9	12,461	1,869	14,646	14,247	399	-	-	152	-	-	-	3,039	5	144,820
1c.0	TOTAL PERIOD 1c COST	238	847	109	286	-	522	13,263	2,481	17,746	17,346	399	-	-	1,655	-	-	-	93,209	16,164	145,403
PERIOD 1 TOTALS		7,813	2,435	254	642	-	1,186	88,855	17,411	118,597	116,197	2,400	-	-	4,246	-	-	-	217,718	91,109	906,985
PERIOD 2a - SAFSTOR Dormancy with Wet Spent Fuel Storage																					
Period 2a Direct Decommissioning Activities																					
2a.1.1	Quarterly Inspection									a											
2a.1.2	Semi-annual environmental survey									a											
2a.1.3	Prepare reports									a											
2a.1.4	Bituminous roof replacement	-	-	-	-	-	-	722	108	830	830	-	-	-	-	-	-	-	-	-	-
2a.1.5	Maintenance supplies	-	-	-	-	-	-	1,992	498	2,490	2,490	-	-	-	-	-	-	-	-	-	-
2a.1	Subtotal Period 2a Activity Costs	-	-	-	-	-	-	2,714	606	3,321	3,321	-	-	-	-	-	-	-	-	-	-
Period 2a Collateral Costs																					
2a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	12,250	1,838	14,088	-	14,088	-	-	-	-	-	-	-	-	-

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
2a.3	Subtotal Period 2a Collateral Costs	-	-	-	-	-	-	12,250	1,838	14,088	-	14,088	-	-	-	-	-	-	-	-	-
Period 2a Period-Dependent Costs																					
2a.4.1	Insurance	-	-	-	-	-	-	9,568	957	10,524	-	10,524	-	-	-	-	-	-	-	-	-
2a.4.2	Property taxes	-	-	-	-	-	-	14,904	1,490	16,395	-	16,395	-	-	-	-	-	-	-	-	-
2a.4.3	Health physics supplies	-	2,778	-	-	-	-	-	694	3,472	3,472	-	-	-	-	-	-	-	-	-	-
2a.4.4	Disposal of DAW generated	-	-	78	55	-	194	-	65	393	393	-	-	-	3,398	-	-	-	67,952	111	-
2a.4.5	Plant energy budget	-	-	-	-	-	-	5,665	850	6,515	-	6,515	-	-	-	-	-	-	-	-	-
2a.4.6	NRC ISFSI Fees	-	-	-	-	-	-	420	42	462	-	462	-	-	-	-	-	-	-	-	-
2a.4.7	NRC Fees	-	-	-	-	-	-	3,254	325	3,580	3,580	-	-	-	-	-	-	-	-	-	-
2a.4.8	Site O&M Costs	-	-	-	-	-	-	4,565	685	5,249	-	5,249	-	-	-	-	-	-	-	-	-
2a.4.9	Spent Fuel Pool O&M	-	-	-	-	-	-	11,270	1,690	12,960	-	12,960	-	-	-	-	-	-	-	-	-
2a.4.10	ISFSI Operating Costs	-	-	-	-	-	-	1,321	198	1,519	-	1,519	-	-	-	-	-	-	-	-	-
2a.4.11	Security Staff Cost	-	-	-	-	-	-	88,917	13,338	102,255	-	102,255	-	-	-	-	-	-	-	-	1,640,100
2a.4.12	Utility Staff Cost	-	-	-	-	-	-	94,837	14,226	109,063	-	109,063	-	-	-	-	-	-	-	-	1,216,600
2a.4	Subtotal Period 2a Period-Dependent Costs	-	2,778	78	55	-	194	234,720	34,560	272,386	7,444	264,941	-	-	3,398	-	-	-	67,952	111	2,856,700
2a.0	TOTAL PERIOD 2a COST	-	2,778	78	55	-	194	249,684	37,004	289,794	10,765	279,029	-	-	3,398	-	-	-	67,952	111	2,856,700
PERIOD 2b - SAFSTOR Dormancy with Dry Spent Fuel Storage																					
Period 2b Direct Decommissioning Activities																					
2b.1.1	Quarterly Inspection									a											
2b.1.2	Semi-annual environmental survey									a											
2b.1.3	Prepare reports									a											
2b.1.4	Bituminous roof replacement	-	-	-	-	-	-	37	5	42	42	-	-	-	-	-	-	-	-	-	-
2b.1.5	Maintenance supplies	-	-	-	-	-	-	101	25	126	126	-	-	-	-	-	-	-	-	-	-
2b.1	Subtotal Period 2b Activity Costs	-	-	-	-	-	-	137	31	168	168	-	-	-	-	-	-	-	-	-	-
Period 2b Collateral Costs																					
2b.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	3,375	506	3,881	-	3,881	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	-	-	-	-	-	-	3,375	506	3,881	-	3,881	-	-	-	-	-	-	-	-	-
Period 2b Period-Dependent Costs																					
2b.4.1	Insurance	-	-	-	-	-	-	429	43	472	-	472	-	-	-	-	-	-	-	-	-
2b.4.2	Property taxes	-	-	-	-	-	-	747	75	822	-	822	-	-	-	-	-	-	-	-	-
2b.4.3	Health physics supplies	-	68	-	-	-	-	-	17	85	85	-	-	-	-	-	-	-	-	-	-
2b.4.4	Disposal of DAW generated	-	-	2	1	-	5	-	2	10	10	-	-	-	83	-	-	-	1,653	3	-
2b.4.5	Plant energy budget	-	-	-	-	-	-	143	22	165	-	165	-	-	-	-	-	-	-	-	-
2b.4.6	NRC ISFSI Fees	-	-	-	-	-	-	139	14	153	-	153	-	-	-	-	-	-	-	-	-
2b.4.7	NRC Fees	-	-	-	-	-	-	165	16	181	181	-	-	-	-	-	-	-	-	-	-
2b.4.8	Site O&M Costs	-	-	-	-	-	-	231	35	266	-	266	-	-	-	-	-	-	-	-	-
2b.4.9	ISFSI Operating Costs	-	-	-	-	-	-	67	10	77	-	77	-	-	-	-	-	-	-	-	-
2b.4.10	Security Staff Cost	-	-	-	-	-	-	2,368	355	2,724	-	2,724	-	-	-	-	-	-	-	-	42,120
2b.4.11	Utility Staff Cost	-	-	-	-	-	-	1,975	296	2,272	-	2,272	-	-	-	-	-	-	-	-	24,960
2b.4	Subtotal Period 2b Period-Dependent Costs	-	68	2	1	-	5	6,266	884	7,227	276	6,950	-	-	83	-	-	-	1,653	3	67,080
2b.0	TOTAL PERIOD 2b COST	-	68	2	1	-	5	9,778	1,421	11,276	444	10,832	-	-	83	-	-	-	1,653	3	67,080
PERIOD 2 TOTALS		-	2,846	80	57	-	199	259,463	38,425	301,070	11,209	289,860	-	-	3,480	-	-	-	69,605	114	2,923,780

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
PERIOD 3a - Reactivate Site Following SAFSTOR Dormancy																					
Period 3a Direct Decommissioning Activities																					
3a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-	-	-	-	1,300
3a.1.2	Review plant dwgs & specs.	-	-	-	-	-	-	550	83	633	633	-	-	-	-	-	-	-	-	-	4,600
3a.1.3	Perform detailed rad survey									a											
3a.1.4	End product description	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
3a.1.5	Detailed by-product inventory	-	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-	-	-	-	1,300
3a.1.6	Define major work sequence	-	-	-	-	-	-	897	135	1,032	1,032	-	-	-	-	-	-	-	-	-	7,500
3a.1.7	Perform SER and EA	-	-	-	-	-	-	371	56	427	427	-	-	-	-	-	-	-	-	-	3,100
3a.1.8	Perform Site-Specific Cost Study	-	-	-	-	-	-	598	90	688	688	-	-	-	-	-	-	-	-	-	5,000
3a.1.9	Prepare/submit License Termination Plan	-	-	-	-	-	-	490	74	564	564	-	-	-	-	-	-	-	-	-	4,096
3a.1.10	Receive NRC approval of termination plan									a											
Activity Specifications																					
3a.1.11.1	Re-activate plant & temporary facilities	-	-	-	-	-	-	882	132	1,014	913	-	101	-	-	-	-	-	-	-	7,370
3a.1.11.2	Plant systems	-	-	-	-	-	-	499	75	573	516	-	57	-	-	-	-	-	-	-	4,167
3a.1.11.3	Reactor internals	-	-	-	-	-	-	850	127	977	977	-	-	-	-	-	-	-	-	-	7,100
3a.1.11.4	Reactor vessel	-	-	-	-	-	-	778	117	894	894	-	-	-	-	-	-	-	-	-	6,500
3a.1.11.5	Sacrificial shield	-	-	-	-	-	-	60	9	69	69	-	-	-	-	-	-	-	-	-	500
3a.1.11.6	Moisture separators/reheaters	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
3a.1.11.7	Reinforced concrete	-	-	-	-	-	-	191	29	220	110	-	110	-	-	-	-	-	-	-	1,600
3a.1.11.8	Main Turbine	-	-	-	-	-	-	250	37	287	287	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.9	Main Condensers	-	-	-	-	-	-	250	37	287	287	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.10	Pressure suppression structure	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
3a.1.11.11	Drywell	-	-	-	-	-	-	191	29	220	220	-	-	-	-	-	-	-	-	-	1,600
3a.1.11.12	Plant structures & buildings	-	-	-	-	-	-	373	56	429	215	-	215	-	-	-	-	-	-	-	3,120
3a.1.11.13	Waste management	-	-	-	-	-	-	550	83	633	633	-	-	-	-	-	-	-	-	-	4,600
3a.1.11.14	Facility & site closeout	-	-	-	-	-	-	108	16	124	62	-	62	-	-	-	-	-	-	-	900
3a.1.11	Total	-	-	-	-	-	-	5,340	801	6,141	5,596	-	545	-	-	-	-	-	-	-	44,633
Planning & Site Preparations																					
3a.1.12	Prepare dismantling sequence	-	-	-	-	-	-	287	43	330	330	-	-	-	-	-	-	-	-	-	2,400
3a.1.13	Plant prep. & temp. svces	-	-	-	-	-	-	2,800	420	3,220	3,220	-	-	-	-	-	-	-	-	-	-
3a.1.14	Design water clean-up system	-	-	-	-	-	-	168	25	193	193	-	-	-	-	-	-	-	-	-	1,400
3a.1.15	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,200	330	2,530	2,530	-	-	-	-	-	-	-	-	-	-
3a.1.16	Procure casks/liners & containers	-	-	-	-	-	-	147	22	169	169	-	-	-	-	-	-	-	-	-	1,230
3a.1	Subtotal Period 3a Activity Costs	-	-	-	-	-	-	14,280	2,142	16,422	15,876	-	545	-	-	-	-	-	-	-	77,559
Period 3a Period-Dependent Costs																					
3a.4.1	Insurance	-	-	-	-	-	-	573	57	631	631	-	-	-	-	-	-	-	-	-	-
3a.4.2	Property taxes	-	-	-	-	-	-	999	100	1,099	1,099	-	-	-	-	-	-	-	-	-	-
3a.4.3	Health physics supplies	-	410	-	-	-	-	-	102	512	512	-	-	-	-	-	-	-	-	-	-
3a.4.4	Heavy equipment rental	-	462	-	-	-	-	-	69	531	531	-	-	-	-	-	-	-	-	-	-
3a.4.5	Disposal of DAW generated	-	-	12	8	-	29	-	10	59	59	-	-	-	514	-	-	-	10,287	17	-
3a.4.6	Plant energy budget	-	-	-	-	-	-	1,918	288	2,206	2,206	-	-	-	-	-	-	-	-	-	-
3a.4.7	NRC Fees	-	-	-	-	-	-	272	27	299	299	-	-	-	-	-	-	-	-	-	-
3a.4.8	Site O&M Costs	-	-	-	-	-	-	309	46	355	355	-	-	-	-	-	-	-	-	-	-
3a.4.9	Security Staff Cost	-	-	-	-	-	-	3,629	544	4,173	4,173	-	-	-	-	-	-	-	-	-	65,179
3a.4.10	Utility Staff Cost	-	-	-	-	-	-	20,498	3,075	23,573	23,573	-	-	-	-	-	-	-	-	-	258,629

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
3a.4	Subtotal Period 3a Period-Dependent Costs	-	872	12	8	-	29	28,199	4,319	33,440	33,440	-	-	-	514	-	-	-	10,287	17	323,807
3a.0	TOTAL PERIOD 3a COST	-	872	12	8	-	29	42,479	6,461	49,861	49,316	-	545	-	514	-	-	-	10,287	17	401,366
PERIOD 3b - Decommissioning Preparations																					
Period 3b Direct Decommissioning Activities																					
Detailed Work Procedures																					
3b.1.1.1	Plant systems	-	-	-	-	-	-	566	85	651	586	-	65	-	-	-	-	-	-	-	4,733
3b.1.1.2	Reactor internals	-	-	-	-	-	-	479	72	550	550	-	-	-	-	-	-	-	-	-	4,000
3b.1.1.3	Remaining buildings	-	-	-	-	-	-	162	24	186	46	-	139	-	-	-	-	-	-	-	1,350
3b.1.1.4	CRD housings & NIs	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.5	Incore instrumentation	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.6	Removal primary containment	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.7	Reactor vessel	-	-	-	-	-	-	434	65	499	499	-	-	-	-	-	-	-	-	-	3,630
3b.1.1.8	Facility closeout	-	-	-	-	-	-	144	22	165	83	-	83	-	-	-	-	-	-	-	1,200
3b.1.1.9	Sacrificial shield	-	-	-	-	-	-	144	22	165	165	-	-	-	-	-	-	-	-	-	1,200
3b.1.1.10	Reinforced concrete	-	-	-	-	-	-	120	18	138	69	-	69	-	-	-	-	-	-	-	1,000
3b.1.1.11	Main Turbine	-	-	-	-	-	-	249	37	286	286	-	-	-	-	-	-	-	-	-	2,080
3b.1.1.12	Main Condensers	-	-	-	-	-	-	250	37	287	287	-	-	-	-	-	-	-	-	-	2,088
3b.1.1.13	Moisture separators & reheaters	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.14	Radwaste building	-	-	-	-	-	-	327	49	376	338	-	38	-	-	-	-	-	-	-	2,730
3b.1.1.15	Reactor building	-	-	-	-	-	-	327	49	376	338	-	38	-	-	-	-	-	-	-	2,730
3b.1.1	Total	-	-	-	-	-	-	3,917	588	4,505	4,074	-	431	-	-	-	-	-	-	-	32,741
3b.1	Subtotal Period 3b Activity Costs	-	-	-	-	-	-	3,917	588	4,505	4,074	-	431	-	-	-	-	-	-	-	32,741
Period 3b Additional Costs																					
3b.2.1	Site Characterization	-	-	-	-	-	-	4,986	1,496	6,482	6,482	-	-	-	-	-	-	-	-	27,140	9,952
3b.2.2	Disposition of Liquid RCRA Waste (not Lead)	-	-	-	17	-	529	-	135	680	680	-	-	-	2,019	-	-	-	115,076	-	-
3b.2.3	Disposition of PCB Soil RCRA Waste (not Lead)	-	-	-	1,362	-	1,450	-	567	3,378	3,378	-	-	-	27,000	-	-	-	3,240,000	-	-
3b.2.4	Disposition of Lead Inventory	-	-	-	26	756	-	-	117	899	899	-	-	328	-	-	-	-	232,673	-	-
3b.2.5	Asbestos Remediation	-	12,217	2	279	-	1,030	-	3,354	16,883	16,883	-	-	-	19,193	-	-	-	249,515	150,230	-
3b.2	Subtotal Period 3b Additional Costs	-	12,217	2	1,684	756	3,009	4,986	5,669	28,323	28,323	-	-	328	48,212	-	-	-	3,837,264	177,370	9,952
Period 3b Collateral Costs																					
3b.3.1	Decon equipment	902	-	-	-	-	-	-	135	1,037	1,037	-	-	-	-	-	-	-	-	-	-
3b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,124	169	1,292	1,292	-	-	-	-	-	-	-	-	-	-
3b.3.3	Small tool allowance	-	184	-	-	-	-	-	28	211	211	-	-	-	-	-	-	-	-	-	-
3b.3.4	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	902	1,284	-	-	-	-	1,124	496	3,806	3,806	-	-	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Decon supplies	28	-	-	-	-	-	-	7	35	35	-	-	-	-	-	-	-	-	-	-
3b.4.2	Insurance	-	-	-	-	-	-	287	29	316	316	-	-	-	-	-	-	-	-	-	-
3b.4.3	Property taxes	-	-	-	-	-	-	501	50	551	551	-	-	-	-	-	-	-	-	-	-
3b.4.4	Health physics supplies	-	879	-	-	-	-	-	220	1,099	1,099	-	-	-	-	-	-	-	-	-	-
3b.4.5	Heavy equipment rental	-	232	-	-	-	-	-	35	266	266	-	-	-	-	-	-	-	-	-	-
3b.4.6	Disposal of DAW generated	-	-	7	5	-	17	-	6	34	34	-	-	-	292	-	-	-	5,834	10	-
3b.4.7	Plant energy budget	-	-	-	-	-	-	962	144	1,106	1,106	-	-	-	-	-	-	-	-	-	-
3b.4.8	NRC Fees	-	-	-	-	-	-	136	14	150	150	-	-	-	-	-	-	-	-	-	-

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 3b Period-Dependent Costs (continued)																					
3b.4.9	Site O&M Costs	-	-	-	-	-	-	155	23	178	178	-	-	-	-	-	-	-	-	-	-
3b.4.10	Security Staff Cost	-	-	-	-	-	-	1,819	273	2,092	2,092	-	-	-	-	-	-	-	-	-	32,679
3b.4.11	DOC Staff Cost	-	-	-	-	-	-	5,076	761	5,838	5,838	-	-	-	-	-	-	-	-	-	58,560
3b.4.12	Utility Staff Cost	-	-	-	-	-	-	10,277	1,542	11,819	11,819	-	-	-	-	-	-	-	-	-	129,669
3b.4	Subtotal Period 3b Period-Dependent Costs	28	1,111	7	5	-	17	19,214	3,103	23,484	23,484	-	-	-	292	-	-	-	5,834	10	220,907
3b.0	TOTAL PERIOD 3b COST	930	14,611	8	1,689	756	3,025	29,242	9,855	60,117	59,686	-	431	328	48,504	-	-	-	3,843,098	177,380	263,600
PERIOD 3 TOTALS		930	15,483	20	1,698	756	3,055	71,721	16,317	109,979	109,002	-	976	328	49,018	-	-	-	3,853,385	177,396	664,966
PERIOD 4a - Large Component Removal																					
Period 4a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
4a.1.1.2	Recirculation Pumps & Motors	10	108	41	136	8	216	-	112	632	632	-	-	107	1,053	-	-	-	196,350	2,156	-
4a.1.1.3	CRDMs & NIs Removal	40	179	523	141	-	137	-	172	1,190	1,190	-	-	-	5,179	-	-	-	112,850	3,338	-
4a.1.1.4	Reactor Vessel Internals	114	2,810	5,441	1,228	-	4,927	213	6,327	21,060	21,060	-	-	-	1,502	1,002	470	-	298,460	22,925	1,049
4a.1.1.5	Vessel & Internals GTCC Disposal	-	-	-	-	-	4,450	-	667	5,117	5,117	-	-	-	-	-	-	1,428	282,300	-	-
4a.1.1.6	Reactor Vessel	87	6,370	1,859	1,718	-	2,333	213	6,913	19,494	19,494	-	-	-	14,674	-	-	-	1,573,112	22,925	1,049
4a.1.1	Totals	251	9,467	7,864	3,222	8	12,062	427	14,192	47,492	47,492	-	-	107	22,409	1,002	470	1,428	2,463,072	51,345	2,098
Removal of Major Equipment																					
4a.1.2	Main Turbine/Generator	-	326	1,861	391	1,707	-	-	582	4,867	4,867	-	-	80,711	-	-	-	-	3,632,000	4,957	-
4a.1.3	Main Condensers	-	1,000	1,291	271	1,184	-	-	597	4,344	4,344	-	-	56,000	-	-	-	-	2,520,000	15,180	-
New Radwaste Building System Components																					
4a.1.7.1	7EB	-	162	9	9	7	23	-	49	259	259	-	-	362	334	-	-	-	33,679	2,492	-
4a.1.7.2	N2G	-	11	0	0	1	-	-	3	16	16	-	-	49	-	-	-	-	2,007	178	-
4a.1.7.3	N2P	-	24	1	1	6	-	-	7	40	40	-	-	341	-	-	-	-	13,830	357	-
4a.1.7.4	N3A	-	68	1	2	8	-	-	18	96	96	-	-	398	-	-	-	-	16,151	1,000	-
4a.1.7.5	N3D	-	81	1	2	10	-	-	22	115	115	-	-	501	-	-	-	-	20,362	1,263	-
4a.1.7.6	N3I	-	17	0	0	1	0	-	4	23	23	-	-	27	5	-	-	-	1,390	273	-
4a.1.7.7	N3N	-	101	1	2	9	-	-	27	139	139	-	-	447	-	-	-	-	18,140	1,529	-
4a.1.7.8	N3P	-	26	0	1	3	-	-	7	37	37	-	-	179	-	-	-	-	7,267	383	-
4a.1.7.9	N3Q	-	17	0	0	2	-	-	5	24	24	-	-	80	-	-	-	-	3,260	271	-
4a.1.7.10	N3R	-	17	0	0	2	-	-	5	24	24	-	-	97	-	-	-	-	3,934	261	-
4a.1.7.11	N3S	-	25	0	1	4	-	-	7	37	37	-	-	187	-	-	-	-	7,583	400	-
4a.1.7.12	N3T	-	16	0	0	1	-	-	4	21	21	-	-	58	-	-	-	-	2,357	243	-
4a.1.7.13	N3U	-	113	14	14	12	38	-	43	234	234	-	-	610	548	-	-	-	55,829	1,727	-
4a.1.7.14	N3W	-	117	16	15	12	41	-	45	247	247	-	-	643	604	-	-	-	60,369	1,792	-
4a.1.7.15	N3Y	-	208	5	13	58	-	-	63	348	348	-	-	3,054	-	-	-	-	124,028	3,179	-
4a.1.7.16	N51	-	28	0	1	5	-	-	8	42	42	-	-	239	-	-	-	-	9,707	433	-
4a.1.7.17	N52	-	23	1	1	2	3	-	7	38	38	-	-	121	43	-	-	-	7,290	353	-
4a.1.7.18	N53	-	35	2	3	5	5	-	11	61	61	-	-	248	75	-	-	-	14,268	541	-
4a.1.7.19	N54	-	17	1	1	1	2	-	5	26	26	-	-	46	28	-	-	-	3,435	260	-
4a.1.7.20	N55	-	73	1	2	8	-	-	20	104	104	-	-	414	-	-	-	-	16,809	1,137	-
4a.1.7.21	N56	-	97	1	3	14	-	-	27	143	143	-	-	734	-	-	-	-	29,828	1,389	-
4a.1.7.22	N5A	-	42	1	2	6	2	-	12	64	64	-	-	290	26	-	-	-	13,205	663	-
4a.1.7.23	N5B	-	39	1	1	6	-	-	11	58	58	-	-	307	-	-	-	-	12,485	621	-

Table D
Oyster Creek Nuclear Generating Station
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(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
New Radwaste Building System Components (continued)																					
4a.1.7.24	N5C	-	18	0	0	2	-	-	5	25	25	-	-	106	-	-	-	-	4,294	267	-
4a.1.7.25	N5D	-	28	0	1	3	-	-	8	39	39	-	-	152	-	-	-	-	6,190	426	-
4a.1.7.26	N5E	-	19	0	0	2	-	-	5	26	26	-	-	110	-	-	-	-	4,453	278	-
4a.1.7.27	N5F	-	27	2	1	2	3	-	8	43	43	-	-	91	45	-	-	-	6,294	408	-
4a.1.7.28	N5G	-	13	0	0	1	-	-	3	18	18	-	-	40	-	-	-	-	1,645	205	-
4a.1.7.29	N5H	-	11	1	1	0	2	-	3	18	18	-	-	5	26	-	-	-	1,667	172	-
4a.1.7.30	N5I	-	15	0	0	1	-	-	4	21	21	-	-	51	-	-	-	-	2,090	238	-
4a.1.7.31	N5J	-	12	0	1	3	-	-	3	19	19	-	-	131	-	-	-	-	5,328	187	-
4a.1.7.32	N5K	-	15	0	0	1	-	-	4	21	21	-	-	75	-	-	-	-	3,050	224	-
4a.1.7.33	N5N	-	28	0	1	3	-	-	8	39	39	-	-	143	-	-	-	-	5,803	433	-
4a.1.7.34	N5O	-	72	1	3	13	-	-	21	110	110	-	-	670	-	-	-	-	27,221	1,105	-
4a.1.7.35	N5P	-	26	2	2	3	4	-	9	46	46	-	-	183	62	-	-	-	10,822	420	-
4a.1.7.36	N5Q	-	26	2	2	3	4	-	8	46	46	-	-	182	61	-	-	-	10,719	414	-
4a.1.7.37	N5S	-	64	4	10	42	-	-	24	143	143	-	-	2,195	-	-	-	-	89,151	1,024	-
4a.1.7.38	N5T	-	59	2	3	12	3	-	18	97	97	-	-	606	40	-	-	-	26,812	930	-
4a.1.7.39	N5U	-	60	2	3	12	3	-	18	98	98	-	-	607	40	-	-	-	26,871	942	-
4a.1.7.40	N5Y	-	23	1	1	3	1	-	7	36	36	-	-	153	19	-	-	-	7,306	358	-
4a.1.7.41	N5Z	-	23	1	1	3	1	-	7	36	36	-	-	153	19	-	-	-	7,306	358	-
4a.1.7.42	PPA	-	75	1	3	11	-	-	21	110	110	-	-	572	-	-	-	-	23,240	1,139	-
4a.1.7	Totals	-	1,972	76	109	299	135	-	596	3,187	3,187	-	-	15,660	1,977	-	-	-	747,476	30,271	-
Old Radwaste Building System Components																					
4a.1.8.1	7BA	-	83	1	2	9	-	-	22	117	117	-	-	480	-	-	-	-	19,481	1,272	-
4a.1.8.2	7DA	-	48	5	5	2	14	-	17	92	92	-	-	122	206	-	-	-	16,640	738	-
4a.1.8.3	7FA	-	22	1	2	4	3	-	7	39	39	-	-	206	43	-	-	-	10,810	355	-
4a.1.8.4	PBA	-	147	12	12	17	26	-	49	263	263	-	-	893	388	-	-	-	57,934	2,324	-
4a.1.8.5	PDA	-	52	1	2	7	-	-	14	75	75	-	-	373	-	-	-	-	15,150	808	-
4a.1.8.6	PMA	-	12	0	0	1	-	-	3	17	17	-	-	54	-	-	-	-	2,174	190	-
4a.1.8.7	PRA	-	82	1	4	16	-	-	24	128	128	-	-	855	-	-	-	-	34,703	1,292	-
4a.1.8.8	PTK / PTP	-	13	0	0	1	-	-	3	17	17	-	-	30	-	-	-	-	1,199	202	-
4a.1.8	Totals	-	460	21	26	57	43	-	141	749	749	-	-	3,011	637	-	-	-	158,091	7,180	-
Turbine Building System Components																					
4a.1.9.1	7CA	-	260	21	22	33	46	-	87	468	468	-	-	1,755	663	-	-	-	108,906	4,017	-
4a.1.9.2	TB2	-	961	19	52	227	-	-	284	1,544	1,544	-	-	11,906	-	-	-	-	483,529	14,570	-
4a.1.9.3	TB23	-	5	0	0	1	-	-	1	8	8	-	-	42	-	-	-	-	1,699	83	-
4a.1.9.4	TB38	-	16	0	1	2	-	-	5	24	24	-	-	124	-	-	-	-	5,034	229	-
4a.1.9.5	TC2	-	1,562	70	188	820	-	-	549	3,190	3,190	-	-	42,978	-	-	-	-	1,745,363	23,871	-
4a.1.9.6	TE2	-	186	12	20	60	22	-	65	365	365	-	-	3,126	317	-	-	-	144,922	2,822	-
4a.1.9.7	TEE	-	320	7	18	79	-	-	95	519	519	-	-	4,115	-	-	-	-	167,126	4,871	-
4a.1.9.8	TEG	-	26	0	1	3	-	-	7	36	36	-	-	139	-	-	-	-	5,640	380	-
4a.1.9.9	TP2	-	170	4	12	51	-	-	52	289	289	-	-	2,659	-	-	-	-	107,977	2,613	-
4a.1.9.10	TP3	-	113	9	10	16	20	-	38	205	205	-	-	859	292	-	-	-	51,008	1,793	-
4a.1.9.11	TPE	-	102	10	10	12	23	-	36	193	193	-	-	647	335	-	-	-	45,003	1,572	-
4a.1.9	Totals	-	3,722	153	332	1,305	110	-	1,219	6,840	6,840	-	-	68,349	1,608	-	-	-	2,866,205	56,820	-
4a.1.12	Scaffolding in support of decommissioning	-	940	27	7	22	8	-	244	1,249	1,249	-	-	1,057	112	-	-	-	53,901	16,869	-
4a.1	Subtotal Period 4a Activity Costs	251	17,887	11,294	4,359	4,583	12,357	427	17,571	68,729	68,729	-	-	224,895	26,743	1,002	470	1,428	12,440,740	182,622	2,098

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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 4a Collateral Costs																					
4a.3.1	Process decommissioning water waste	24	-	15	39	-	71	-	37	185	185	-	-	-	207	-	-	-	12,411	40	-
4a.3.3	Small tool allowance	-	223	-	-	-	-	-	33	257	231	-	26	-	-	-	-	-	-	-	-
4a.3	Subtotal Period 4a Collateral Costs	24	223	15	39	-	71	-	70	442	416	-	26	-	207	-	-	-	12,411	40	-
Period 4a Period-Dependent Costs																					
4a.4.1	Decon supplies	62	-	-	-	-	-	-	15	77	77	-	-	-	-	-	-	-	-	-	-
4a.4.2	Insurance	-	-	-	-	-	-	643	64	707	707	-	-	-	-	-	-	-	-	-	-
4a.4.3	Property taxes	-	-	-	-	-	-	1,120	112	1,232	1,109	-	123	-	-	-	-	-	-	-	-
4a.4.4	Health physics supplies	-	1,311	-	-	-	-	-	328	1,639	1,639	-	-	-	-	-	-	-	-	-	-
4a.4.5	Heavy equipment rental	-	2,252	-	-	-	-	-	338	2,590	2,590	-	-	-	-	-	-	-	-	-	-
4a.4.6	Disposal of DAW generated	-	-	85	60	-	212	-	71	428	428	-	-	-	3,704	-	-	-	74,073	121	-
4a.4.7	Plant energy budget	-	-	-	-	-	-	2,042	306	2,348	2,348	-	-	-	-	-	-	-	-	-	-
4a.4.8	NRC Fees	-	-	-	-	-	-	804	80	884	884	-	-	-	-	-	-	-	-	-	-
4a.4.9	Site O&M Costs	-	-	-	-	-	-	346	52	398	398	-	-	-	-	-	-	-	-	-	-
4a.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	434	65	499	499	-	-	-	-	-	-	-	-	-	-
4a.4.11	Security Staff Cost	-	-	-	-	-	-	4,066	610	4,676	4,676	-	-	-	-	-	-	-	-	-	73,036
4a.4.12	DOC Staff Cost	-	-	-	-	-	-	13,729	2,059	15,789	15,789	-	-	-	-	-	-	-	-	-	161,263
4a.4.13	Utility Staff Cost	-	-	-	-	-	-	23,178	3,477	26,654	26,654	-	-	-	-	-	-	-	-	-	292,143
4a.4	Subtotal Period 4a Period-Dependent Costs	62	3,563	85	60	-	212	46,362	7,578	57,922	57,799	-	123	-	3,704	-	-	-	74,073	121	526,441
4a.0	TOTAL PERIOD 4a COST	336	21,674	11,394	4,459	4,583	12,639	46,789	25,219	127,092	126,943	-	149	224,895	30,653	1,002	470	1,428	12,527,230	182,783	528,539
PERIOD 4b - Site Decontamination																					
Period 4b Direct Decommissioning Activities																					
4b.1.1	Remove spent fuel racks	545	64	142	226	-	744	-	523	2,243	2,243	-	-	-	10,858	-	-	-	615,095	1,071	-
Disposal of Plant Systems																					
Drywell System Components																					
4b.1.2.1	IAA/IAC	-	329	218	191	136	527	-	285	1,685	1,685	-	-	7,111	7,660	-	-	-	723,932	5,700	-
4b.1.2.2	IBA	-	164	19	19	17	50	-	61	330	330	-	-	880	734	-	-	-	77,321	2,588	-
4b.1.2.3	ICA	-	263	36	32	35	79	-	99	543	543	-	-	1,841	1,148	-	-	-	140,037	4,149	-
4b.1.2.4	IEA	-	70	9	11	18	22	-	28	157	157	-	-	926	320	-	-	-	55,719	1,176	-
4b.1.2.5	RC6	-	65	1	2	8	-	-	18	95	95	-	-	440	-	-	-	-	17,889	989	-
4b.1.2	Totals	-	890	282	255	214	678	-	491	2,809	2,809	-	-	11,199	9,861	-	-	-	1,014,897	14,602	-
Reactor Building System Components																					
4b.1.3.1	RB1	-	202	4	11	48	-	-	60	324	324	-	-	2,495	-	-	-	-	101,308	2,991	-
4b.1.3.2	RBB	-	106	2	6	25	-	-	31	170	170	-	-	1,306	-	-	-	-	53,019	1,597	-
4b.1.3.3	RBC	-	108	2	6	28	-	-	33	178	178	-	-	1,485	-	-	-	-	60,294	1,647	-
4b.1.3.4	RBE	-	142	2	6	26	-	-	41	217	217	-	-	1,381	-	-	-	-	56,063	2,156	-
4b.1.3.5	RBF	-	121	14	14	14	35	-	45	244	244	-	-	740	516	-	-	-	59,235	1,909	-
4b.1.3.6	RBO	-	526	18	49	214	-	-	173	981	981	-	-	11,229	-	-	-	-	456,005	8,678	-
4b.1.3.7	RBS	-	247	22	27	53	50	-	88	486	486	-	-	2,757	727	-	-	-	153,183	3,897	-
4b.1.3.8	RBSW	-	135	2	6	26	-	-	39	207	207	-	-	1,343	-	-	-	-	54,558	2,077	-
4b.1.3.9	RC1/RC3	-	4	0	0	0	-	-	1	6	6	-	-	14	-	-	-	-	577	63	-
4b.1.3.10	RC7	-	90	2	5	21	-	-	27	145	145	-	-	1,106	-	-	-	-	44,917	1,311	-
4b.1.3.11	RCA	-	47	3	3	3	8	-	15	79	79	-	-	147	109	-	-	-	12,175	725	-
4b.1.3.12	RCB	-	69	2	3	10	2	-	20	105	105	-	-	501	28	-	-	-	21,917	1,051	-

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Reactor Building System Components (continued)																					
4b.1.3.13	RCD	-	352	7	17	76	-	-	103	555	555	-	-	3,974	-	-	-	-	161,384	5,318	-
4b.1.3.14	RCG	-	67	2	5	22	-	-	21	116	116	-	-	1,136	-	-	-	-	46,136	1,041	-
4b.1.3.15	RCJ	-	74	1	3	12	-	-	21	110	110	-	-	617	-	-	-	-	25,044	1,121	-
4b.1.3.16	RCM	-	109	2	6	28	-	-	33	179	179	-	-	1,481	-	-	-	-	60,136	1,694	-
4b.1.3.17	RCN	-	243	3	9	40	-	-	69	365	365	-	-	2,107	-	-	-	-	85,581	3,666	-
4b.1.3.18	RCS	-	87	15	14	12	38	-	37	204	204	-	-	636	561	-	-	-	57,657	1,365	-
4b.1.3.19	RCT	-	57	1	2	9	-	-	16	84	84	-	-	464	-	-	-	-	18,858	858	-
4b.1.3.20	RD8	-	87	66	66	36	189	-	91	535	535	-	-	1,861	2,761	-	-	-	231,971	1,484	-
4b.1.3.21	RDM	-	48	0	1	5	-	-	13	67	67	-	-	268	-	-	-	-	10,870	701	-
4b.1.3.22	REC	-	216	3	9	37	-	-	61	326	326	-	-	1,953	-	-	-	-	79,329	3,190	-
4b.1.3.23	REF	-	100	23	21	13	60	-	47	264	264	-	-	667	875	-	-	-	76,709	1,550	-
4b.1.3.24	REH/REI	-	121	2	6	25	-	-	35	189	189	-	-	1,325	-	-	-	-	53,806	1,846	-
4b.1.3.25	REL	-	215	5	14	63	-	-	66	364	364	-	-	3,286	-	-	-	-	133,445	3,285	-
4b.1.3.26	REM	-	57	1	2	10	-	-	16	87	87	-	-	538	-	-	-	-	21,846	868	-
4b.1.3.27	REO	-	122	21	22	21	57	-	53	296	296	-	-	1,115	827	-	-	-	92,099	1,930	-
4b.1.3.28	REQ	-	169	9	11	25	17	-	53	284	284	-	-	1,311	254	-	-	-	67,684	2,610	-
4b.1.3.29	RER	-	56	5	4	3	11	-	19	98	98	-	-	177	167	-	-	-	16,663	881	-
4b.1.3.30	RET	-	32	1	1	4	1	-	9	48	48	-	-	185	18	-	-	-	8,515	500	-
4b.1.3.31	REW	-	28	0	1	3	-	-	8	39	39	-	-	146	-	-	-	-	5,936	432	-
4b.1.3.32	REX	-	31	0	1	3	-	-	8	43	43	-	-	165	-	-	-	-	6,710	477	-
4b.1.3.33	REY	-	36	0	1	4	-	-	10	50	50	-	-	192	-	-	-	-	7,781	543	-
4b.1.3.34	RFB	-	159	3	7	31	-	-	46	246	246	-	-	1,622	-	-	-	-	65,859	2,449	-
4b.1.3.35	RFC	-	104	12	9	6	24	-	35	190	190	-	-	337	351	-	-	-	33,707	1,649	-
4b.1.3.36	RFF	-	111	2	4	18	-	-	31	166	166	-	-	923	-	-	-	-	37,469	1,696	-
4b.1.3.37	RFH	-	152	25	22	13	61	-	61	335	335	-	-	692	893	-	-	-	78,810	2,337	-
4b.1.3.38	RFJ	-	133	23	21	13	59	-	56	305	305	-	-	690	866	-	-	-	77,154	2,052	-
4b.1.3.39	RFL	-	85	1	3	14	-	-	24	128	128	-	-	754	-	-	-	-	30,625	1,337	-
4b.1.3.40	RFN	-	115	2	5	21	-	-	33	176	176	-	-	1,118	-	-	-	-	45,418	1,768	-
4b.1.3.41	RFQ	-	167	2	4	18	-	-	45	236	236	-	-	942	-	-	-	-	38,243	2,456	-
4b.1.3.42	RGC	-	89	1	3	13	-	-	25	130	130	-	-	667	-	-	-	-	27,107	1,368	-
4b.1.3.43	RGD	-	251	7	19	84	-	-	79	441	441	-	-	4,427	-	-	-	-	179,773	3,921	-
4b.1.3.44	RGI	-	53	1	2	8	-	-	15	78	78	-	-	414	-	-	-	-	16,826	835	-
4b.1.3.45	RGL	-	62	1	2	11	-	-	18	94	94	-	-	555	-	-	-	-	22,545	967	-
4b.1.3.46	RGP	-	29	0	1	5	-	-	8	43	43	-	-	238	-	-	-	-	9,661	437	-
4b.1.3.47	RGR	-	190	3	7	31	-	-	54	284	284	-	-	1,633	-	-	-	-	66,314	2,876	-
4b.1.3.48	RGU	-	85	1	2	10	-	-	23	121	121	-	-	547	-	-	-	-	22,199	1,312	-
4b.1.3.49	RH1	-	50	1	1	6	-	-	14	72	72	-	-	339	-	-	-	-	13,754	762	-
4b.1.3.50	RH2	-	37	1	2	10	-	-	11	62	62	-	-	550	-	-	-	-	22,340	572	-
4b.1.3.51	RH3 / RH4 / RH6	-	127	1	3	11	-	-	34	176	176	-	-	592	-	-	-	-	24,061	1,896	-
4b.1.3.52	RHA	-	21	1	2	2	4	-	7	36	36	-	-	83	57	-	-	-	6,596	326	-
4b.1.3.53	RHJ	-	45	0	1	5	-	-	12	64	64	-	-	282	-	-	-	-	11,443	687	-
4b.1.3.54	RHL	-	29	0	1	2	-	-	8	40	40	-	-	121	-	-	-	-	4,913	431	-
4b.1.3.55	RHX	-	54	1	2	8	-	-	15	80	80	-	-	440	-	-	-	-	17,877	814	-
4b.1.3.56	RHY	-	49	1	2	7	-	-	13	71	71	-	-	369	-	-	-	-	14,998	750	-
4b.1.3.57	RMCC	-	98	2	4	19	-	-	28	151	151	-	-	989	-	-	-	-	40,165	1,468	-
4b.1.3	Totals	-	6,397	332	482	1,287	618	-	2,053	11,170	11,170	-	-	67,430	9,010	-	-	-	3,249,269	98,630	-
New Radwaste Building System Components																					
4b.1.4.1	N38	-	173	2	6	27	-	-	48	256	256	-	-	1,392	-	-	-	-	56,536	2,566	-
4b.1.4.2	N48	-	88	1	2	10	-	-	24	125	125	-	-	530	-	-	-	-	21,506	1,308	-

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
New Radwaste Building System Components (continued)																					
4b.1.4.3	N4A	-	29	2	2	3	4	-	9	50	50	-	-	183	63	-	-	-	10,949	470	-
4b.1.4.4	N4B	-	28	2	2	3	4	-	9	46	46	-	-	162	53	-	-	-	9,549	442	-
4b.1.4.5	N4D	-	91	1	2	9	-	-	24	127	127	-	-	459	-	-	-	-	18,650	1,350	-
4b.1.4.6	N4E	-	7	0	0	0	-	-	2	9	9	-	-	17	-	-	-	-	687	107	-
4b.1.4.7	N4F	-	19	0	0	2	-	-	5	27	27	-	-	98	-	-	-	-	3,986	289	-
4b.1.4.8	N4H	-	22	1	1	4	2	-	7	38	38	-	-	217	23	-	-	-	10,137	364	-
4b.1.4.9	N4K	-	24	0	1	3	-	-	7	35	35	-	-	176	-	-	-	-	7,138	364	-
4b.1.4.10	N4L	-	35	0	1	3	-	-	10	49	49	-	-	177	-	-	-	-	7,195	553	-
4b.1.4.11	N5R	-	77	2	4	20	-	-	23	125	125	-	-	1,029	-	-	-	-	41,782	1,188	-
4b.1.4.12	N5V	-	59	4	5	9	10	-	20	107	107	-	-	482	146	-	-	-	27,568	934	-
4b.1.4.13	N5W	-	9	0	0	0	-	-	2	12	12	-	-	10	-	-	-	-	401	148	-
4b.1.4.14	N5X	-	74	1	4	16	-	-	22	116	116	-	-	842	-	-	-	-	34,176	1,155	-
4b.1.4	Totals	-	734	16	31	110	19	-	211	1,122	1,122	-	-	5,774	286	-	-	-	250,260	11,236	-
Old Radwaste Building System Components																					
4b.1.5.1	ORW Pre D&D Desludge and Decon	-	203	-	-	-	-	-	30	234	234	-	-	-	-	-	-	-	-	2,839	-
4b.1.5.2	PRD	-	15	0	1	3	-	-	4	23	23	-	-	151	-	-	-	-	6,112	245	-
4b.1.5.3	PSB	-	139	2	5	23	-	-	39	209	209	-	-	1,198	-	-	-	-	48,634	2,135	-
4b.1.5.4	PTA	-	39	1	2	7	-	-	11	59	59	-	-	371	-	-	-	-	15,084	601	-
4b.1.5.5	PUA	-	208	2	6	27	-	-	57	300	300	-	-	1,389	-	-	-	-	56,392	3,154	-
4b.1.5.6	PUU	-	141	5	10	35	5	-	44	239	239	-	-	1,825	83	-	-	-	78,582	2,225	-
4b.1.5.7	PVA	-	9	0	0	0	-	-	2	12	12	-	-	13	-	-	-	-	519	148	-
4b.1.5.8	UAB	-	304	4	10	45	-	-	85	448	448	-	-	2,367	-	-	-	-	96,117	4,649	-
4b.1.5.9	UAS	-	208	4	10	43	-	-	61	326	326	-	-	2,277	-	-	-	-	92,465	3,222	-
4b.1.5	Totals	-	1,268	18	44	183	5	-	334	1,851	1,851	-	-	9,590	83	-	-	-	393,904	19,219	-
Turbine Building System Components																					
4b.1.6.1	TD2	-	60	1	2	7	-	-	17	87	87	-	-	390	-	-	-	-	15,850	875	-
4b.1.6.2	TF2	-	324	16	42	184	-	-	117	683	683	-	-	9,646	-	-	-	-	391,743	4,891	-
4b.1.6.3	TFG	-	23	0	1	3	-	-	6	34	34	-	-	150	-	-	-	-	6,106	361	-
4b.1.6.4	TG2	-	236	12	33	144	-	-	87	513	513	-	-	7,564	-	-	-	-	307,179	3,660	-
4b.1.6.5	TH2	-	459	21	56	243	-	-	162	940	940	-	-	12,740	-	-	-	-	517,385	7,040	-
4b.1.6.6	TKA	-	24	0	0	1	-	-	6	32	32	-	-	74	-	-	-	-	2,996	348	-
4b.1.6.7	TL2	-	100	7	6	10	14	-	32	168	168	-	-	523	201	-	-	-	32,662	1,480	-
4b.1.6.8	TMA	-	61	1	4	17	-	-	18	102	102	-	-	895	-	-	-	-	36,367	921	-
4b.1.6.9	TN2	-	320	7	19	85	-	-	96	528	528	-	-	4,447	-	-	-	-	180,585	4,873	-
4b.1.6.10	TO2	-	170	-	-	-	-	-	26	196	-	-	196	-	-	-	-	-	-	2,826	-
4b.1.6.11	TOA	-	87	2	4	19	-	-	26	138	138	-	-	1,014	-	-	-	-	41,172	1,303	-
4b.1.6.12	TOCR	-	74	3	7	32	-	-	25	141	141	-	-	1,692	-	-	-	-	68,697	1,058	-
4b.1.6.13	TOR	-	65	2	4	18	-	-	20	107	107	-	-	931	-	-	-	-	37,795	994	-
4b.1.6.14	TOV	-	19	0	0	2	-	-	5	27	27	-	-	98	-	-	-	-	3,978	292	-
4b.1.6.15	TOW	-	103	4	11	49	-	-	35	202	202	-	-	2,557	-	-	-	-	103,857	1,547	-
4b.1.6.16	TOX / TOY	-	28	0	1	2	-	-	8	39	39	-	-	124	-	-	-	-	5,052	423	-
4b.1.6.17	TS2	-	201	6	17	74	-	-	64	362	362	-	-	3,875	-	-	-	-	157,362	2,995	-
4b.1.6.18	TTA	-	60	1	4	17	-	-	18	101	101	-	-	899	-	-	-	-	36,508	957	-
4b.1.6.19	TU2	-	185	3	9	40	-	-	54	292	292	-	-	2,096	-	-	-	-	85,139	2,856	-
4b.1.6	Totals	-	2,599	87	221	949	14	-	820	4,691	4,495	-	196	49,717	201	-	-	-	2,030,434	39,701	-

Table D
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Delayed DECON Decommissioning Cost Estimate
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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Augmented Offgas System Components																					
4b.1.7.1	AY8	-	143	3	7	30	-	-	42	224	224	-	-	1,596	-	-	-	-	64,813	2,154	-
4b.1.7.2	AYA	-	30	1	2	10	-	-	9	53	53	-	-	512	-	-	-	-	20,775	459	-
4b.1.7.3	AYB	-	29	0	1	5	-	-	8	43	43	-	-	267	-	-	-	-	10,862	441	-
4b.1.7.4	AYC	-	73	2	4	19	-	-	22	120	120	-	-	1,012	-	-	-	-	41,078	1,127	-
4b.1.7.5	AYE	-	25	0	0	2	-	-	7	35	35	-	-	103	-	-	-	-	4,199	375	-
4b.1.7.6	AZ8	-	54	1	3	12	-	-	16	85	85	-	-	611	-	-	-	-	24,796	824	-
4b.1.7.7	AZA	-	12	0	0	1	-	-	3	17	17	-	-	40	-	-	-	-	1,638	188	-
4b.1.7.8	AZC	-	103	2	5	22	-	-	30	162	162	-	-	1,145	-	-	-	-	46,509	1,555	-
4b.1.7.9	AZD	-	17	0	0	1	-	-	5	24	24	-	-	75	-	-	-	-	3,063	267	-
4b.1.7.10	AZE	-	16	0	0	1	-	-	4	23	23	-	-	70	-	-	-	-	2,856	256	-
4b.1.7.11	AZF	-	15	0	0	2	-	-	4	22	22	-	-	90	-	-	-	-	3,672	239	-
4b.1.7.12	AZI	-	30	1	1	7	-	-	9	47	47	-	-	343	-	-	-	-	13,938	461	-
4b.1.7	Totals	-	547	10	26	112	-	-	158	853	853	-	-	5,865	-	-	-	-	238,198	8,345	-
Miscellaneous System Components																					
4b.1.8.1	BAA	-	262	5	14	62	-	-	77	421	421	-	-	3,241	-	-	-	-	131,602	3,979	-
4b.1.8.2	BBA	-	88	4	10	42	-	-	30	173	173	-	-	2,183	-	-	-	-	88,656	1,368	-
4b.1.8.3	BDA	-	11	0	0	1	-	-	3	14	14	-	-	27	-	-	-	-	1,083	167	-
4b.1.8.4	CAA	-	615	17	45	196	-	-	192	1,064	1,064	-	-	10,252	-	-	-	-	416,330	9,611	-
4b.1.8.5	DAA	-	64	1	2	7	-	-	17	91	91	-	-	376	-	-	-	-	15,277	1,005	-
4b.1.8.6	DAC	-	152	2	5	23	-	-	42	225	225	-	-	1,230	-	-	-	-	49,940	2,323	-
4b.1.8.7	DGB	-	82	-	-	-	-	-	12	94	-	-	94	-	-	-	-	-	-	1,336	-
4b.1.8.8	DOT	-	14	-	-	-	-	-	2	16	-	-	16	-	-	-	-	-	-	223	-
4b.1.8.9	DPH	-	95	-	-	-	-	-	14	109	-	-	109	-	-	-	-	-	-	1,527	-
4b.1.8.10	DWF	-	22	-	-	-	-	-	3	25	-	-	25	-	-	-	-	-	-	360	-
4b.1.8.11	FWP	-	127	-	-	-	-	-	19	146	-	-	146	-	-	-	-	-	-	2,018	-
4b.1.8.12	GAA / GCA	-	23	-	-	-	-	-	3	26	-	-	26	-	-	-	-	-	-	368	-
4b.1.8.13	INTAKE STRUCTURE	-	199	-	-	-	-	-	30	229	-	-	229	-	-	-	-	-	-	3,218	-
4b.1.8.14	MAA	-	127	2	6	28	-	-	37	200	200	-	-	1,469	-	-	-	-	59,650	1,920	-
4b.1.8.15	MBA	-	51	1	2	8	-	-	14	76	76	-	-	413	-	-	-	-	16,776	764	-
4b.1.8.16	MBS / MBT	-	38	0	0	2	-	-	10	50	50	-	-	108	-	-	-	-	4,371	575	-
4b.1.8.17	MS	-	40	-	-	-	-	-	6	46	-	-	46	-	-	-	-	-	-	676	-
4b.1.8.18	NMB ROOF	-	20	-	-	-	-	-	3	22	-	-	22	-	-	-	-	-	-	312	-
4b.1.8.19	OB	-	292	-	-	-	-	-	44	336	-	-	336	-	-	-	-	-	-	4,806	-
4b.1.8.20	PTB	-	43	-	-	-	-	-	6	49	-	-	49	-	-	-	-	-	-	688	-
4b.1.8.21	RSF ROOF	-	29	0	1	3	-	-	8	42	42	-	-	175	-	-	-	-	7,097	451	-
4b.1.8.22	UYARD	-	1,807	10	27	118	-	-	474	2,435	2,435	-	-	6,162	-	-	-	-	250,262	21,730	-
4b.1.8.23	WAA	-	166	2	5	23	-	-	46	242	242	-	-	1,197	-	-	-	-	48,603	2,479	-
4b.1.8.24	WHS	-	19	-	-	-	-	-	3	22	-	-	22	-	-	-	-	-	-	318	-
4b.1.8.25	YARD AREAS	-	408	-	-	-	-	-	61	470	-	-	470	-	-	-	-	-	-	6,583	-
4b.1.8.26	YDA / YFA / YLA	-	2	0	0	0	-	-	1	3	3	-	-	19	-	-	-	-	783	30	-
4b.1.8	Totals	-	4,796	44	117	513	-	-	1,159	6,629	5,037	-	1,592	26,851	-	-	-	-	1,090,429	68,833	-
4b.1.9	Scaffolding in support of decommissioning	-	1,410	41	11	34	11	-	366	1,873	1,873	-	-	1,586	168	-	-	-	80,852	25,304	-
Decontamination of Site Buildings																					
4b.1.10.1	New Radwaste Building - Systems Removal	0	146	103	156	0	233	-	129	767	767	-	-	6	4,340	-	-	-	382,187	2,226	-
4b.1.10.2	Old Radwaste Building - Systems Removal	0	4	11	17	0	25	-	11	67	67	-	-	6	461	-	-	-	40,787	66	-
4b.1.10.3	Turbine Building - Systems Removal	-	419	249	376	-	561	-	326	1,931	1,931	-	-	-	10,447	-	-	-	919,350	5,562	-
4b.1.10.4	Augmented Off Gas - Decon	19	117	15	23	1	34	-	52	261	261	-	-	45	629	-	-	-	57,149	1,961	-

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Decontamination of Site Buildings (continued)																					
4b.1.10.5	LLRW Storage - Decon	10	36	9	14	-	20	-	22	112	112	-	-	-	379	-	-	-	33,330	653	-
4b.1.10.6	Miscellaneous Buildings - Decon	10	48	9	13	-	20	-	25	126	126	-	-	-	372	-	-	-	32,778	831	-
4b.1.10.7	New Radwaste Building - Decon	47	441	58	88	4	130	-	186	955	955	-	-	235	2,420	-	-	-	222,115	7,003	-
4b.1.10.8	Old Radwaste Building - Decon	-	410	237	359	3	535	-	314	1,859	1,859	-	-	152	9,965	-	-	-	882,859	4,833	-
4b.1.10.9	Stack/Exhaust Tunnels - Remove & Decon	103	494	36	55	-	82	-	207	977	977	-	-	-	1,521	-	-	-	133,878	8,806	-
4b.1.10.10	Turbine Building 0ft - Decon	72	532	58	88	22	127	-	223	1,122	1,122	-	-	1,144	2,356	-	-	-	252,047	8,702	-
4b.1.10.11	Turbine Building 23ft - Decon	47	381	44	68	21	97	-	161	818	818	-	-	1,109	1,789	-	-	-	200,730	6,140	-
4b.1.10.12	Turbine Building 46ft - Decon	29	121	26	39	-	58	-	68	340	340	-	-	-	1,073	-	-	-	94,413	2,127	-
4b.1.10.13	Drywell - Decon	4	727	395	513	-	1,006	-	552	3,198	3,198	-	-	-	16,964	-	-	-	1,290,650	9,848	-
4b.1.10.14	Drywell - Liner Removal	2,063	1,197	74	105	422	71	-	1,435	5,366	5,366	-	-	22,108	1,022	-	-	-	956,216	47,924	-
4b.1.10.15	RB0 - Torus Removal	2,765	1,375	110	156	626	105	-	1,881	7,017	7,017	-	-	32,774	1,515	-	-	-	1,417,560	60,646	-
4b.1.10.16	Reactor Building - Systems Removal	-	6	18	27	-	40	-	17	107	107	-	-	-	736	-	-	-	64,800	101	-
4b.1.10.17	Reactor Building -19ft - Decon	33	277	28	44	39	57	-	115	593	593	-	-	2,052	1,043	-	-	-	172,007	4,412	-
4b.1.10.18	Reactor Building 119ft - Decon	442	537	16	24	30	29	-	372	1,450	1,450	-	-	1,563	526	-	-	-	107,572	14,581	-
4b.1.10.19	Reactor Building 23ft - Decon	21	128	19	29	-	43	-	60	299	299	-	-	-	796	-	-	-	70,017	2,140	-
4b.1.10.20	Reactor Building 51ft - Decon	24	133	21	32	-	48	-	64	322	322	-	-	-	887	-	-	-	78,096	2,253	-
4b.1.10.21	Reactor Building 75ft - Decon	8	71	7	11	-	16	-	28	141	141	-	-	-	297	-	-	-	26,136	1,155	-
4b.1.10.22	Reactor Building 91ft - Decon	17	111	15	23	-	34	-	50	250	250	-	-	-	634	-	-	-	55,770	1,847	-
4b.1.10	Totals	5,715	7,712	1,558	2,257	1,168	3,369	-	6,297	28,076	28,076	-	-	61,196	60,173	-	-	-	7,490,445	193,816	-
4b.1	Subtotal Period 4b Activity Costs	6,260	26,416	2,530	3,671	4,569	5,459	-	12,412	61,317	59,530	-	1,787	239,206	90,639	-	-	-	16,453,780	480,758	-
Period 4b Additional Costs																					
4b.2.1	ISFSI License Termination	-	1,563	-	-	-	1,587	1,411	999	5,560	-	5,560	-	-	19,521	-	-	-	2,578,520	-	-
4b.2.2	ISFSI License Termination - Cascading Costs	-	778	-	-	-	-	247	154	1,179	-	1,179	-	-	-	-	-	-	-	-	-
4b.2.3	License Termination Survey Planning	-	-	-	-	-	-	1,948	584	2,532	2,532	-	-	-	-	-	-	-	-	-	12,480
4b.2.4	Contaminated Soil Removal	-	111	2	500	-	5,702	-	1,529	7,844	7,844	-	-	-	106,200	-	-	-	8,071,193	834	-
4b.2	Subtotal Period 4b Additional Costs	-	2,453	2	500	-	7,289	3,605	3,266	17,116	10,376	6,739	-	-	125,721	-	-	-	10,649,710	834	12,480
Period 4b Collateral Costs																					
4b.3.1	Process decommissioning water waste	52	-	33	88	-	159	-	82	414	414	-	-	-	466	-	-	-	27,948	91	-
4b.3.3	Small tool allowance	-	592	-	-	-	-	-	89	681	681	-	-	-	-	-	-	-	-	-	-
4b.3.4	Decommissioning Equipment Disposition	-	-	155	49	127	44	-	53	427	427	-	-	6,000	635	-	-	-	305,961	88	-
4b.3	Subtotal Period 4b Collateral Costs	52	592	188	137	127	203	-	224	1,521	1,521	-	-	6,000	1,101	-	-	-	333,910	179	-
Period 4b Period-Dependent Costs																					
4b.4.1	Decon supplies	1,124	-	-	-	-	-	-	281	1,404	1,404	-	-	-	-	-	-	-	-	-	-
4b.4.2	Insurance	-	-	-	-	-	-	850	85	935	935	-	-	-	-	-	-	-	-	-	-
4b.4.3	Property taxes	-	-	-	-	-	-	1,481	148	1,629	1,629	-	-	-	-	-	-	-	-	-	-
4b.4.4	Health physics supplies	-	2,768	-	-	-	-	-	692	3,460	3,460	-	-	-	-	-	-	-	-	-	-
4b.4.5	Heavy equipment rental	-	2,955	-	-	-	-	-	443	3,398	3,398	-	-	-	-	-	-	-	-	-	-
4b.4.6	Disposal of DAW generated	-	-	171	121	-	424	-	141	857	857	-	-	-	7,415	-	-	-	148,298	242	-
4b.4.7	Plant energy budget	-	-	-	-	-	-	2,132	320	2,452	2,452	-	-	-	-	-	-	-	-	-	-
4b.4.8	NRC Fees	-	-	-	-	-	-	1,063	106	1,170	1,170	-	-	-	-	-	-	-	-	-	-
4b.4.9	Site O&M Costs	-	-	-	-	-	-	458	69	527	527	-	-	-	-	-	-	-	-	-	-
4b.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	574	86	661	661	-	-	-	-	-	-	-	-	-	-
4b.4.11	Security Staff Cost	-	-	-	-	-	-	5,378	807	6,185	6,185	-	-	-	-	-	-	-	-	-	96,607
4b.4.12	DOC Staff Cost	-	-	-	-	-	-	17,703	2,655	20,358	20,358	-	-	-	-	-	-	-	-	-	207,126
4b.4.13	Utility Staff Cost	-	-	-	-	-	-	29,142	4,371	33,513	33,513	-	-	-	-	-	-	-	-	-	364,789
4b.4	Subtotal Period 4b Period-Dependent Costs	1,124	5,723	171	121	-	424	58,782	10,205	76,549	76,549	-	-	-	7,415	-	-	-	148,298	242	668,521

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
4b.0	TOTAL PERIOD 4b COST	7,435	35,184	2,891	4,429	4,696	13,374	62,387	26,106	156,503	147,976	6,739	1,787	245,206	224,875	-	-	-	27,585,700	482,012	681,001
PERIOD 4f - License Termination																					
Period 4f Direct Decommissioning Activities																					
4f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	161	48	210	210	-	-	-	-	-	-	-	-	-	-
4f.1.2	Terminate license									a											
4f.1	Subtotal Period 4f Activity Costs	-	-	-	-	-	-	161	48	210	210	-	-	-	-	-	-	-	-	-	-
Period 4f Additional Costs																					
4f.2.1	License Termination Survey	-	-	-	-	-	-	8,201	2,460	10,661	10,661	-	-	-	-	-	-	-	-	118,801	6,240
4f.2	Subtotal Period 4f Additional Costs	-	-	-	-	-	-	8,201	2,460	10,661	10,661	-	-	-	-	-	-	-	-	118,801	6,240
Period 4f Collateral Costs																					
4f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,124	169	1,292	1,292	-	-	-	-	-	-	-	-	-	-
4f.3	Subtotal Period 4f Collateral Costs	-	-	-	-	-	-	1,124	169	1,292	1,292	-	-	-	-	-	-	-	-	-	-
Period 4f Period-Dependent Costs																					
4f.4.2	Property taxes	-	-	-	-	-	-	753	75	828	828	-	-	-	-	-	-	-	-	-	-
4f.4.3	Health physics supplies	-	802	-	-	-	-	-	201	1,003	1,003	-	-	-	-	-	-	-	-	-	-
4f.4.4	Disposal of DAW generated	-	-	8	6	-	20	-	7	41	41	-	-	-	351	-	-	-	7,025	11	-
4f.4.5	Plant energy budget	-	-	-	-	-	-	289	43	332	332	-	-	-	-	-	-	-	-	-	-
4f.4.6	NRC Fees	-	-	-	-	-	-	579	58	637	637	-	-	-	-	-	-	-	-	-	-
4f.4.7	Site O&M Costs	-	-	-	-	-	-	233	35	268	268	-	-	-	-	-	-	-	-	-	-
4f.4.8	Security Staff Cost	-	-	-	-	-	-	1,087	163	1,250	1,250	-	-	-	-	-	-	-	-	-	18,857
4f.4.9	DOC Staff Cost	-	-	-	-	-	-	5,156	773	5,929	5,929	-	-	-	-	-	-	-	-	-	57,357
4f.4.10	Utility Staff Cost	-	-	-	-	-	-	6,703	1,005	7,708	7,708	-	-	-	-	-	-	-	-	-	74,643
4f.4	Subtotal Period 4f Period-Dependent Costs	-	802	8	6	-	20	14,800	2,361	17,997	17,997	-	-	-	351	-	-	-	7,025	11	150,857
4f.0	TOTAL PERIOD 4f COST	-	802	8	6	-	20	24,286	5,038	30,161	30,161	-	-	-	351	-	-	-	7,025	118,812	157,097
PERIOD 4 TOTALS		7,771	57,660	14,293	8,894	9,279	26,034	133,462	56,363	313,755	305,080	6,739	1,936	470,101	255,880	1,002	470	1,428	40,119,960	783,607	1,366,638
PERIOD 5b - Site Restoration																					
Period 5b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
5b.1.1.1	Stack/Exhaust Tunnels - Remove & Decon	-	1,019	-	-	-	-	-	153	1,172	-	-	1,172	-	-	-	-	-	-	1,665	-
5b.1.1.2	Administration Building	-	506	-	-	-	-	-	76	582	-	-	582	-	-	-	-	-	-	6,477	-
5b.1.1.3	Augmented Off Gas Building	-	338	-	-	-	-	-	51	388	-	-	388	-	-	-	-	-	-	3,399	-
5b.1.1.4	Chlorination Building	-	32	-	-	-	-	-	5	36	-	-	36	-	-	-	-	-	-	407	-
5b.1.1.5	Diesel Generator Building	-	137	-	-	-	-	-	21	157	-	-	157	-	-	-	-	-	-	1,268	-
5b.1.1.6	Dilution Structure	-	178	-	-	-	-	-	27	205	-	-	205	-	-	-	-	-	-	1,758	-
5b.1.1.7	Domestic Water Facility	-	11	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	147	-
5b.1.1.8	Fire Pump House	-	4	-	-	-	-	-	1	5	-	-	5	-	-	-	-	-	-	54	-
5b.1.1.9	Fresh Water Pump House	-	22	-	-	-	-	-	3	26	-	-	26	-	-	-	-	-	-	293	-
5b.1.1.10	Heating Boiler House	-	41	-	-	-	-	-	6	48	-	-	48	-	-	-	-	-	-	546	-
5b.1.1.11	Intake Structure	-	632	-	-	-	-	-	95	727	-	-	727	-	-	-	-	-	-	6,322	-
5b.1.1.12	Low Level Radwaste Storage	-	444	-	-	-	-	-	67	511	-	-	511	-	-	-	-	-	-	5,435	-

Table D
Oyster Creek Nuclear Generating Station
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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Demolition of Remaining Site Buildings (continued)																					
5b.1.1.13	Machine Shop	-	226	-	-	-	-	-	34	260	-	-	260	-	-	-	-	-	-	2,858	-
5b.1.1.14	Main Gate Security	-	101	-	-	-	-	-	15	116	-	-	116	-	-	-	-	-	-	1,059	-
5b.1.1.15	Maintenance Building	-	326	-	-	-	-	-	49	375	-	-	375	-	-	-	-	-	-	4,274	-
5b.1.1.16	Materials Warehouse	-	879	-	-	-	-	-	132	1,011	-	-	1,011	-	-	-	-	-	-	8,908	-
5b.1.1.17	Miscellaneous Structures	-	617	-	-	-	-	-	93	710	-	-	710	-	-	-	-	-	-	6,565	-
5b.1.1.18	New Radwaste Building	-	745	-	-	-	-	-	112	857	-	-	857	-	-	-	-	-	-	8,009	-
5b.1.1.19	New Sample Pump House	-	9	-	-	-	-	-	1	11	-	-	11	-	-	-	-	-	-	128	-
5b.1.1.20	Office Building	-	374	-	-	-	-	-	56	430	-	-	430	-	-	-	-	-	-	4,459	-
5b.1.1.21	Old Radwaste Building	-	680	-	-	-	-	-	102	782	-	-	782	-	-	-	-	-	-	6,852	-
5b.1.1.22	Plant Engineering	-	170	-	-	-	-	-	25	195	-	-	195	-	-	-	-	-	-	1,784	-
5b.1.1.23	Pretreatment Building	-	31	-	-	-	-	-	5	35	-	-	35	-	-	-	-	-	-	420	-
5b.1.1.24	Reactor Building	-	6,127	-	-	-	-	-	919	7,046	-	-	7,046	-	-	-	-	-	-	61,454	-
5b.1.1.25	Sample Pool	-	15	-	-	-	-	-	2	18	-	-	18	-	-	-	-	-	-	180	-
5b.1.1.26	Security Modifications	-	1,256	-	-	-	-	-	188	1,444	-	-	1,444	-	-	-	-	-	-	10,330	-
5b.1.1.27	Site Emergency Building	-	316	-	-	-	-	-	47	363	-	-	363	-	-	-	-	-	-	3,285	-
5b.1.1.28	Tank Pads & Misc. Yard	-	772	-	-	-	-	-	116	887	-	-	887	-	-	-	-	-	-	8,326	-
5b.1.1.29	Turbine Building	-	4,209	-	-	-	-	-	631	4,840	-	-	4,840	-	-	-	-	-	-	41,424	-
5b.1.1.30	Turbine Pedestal	-	574	-	-	-	-	-	86	660	-	-	660	-	-	-	-	-	-	5,050	-
5b.1.1	Totals	-	20,789	-	-	-	-	-	3,118	23,908	-	-	23,908	-	-	-	-	-	-	203,134	-
Site Closeout Activities																					
5b.1.2	Remove Rubble	-	798	-	-	-	-	-	120	917	-	-	917	-	-	-	-	-	-	4,211	-
5b.1.3	Grade & landscape site	-	634	-	-	-	-	-	95	729	-	-	729	-	-	-	-	-	-	1,304	-
5b.1.4	Final report to NRC	-	-	-	-	-	-	187	28	215	215	-	-	-	-	-	-	-	-	-	1,560
5b.1	Subtotal Period 5b Activity Costs	-	22,221	-	-	-	-	187	3,361	25,769	215	-	25,554	-	-	-	-	-	-	208,649	1,560
Period 5b Additional Costs																					
5b.2.1	Concrete Crushing	-	756	-	-	-	-	9	115	880	-	-	880	-	-	-	-	-	-	3,219	-
5b.2.2	Install Cofferdams - Intake & Dilution	-	975	-	-	-	-	-	146	1,122	-	-	1,122	-	-	-	-	-	-	8,296	-
5b.2.3	ISFSI Site Restoration	-	103	-	-	-	-	6	16	126	-	126	-	-	-	-	-	-	-	-	-
5b.2	Subtotal Period 5b Additional Costs	-	1,835	-	-	-	-	15	278	2,128	-	126	2,002	-	-	-	-	-	-	11,516	-
Period 5b Collateral Costs																					
5b.3.1	Small tool allowance	-	265	-	-	-	-	-	40	305	-	-	305	-	-	-	-	-	-	-	-
5b.3	Subtotal Period 5b Collateral Costs	-	265	-	-	-	-	-	40	305	-	-	305	-	-	-	-	-	-	-	-
Period 5b Period-Dependent Costs																					
5b.4.2	Property taxes	-	-	-	-	-	-	1,552	155	1,708	-	-	1,708	-	-	-	-	-	-	-	-
5b.4.3	Heavy equipment rental	-	4,438	-	-	-	-	-	666	5,104	-	-	5,104	-	-	-	-	-	-	-	-
5b.4.4	Plant energy budget	-	-	-	-	-	-	298	45	343	-	-	343	-	-	-	-	-	-	-	-
5b.4.5	Site O&M Cost	-	-	-	-	-	-	480	72	552	-	-	552	-	-	-	-	-	-	-	-
5b.4.6	Security Staff Cost	-	-	-	-	-	-	2,242	336	2,578	-	-	2,578	-	-	-	-	-	-	-	38,880
5b.4.7	DOC Staff Cost	-	-	-	-	-	-	10,204	1,531	11,735	-	-	11,735	-	-	-	-	-	-	-	110,160
5b.4.8	Utility Staff Cost	-	-	-	-	-	-	5,737	861	6,598	-	-	6,598	-	-	-	-	-	-	-	63,180
5b.4	Subtotal Period 5b Period-Dependent Costs	-	4,438	-	-	-	-	20,514	3,665	28,617	-	-	28,617	-	-	-	-	-	-	-	212,220
5b.0	TOTAL PERIOD 5b COST	-	28,759	-	-	-	-	20,716	7,344	56,818	215	126	56,478	-	-	-	-	-	-	220,165	213,780
PERIOD 5 TOTALS		-	28,759	-	-	-	-	20,716	7,344	56,818	215	126	56,478	-	-	-	-	-	-	220,165	213,780

Table D
Oyster Creek Nuclear Generating Station
Delayed DECON Decommissioning Cost Estimate
(Thousands of 2011 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
TOTAL COST TO DECOMMISSION		16,514	107,183	14,647	11,290	10,035	30,474	574,216	135,859	900,219	541,703	299,125	59,390	470,429	312,624	1,002	470	1,428	44,260,660	1,272,391	6,076,148

TOTAL COST TO DECOMMISSION WITH 17.77% CONTINGENCY:	**$900,219**	**thousands of 2011 dollars**
TOTAL NRC LICENSE TERMINATION COST IS 60.17% OR:	**$541,703**	**thousands of 2011 dollars**
SPENT FUEL MANAGEMENT COST IS 33.23% OR:	**$299,125**	**thousands of 2011 dollars**
NON-NUCLEAR DEMOLITION COST IS 6.6% OR:	**$59,390**	**thousands of 2011 dollars**
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	**314,095**	**cubic feet**
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	**1,428**	**cubic feet**
TOTAL SCRAP METAL REMOVED:	**24,292**	**tons**
TOTAL CRAFT LABOR REQUIREMENTS:	**1,272,391**	**man-hours**

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

APPENDIX E

DETAILED COST ANALYSIS

SAFSTOR

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a.1.1	SAFSTOR site characterization survey	-	-	-	-	-	-	434	130	564	564	-	-	-	-	-	-	-	-	-	-
1a.1.2	Prepare preliminary decommissioning cost	-	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-	-	-	-	1,300
1a.1.3	Notification of Cessation of Operations									a											
1a.1.4	Remove fuel & source material									n/a											
1a.1.5	Notification of Permanent Defueling									a											
1a.1.6	Deactivate plant systems & process waste									a											
1a.1.7	Prepare and submit PSDAR	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
1a.1.8	Review plant dwgs & specs.	-	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-	-	-	-	1,300
1a.1.9	Perform detailed rad survey									a											
1a.1.10	Estimate by-product inventory	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1a.1.11	End product description	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1a.1.12	Detailed by-product inventory	-	-	-	-	-	-	179	27	206	206	-	-	-	-	-	-	-	-	-	1,500
1a.1.13	Define major work sequence	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
1a.1.14	Perform SER and EA	-	-	-	-	-	-	371	56	427	427	-	-	-	-	-	-	-	-	-	3,100
1a.1.15	Perform Site-Specific Cost Study	-	-	-	-	-	-	598	90	688	688	-	-	-	-	-	-	-	-	-	5,000
Activity Specifications																					
1a.1.16.1	Prepare plant and facilities for SAFSTOR	-	-	-	-	-	-	589	88	677	677	-	-	-	-	-	-	-	-	-	4,920
1a.1.16.2	Plant systems	-	-	-	-	-	-	499	75	573	573	-	-	-	-	-	-	-	-	-	4,167
1a.1.16.3	Plant structures and buildings	-	-	-	-	-	-	373	56	429	429	-	-	-	-	-	-	-	-	-	3,120
1a.1.16.4	Waste management	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
1a.1.16.5	Facility and site dormancy	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
1a.1.16	Total	-	-	-	-	-	-	1,939	291	2,230	2,230	-	-	-	-	-	-	-	-	-	16,207
Detailed Work Procedures																					
1a.1.17.1	Plant systems	-	-	-	-	-	-	142	21	163	163	-	-	-	-	-	-	-	-	-	1,183
1a.1.17.2	Facility closeout & dormancy	-	-	-	-	-	-	144	22	165	165	-	-	-	-	-	-	-	-	-	1,200
1a.1.17	Total	-	-	-	-	-	-	285	43	328	328	-	-	-	-	-	-	-	-	-	2,383
1a.1.18	Procure vacuum drying system	-	-	-	-	-	-	12	2	14	14	-	-	-	-	-	-	-	-	-	100
1a.1.19	Drain/de-energize non-cont. systems									a											
1a.1.20	Drain & dry NSSS									a											
1a.1.21	Drain/de-energize contaminated systems									a											
1a.1.22	Decon/secure contaminated systems									a											
1a.1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	4,728	774	5,503	5,503	-	-	-	-	-	-	-	-	-	35,890
Period 1a Additional Costs																					
1a.2.1	ISFSI Expansion	-	-	-	-	-	-	5,200	780	5,980	-	5,980	-	-	-	-	-	-	-	-	-
1a.2	Subtotal Period 1a Additional Costs	-	-	-	-	-	-	5,200	780	5,980	-	5,980	-	-	-	-	-	-	-	-	-
Period 1a Collateral Costs																					
1a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	10,977	1,647	12,623	-	12,623	-	-	-	-	-	-	-	-	-
1a.3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	10,977	1,647	12,623	-	12,623	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a.4.1	Insurance	-	-	-	-	-	-	2,227	223	2,450	2,450	-	-	-	-	-	-	-	-	-	-
1a.4.2	Property taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1a.4.3	Health physics supplies	-	469	-	-	-	-	-	117	586	586	-	-	-	-	-	-	-	-	-	-

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 1a Period-Dependent Costs (continued)																					
1a.4.4	Heavy equipment rental	-	462	-	-	-	-	-	69	531	531	-	-	-	-	-	-	-	-	-	-
1a.4.5	Disposal of DAW generated	-	-	14	10	-	35	-	12	70	70	-	-	-	610	-	-	-	12,190	20	-
1a.4.6	Plant energy budget	-	-	-	-	-	-	1,918	288	2,206	2,206	-	-	-	-	-	-	-	-	-	-
1a.4.7	NRC Fees	-	-	-	-	-	-	769	77	846	846	-	-	-	-	-	-	-	-	-	-
1a.4.8	Emergency Planning Fees	-	-	-	-	-	-	564	56	621	-	621	-	-	-	-	-	-	-	-	-
1a.4.9	Site O&M Costs	-	-	-	-	-	-	309	46	355	355	-	-	-	-	-	-	-	-	-	-
1a.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	763	114	878	-	878	-	-	-	-	-	-	-	-	-
1a.4.11	ISFSI Operating Costs	-	-	-	-	-	-	89	13	103	-	103	-	-	-	-	-	-	-	-	-
1a.4.12	Security Staff Cost	-	-	-	-	-	-	8,441	1,266	9,707	9,707	-	-	-	-	-	-	-	-	-	157,471
1a.4.13	Utility Staff Cost	-	-	-	-	-	-	33,041	4,956	37,997	37,997	-	-	-	-	-	-	-	-	-	423,400
1a.4	Subtotal Period 1a Period-Dependent Costs	-	931	14	10	-	35	48,122	7,238	56,350	54,749	1,601	-	-	610	-	-	-	12,190	20	580,871
1a.0	TOTAL PERIOD 1a COST	-	931	14	10	-	35	69,028	10,439	80,456	60,252	20,205	-	-	610	-	-	-	12,190	20	616,761
PERIOD 1b - SAFSTOR Limited DECON Activities																					
Period 1b Direct Decommissioning Activities																					
Decontamination of Site Buildings																					
1b.1.1.1	New Radwaste Building - Systems Removal	0	-	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	1	-	-
1b.1.1.2	Old Radwaste Building - Systems Removal	0	-	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	1	-	-
1b.1.1.3	Augmented Off Gas - Decon	2	-	-	-	-	-	-	1	3	3	-	-	-	-	-	-	-	33	-	-
1b.1.1.4	Stack/Exhaust Tunnels - Remove & Decon	54	-	-	-	-	-	-	27	81	81	-	-	-	-	-	-	-	849	-	-
1b.1.1.5	Turbine Building 0ft - Decon	10	-	-	-	-	-	-	5	15	15	-	-	-	-	-	-	-	137	-	-
1b.1.1.6	Drywell - Liner Removal	2,063	-	-	-	-	-	-	1,031	3,094	3,094	-	-	-	-	-	-	-	28,819	-	-
1b.1.1.7	RB0 - Torus Removal	2,765	-	-	-	-	-	-	1,383	4,148	4,148	-	-	-	-	-	-	-	38,634	-	-
1b.1.1.8	Reactor Building -19ft - Decon	7	-	-	-	-	-	-	3	10	10	-	-	-	-	-	-	-	96	-	-
1b.1.1.9	Reactor Building 119ft - Decon	429	-	-	-	-	-	-	215	644	644	-	-	-	-	-	-	-	5,996	-	-
1b.1.1	Totals	5,330	-	-	-	-	-	-	2,665	7,996	7,996	-	-	-	-	-	-	-	74,565	-	-
1b.1	Subtotal Period 1b Activity Costs	5,330	-	-	-	-	-	-	2,665	7,996	7,996	-	-	-	-	-	-	-	74,565	-	-
Period 1b Additional Costs																					
1b.2.1	Spent fuel pool isolation	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
1b.2	Subtotal Period 1b Additional Costs	-	-	-	-	-	-	10,280	1,542	11,822	11,822	-	-	-	-	-	-	-	-	-	-
Period 1b Collateral Costs																					
1b.3.1	Decon equipment	902	-	-	-	-	-	-	135	1,037	1,037	-	-	-	-	-	-	-	-	-	-
1b.3.2	Process decommissioning water waste	288	-	127	343	-	620	-	363	1,742	1,742	-	-	-	1,817	-	-	-	109,041	354	-
1b.3.4	Small tool allowance	-	100	-	-	-	-	-	15	115	115	-	-	-	-	-	-	-	-	-	-
1b.3.5	Spent Fuel Capital and Transfer	-	-	-	-	-	-	2,737	410	3,147	-	3,147	-	-	-	-	-	-	-	-	-
1b.3	Subtotal Period 1b Collateral Costs	1,190	100	127	343	-	620	2,737	924	6,042	2,894	3,147	-	-	1,817	-	-	-	109,041	354	-
Period 1b Period-Dependent Costs																					
1b.4.1	Decon supplies	1,056	-	-	-	-	-	-	264	1,320	1,320	-	-	-	-	-	-	-	-	-	-
1b.4.2	Insurance	-	-	-	-	-	-	418	42	459	459	-	-	-	-	-	-	-	-	-	-
1b.4.3	Property taxes	-	-	-	-	-	-	601	60	661	661	-	-	-	-	-	-	-	-	-	-
1b.4.4	Health physics supplies	-	442	-	-	-	-	-	111	553	553	-	-	-	-	-	-	-	-	-	-
1b.4.5	Heavy equipment rental	-	115	-	-	-	-	-	17	132	132	-	-	-	-	-	-	-	-	-	-
1b.4.6	Disposal of DAW generated	-	-	4	3	-	9	-	3	19	19	-	-	-	164	-	-	-	3,277	5	-
1b.4.7	Plant energy budget	-	-	-	-	-	-	478	72	550	550	-	-	-	-	-	-	-	-	-	-

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 1b Period-Dependent Costs (continued)																					
1b.4.8	NRC Fees	-	-	-	-	-	-	192	19	211	211	-	-	-	-	-	-	-	-	-	-
1b.4.9	Emergency Planning Fees	-	-	-	-	-	-	141	14	155	-	155	-	-	-	-	-	-	-	-	-
1b.4.10	Site O&M Costs	-	-	-	-	-	-	77	12	89	89	-	-	-	-	-	-	-	-	-	-
1b.4.11	Spent Fuel Pool O&M	-	-	-	-	-	-	190	29	219	-	219	-	-	-	-	-	-	-	-	-
1b.4.12	ISFSI Operating Costs	-	-	-	-	-	-	22	3	26	-	26	-	-	-	-	-	-	-	-	-
1b.4.13	Security Staff Cost	-	-	-	-	-	-	2,104	316	2,420	2,420	-	-	-	-	-	-	-	-	-	39,260
1b.4.14	Utility Staff Cost	-	-	-	-	-	-	8,238	1,236	9,473	9,473	-	-	-	-	-	-	-	-	-	105,560
1b.4	Subtotal Period 1b Period-Dependent Costs	1,056	558	4	3	-	9	12,461	2,196	16,286	15,887	399	-	-	164	-	-	-	3,277	5	144,820
1b.0	TOTAL PERIOD 1b COST	7,576	658	131	346	-	630	25,477	7,328	42,145	38,599	3,546	-	-	1,981	-	-	-	112,319	74,925	144,820
PERIOD 1c - Preparations for SAFSTOR Dormancy																					
Period 1c Direct Decommissioning Activities																					
1c.1.1	Prepare support equipment for storage	-	489	-	-	-	-	-	73	562	562	-	-	-	-	-	-	-	-	3,000	-
1c.1.2	Install containment pressure equal. lines	-	51	-	-	-	-	-	8	59	59	-	-	-	-	-	-	-	-	700	-
1c.1.3	Interim survey prior to dormancy	-	-	-	-	-	-	733	220	953	953	-	-	-	-	-	-	-	-	12,166	-
1c.1.4	Secure building accesses									a											
1c.1.5	Prepare & submit interim report	-	-	-	-	-	-	70	10	80	80	-	-	-	-	-	-	-	-	-	583
1c.1	Subtotal Period 1c Activity Costs	-	540	-	-	-	-	803	311	1,654	1,654	-	-	-	-	-	-	-	-	15,866	583
Period 1c Collateral Costs																					
1c.3.1	Process decommissioning water waste	238	-	105	284	-	513	-	300	1,440	1,440	-	-	-	1,503	-	-	-	90,169	293	-
1c.3.3	Small tool allowance	-	5	-	-	-	-	-	1	6	6	-	-	-	-	-	-	-	-	-	-
1c.3.4	Spent Fuel Capital and Transfer	-	-	-	-	-	-	2,737	410	3,147	-	3,147	-	-	-	-	-	-	-	-	-
1c.3	Subtotal Period 1c Collateral Costs	238	5	105	284	-	513	2,737	711	4,593	1,446	3,147	-	-	1,503	-	-	-	90,169	293	-
Period 1c Period-Dependent Costs																					
1c.4.1	Insurance	-	-	-	-	-	-	418	42	459	459	-	-	-	-	-	-	-	-	-	-
1c.4.2	Property taxes	-	-	-	-	-	-	601	60	661	661	-	-	-	-	-	-	-	-	-	-
1c.4.3	Health physics supplies	-	187	-	-	-	-	-	47	234	234	-	-	-	-	-	-	-	-	-	-
1c.4.4	Heavy equipment rental	-	115	-	-	-	-	-	17	132	132	-	-	-	-	-	-	-	-	-	-
1c.4.5	Disposal of DAW generated	-	-	4	2	-	9	-	3	18	18	-	-	-	152	-	-	-	3,039	5	-
1c.4.6	Plant energy budget	-	-	-	-	-	-	478	72	550	550	-	-	-	-	-	-	-	-	-	-
1c.4.7	NRC Fees	-	-	-	-	-	-	192	19	211	211	-	-	-	-	-	-	-	-	-	-
1c.4.8	Emergency Planning Fees	-	-	-	-	-	-	141	14	155	-	155	-	-	-	-	-	-	-	-	-
1c.4.9	Site O&M Costs	-	-	-	-	-	-	77	12	89	89	-	-	-	-	-	-	-	-	-	-
1c.4.10	Spent Fuel Pool O&M	-	-	-	-	-	-	190	29	219	-	219	-	-	-	-	-	-	-	-	-
1c.4.11	ISFSI Operating Costs	-	-	-	-	-	-	22	3	26	-	26	-	-	-	-	-	-	-	-	-
1c.4.12	Security Staff Cost	-	-	-	-	-	-	2,104	316	2,420	2,420	-	-	-	-	-	-	-	-	-	39,260
1c.4.13	Utility Staff Cost	-	-	-	-	-	-	8,238	1,236	9,473	9,473	-	-	-	-	-	-	-	-	-	105,560
1c.4	Subtotal Period 1c Period-Dependent Costs	-	302	4	2	-	9	12,461	1,869	14,646	14,247	399	-	-	152	-	-	-	3,039	5	144,820
1c.0	TOTAL PERIOD 1c COST	238	847	109	286	-	522	16,000	2,891	20,893	17,346	3,546	-	-	1,655	-	-	-	93,209	16,164	145,403
PERIOD 1 TOTALS		7,813	2,435	254	642	-	1,186	110,505	20,658	143,494	116,197	27,297	-	-	4,246	-	-	-	217,718	91,109	906,985

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 2a - SAFSTOR Dormancy with Wet Spent Fuel Storage																					
Period 2a Direct Decommissioning Activities																					
2a.1.1	Quarterly Inspection									a											
2a.1.2	Semi-annual environmental survey									a											
2a.1.3	Prepare reports									a											
2a.1.4	Bituminous roof replacement	-	-	-	-	-	-	196	29	225	225	-	-	-	-	-	-	-	-	-	-
2a.1.5	Maintenance supplies	-	-	-	-	-	-	540	135	675	675	-	-	-	-	-	-	-	-	-	-
2a.1	Subtotal Period 2a Activity Costs	-	-	-	-	-	-	736	164	901	901	-	-	-	-	-	-	-	-	-	-
Period 2a Collateral Costs																					
2a.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	43,967	6,595	50,562	-	50,562	-	-	-	-	-	-	-	-	-
2a.3	Subtotal Period 2a Collateral Costs	-	-	-	-	-	-	43,967	6,595	50,562	-	50,562	-	-	-	-	-	-	-	-	-
Period 2a Period-Dependent Costs																					
2a.4.1	Insurance	-	-	-	-	-	-	3,396	340	3,735	2,526	1,209	-	-	-	-	-	-	-	-	-
2a.4.2	Property taxes	-	-	-	-	-	-	5,402	540	5,943	4,403	1,540	-	-	-	-	-	-	-	-	-
2a.4.3	Health physics supplies	-	753	-	-	-	-	-	188	942	942	-	-	-	-	-	-	-	-	-	-
2a.4.4	Disposal of DAW generated	-	-	21	15	-	53	-	18	107	107	-	-	-	922	-	-	-	18,431	30	-
2a.4.5	Plant energy budget	-	-	-	-	-	-	1,537	230	1,767	884	884	-	-	-	-	-	-	-	-	-
2a.4.6	NRC Fees	-	-	-	-	-	-	883	88	971	971	-	-	-	-	-	-	-	-	-	-
2a.4.7	Site O&M Costs	-	-	-	-	-	-	1,238	186	1,424	1,424	-	-	-	-	-	-	-	-	-	-
2a.4.8	Spent Fuel Pool O&M	-	-	-	-	-	-	3,057	459	3,515	-	3,515	-	-	-	-	-	-	-	-	-
2a.4.9	ISFSI Operating Costs	-	-	-	-	-	-	358	54	412	-	412	-	-	-	-	-	-	-	-	-
2a.4.10	Security Staff Cost	-	-	-	-	-	-	24,118	3,618	27,736	8,574	19,162	-	-	-	-	-	-	-	-	444,866
2a.4.11	Utility Staff Cost	-	-	-	-	-	-	25,724	3,859	29,582	6,534	23,049	-	-	-	-	-	-	-	-	329,994
2a.4	Subtotal Period 2a Period-Dependent Costs	-	753	21	15	-	53	65,713	9,579	76,134	26,364	49,770	-	-	922	-	-	-	18,431	30	774,860
2a.0	TOTAL PERIOD 2a COST	-	753	21	15	-	53	110,416	16,338	127,597	27,264	100,332	-	-	922	-	-	-	18,431	30	774,860
PERIOD 2b - SAFSTOR Dormancy with Dry Spent Fuel Storage																					
Period 2b Direct Decommissioning Activities																					
2b.1.1	Quarterly Inspection									a											
2b.1.2	Semi-annual environmental survey									a											
2b.1.3	Prepare reports									a											
2b.1.4	Bituminous roof replacement	-	-	-	-	-	-	563	84	647	647	-	-	-	-	-	-	-	-	-	-
2b.1.5	Maintenance supplies	-	-	-	-	-	-	1,553	388	1,941	1,941	-	-	-	-	-	-	-	-	-	-
2b.1	Subtotal Period 2b Activity Costs	-	-	-	-	-	-	2,115	473	2,588	2,588	-	-	-	-	-	-	-	-	-	-
Period 2b Collateral Costs																					
2b.3.1	Spent Fuel Capital and Transfer	-	-	-	-	-	-	9,500	1,425	10,925	-	10,925	-	-	-	-	-	-	-	-	-
2b.3	Subtotal Period 2b Collateral Costs	-	-	-	-	-	-	9,500	1,425	10,925	-	10,925	-	-	-	-	-	-	-	-	-
Period 2b Period-Dependent Costs																					
2b.4.1	Insurance	-	-	-	-	-	-	6,600	660	7,260	7,260	-	-	-	-	-	-	-	-	-	-
2b.4.2	Property taxes	-	-	-	-	-	-	11,502	1,150	12,652	12,652	-	-	-	-	-	-	-	-	-	-
2b.4.3	Health physics supplies	-	1,050	-	-	-	-	-	263	1,313	1,313	-	-	-	-	-	-	-	-	-	-
2b.4.4	Disposal of DAW generated	-	-	29	21	-	73	-	24	147	147	-	-	-	1,272	-	-	-	25,441	41	-
2b.4.5	Plant energy budget	-	-	-	-	-	-	2,208	331	2,539	2,539	-	-	-	-	-	-	-	-	-	-
2b.4.6	NRC ISFSI Fees	-	-	-	-	-	-	559	56	615	-	615	-	-	-	-	-	-	-	-	-
2b.4.7	NRC Fees	-	-	-	-	-	-	2,536	254	2,790	2,790	-	-	-	-	-	-	-	-	-	-

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2b Period-Dependent Costs (continued)																					
2b.4.8	Site O&M Costs	-	-	-	-	-	-	3,558	534	4,091	4,091	-	-	-	-	-	-	-	-	-	-
2b.4.9	ISFSI Operating Costs	-	-	-	-	-	-	1,030	154	1,184	-	1,184	-	-	-	-	-	-	-	-	-
2b.4.10	Security Staff Cost	-	-	-	-	-	-	36,444	5,467	41,911	24,637	17,274	-	-	-	-	-	-	-	-	648,154
2b.4.11	Utility Staff Cost	-	-	-	-	-	-	30,398	4,560	34,958	18,774	16,184	-	-	-	-	-	-	-	-	384,091
2b.4	Subtotal Period 2b Period-Dependent Costs	-	1,050	29	21	-	73	94,835	13,452	109,460	74,203	35,258	-	-	1,272	-	-	-	25,441	41	1,032,246
2b.0	TOTAL PERIOD 2b COST	-	1,050	29	21	-	73	106,451	15,350	122,973	76,791	46,183	-	-	1,272	-	-	-	25,441	41	1,032,246
PERIOD 2c - SAFSTOR Dormancy without Spent Fuel Storage																					
Period 2c Direct Decommissioning Activities																					
2c.1.1	Quarterly Inspection									a											
2c.1.2	Semi-annual environmental survey									a											
2c.1.3	Prepare reports									a											
2c.1.4	Bituminous roof replacement	-	-	-	-	-	-	1,875	281	2,156	2,156	-	-	-	-	-	-	-	-	-	-
2c.1.5	Maintenance supplies	-	-	-	-	-	-	5,174	1,293	6,467	6,467	-	-	-	-	-	-	-	-	-	-
2c.1	Subtotal Period 2c Activity Costs	-	-	-	-	-	-	7,049	1,575	8,624	8,624	-	-	-	-	-	-	-	-	-	-
Period 2c Period-Dependent Costs																					
2c.4.1	Insurance	-	-	-	-	-	-	21,991	2,199	24,190	24,190	-	-	-	-	-	-	-	-	-	-
2c.4.2	Property taxes	-	-	-	-	-	-	38,324	3,832	42,157	42,157	-	-	-	-	-	-	-	-	-	-
2c.4.3	Health physics supplies	-	3,291	-	-	-	-	-	823	4,114	4,114	-	-	-	-	-	-	-	-	-	-
2c.4.4	Disposal of DAW generated	-	-	90	64	-	223	-	74	451	451	-	-	-	3,904	-	-	-	78,074	127	-
2c.4.5	Plant energy budget	-	-	-	-	-	-	7,356	1,103	8,459	8,459	-	-	-	-	-	-	-	-	-	-
2c.4.6	NRC Fees	-	-	-	-	-	-	7,657	766	8,423	8,423	-	-	-	-	-	-	-	-	-	-
2c.4.7	Site O&M Costs	-	-	-	-	-	-	11,854	1,778	13,633	13,633	-	-	-	-	-	-	-	-	-	-
2c.4.8	Security Staff Cost	-	-	-	-	-	-	71,385	10,708	82,093	82,093	-	-	-	-	-	-	-	-	-	1,199,829
2c.4.9	Utility Staff Cost	-	-	-	-	-	-	54,396	8,159	62,556	62,556	-	-	-	-	-	-	-	-	-	699,900
2c.4	Subtotal Period 2c Period-Dependent Costs	-	3,291	90	64	-	223	212,964	29,443	246,076	246,076	-	-	-	3,904	-	-	-	78,074	127	1,899,729
2c.0	TOTAL PERIOD 2c COST	-	3,291	90	64	-	223	220,013	31,018	254,699	254,699	-	-	-	3,904	-	-	-	78,074	127	1,899,729
PERIOD 2 TOTALS		-	5,095	141	100	-	349	436,879	62,706	505,269	358,754	146,515	-	-	6,097	-	-	-	121,947	199	3,706,834
PERIOD 3a - Reactivate Site Following SAFSTOR Dormancy																					
Period 3a Direct Decommissioning Activities																					
3a.1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-	-	-	-	1,300
3a.1.2	Review plant dwgs & specs.	-	-	-	-	-	-	550	83	633	633	-	-	-	-	-	-	-	-	-	4,600
3a.1.3	Perform detailed rad survey									a											
3a.1.4	End product description	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
3a.1.5	Detailed by-product inventory	-	-	-	-	-	-	156	23	179	179	-	-	-	-	-	-	-	-	-	1,300
3a.1.6	Define major work sequence	-	-	-	-	-	-	897	135	1,032	1,032	-	-	-	-	-	-	-	-	-	7,500
3a.1.7	Perform SER and EA	-	-	-	-	-	-	371	56	427	427	-	-	-	-	-	-	-	-	-	3,100
3a.1.8	Perform Site-Specific Cost Study	-	-	-	-	-	-	598	90	688	688	-	-	-	-	-	-	-	-	-	5,000
3a.1.9	Prepare/submit License Termination Plan	-	-	-	-	-	-	490	74	564	564	-	-	-	-	-	-	-	-	-	4,096
3a.1.10	Receive NRC approval of termination plan									a											

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Activity Specifications																					
3a.1.11.1	Re-activate plant & temporary facilities	-	-	-	-	-	-	882	132	1,014	913	-	101	-	-	-	-	-	-	-	7,370
3a.1.11.2	Plant systems	-	-	-	-	-	-	499	75	573	516	-	57	-	-	-	-	-	-	-	4,167
3a.1.11.3	Reactor internals	-	-	-	-	-	-	850	127	977	977	-	-	-	-	-	-	-	-	-	7,100
3a.1.11.4	Reactor vessel	-	-	-	-	-	-	778	117	894	894	-	-	-	-	-	-	-	-	-	6,500
3a.1.11.5	Sacrificial shield	-	-	-	-	-	-	60	9	69	69	-	-	-	-	-	-	-	-	-	500
3a.1.11.6	Moisture separators/reheaters	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
3a.1.11.7	Reinforced concrete	-	-	-	-	-	-	191	29	220	110	-	110	-	-	-	-	-	-	-	1,600
3a.1.11.8	Main Turbine	-	-	-	-	-	-	250	37	287	287	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.9	Main Condensers	-	-	-	-	-	-	250	37	287	287	-	-	-	-	-	-	-	-	-	2,088
3a.1.11.10	Pressure suppression structure	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
3a.1.11.11	Drywell	-	-	-	-	-	-	191	29	220	220	-	-	-	-	-	-	-	-	-	1,600
3a.1.11.12	Plant structures & buildings	-	-	-	-	-	-	373	56	429	215	-	215	-	-	-	-	-	-	-	3,120
3a.1.11.13	Waste management	-	-	-	-	-	-	550	83	633	633	-	-	-	-	-	-	-	-	-	4,600
3a.1.11.14	Facility & site closeout	-	-	-	-	-	-	108	16	124	62	-	62	-	-	-	-	-	-	-	900
3a.1.11	Total	-	-	-	-	-	-	5,340	801	6,141	5,596	-	545	-	-	-	-	-	-	-	44,633
Planning & Site Preparations																					
3a.1.12	Prepare dismantling sequence	-	-	-	-	-	-	287	43	330	330	-	-	-	-	-	-	-	-	-	2,400
3a.1.13	Plant prep. & temp. svces	-	-	-	-	-	-	2,800	420	3,220	3,220	-	-	-	-	-	-	-	-	-	-
3a.1.14	Design water clean-up system	-	-	-	-	-	-	168	25	193	193	-	-	-	-	-	-	-	-	-	1,400
3a.1.15	Rigging/Cont. Cntrl Envlps/tooling/etc.	-	-	-	-	-	-	2,200	330	2,530	2,530	-	-	-	-	-	-	-	-	-	-
3a.1.16	Procure casks/liners & containers	-	-	-	-	-	-	147	22	169	169	-	-	-	-	-	-	-	-	-	1,230
3a.1	Subtotal Period 3a Activity Costs	-	-	-	-	-	-	14,280	2,142	16,422	15,876	-	545	-	-	-	-	-	-	-	77,559
Period 3a Period-Dependent Costs																					
3a.4.1	Insurance	-	-	-	-	-	-	573	57	631	631	-	-	-	-	-	-	-	-	-	-
3a.4.2	Property taxes	-	-	-	-	-	-	999	100	1,099	1,099	-	-	-	-	-	-	-	-	-	-
3a.4.3	Health physics supplies	-	410	-	-	-	-	-	102	512	512	-	-	-	-	-	-	-	-	-	-
3a.4.4	Heavy equipment rental	-	462	-	-	-	-	-	69	531	531	-	-	-	-	-	-	-	-	-	-
3a.4.5	Disposal of DAW generated	-	-	12	8	-	29	-	10	59	59	-	-	-	514	-	-	-	10,287	17	-
3a.4.6	Plant energy budget	-	-	-	-	-	-	1,918	288	2,206	2,206	-	-	-	-	-	-	-	-	-	-
3a.4.7	NRC Fees	-	-	-	-	-	-	272	27	299	299	-	-	-	-	-	-	-	-	-	-
3a.4.8	Site O&M Costs	-	-	-	-	-	-	309	46	355	355	-	-	-	-	-	-	-	-	-	-
3a.4.9	Security Staff Cost	-	-	-	-	-	-	3,629	544	4,173	4,173	-	-	-	-	-	-	-	-	-	65,179
3a.4.10	Utility Staff Cost	-	-	-	-	-	-	20,498	3,075	23,573	23,573	-	-	-	-	-	-	-	-	-	258,629
3a.4	Subtotal Period 3a Period-Dependent Costs	-	872	12	8	-	29	28,199	4,319	33,440	33,440	-	-	-	514	-	-	-	10,287	17	323,807
3a.0	TOTAL PERIOD 3a COST	-	872	12	8	-	29	42,479	6,461	49,861	49,316	-	545	-	514	-	-	-	10,287	17	401,366
PERIOD 3b - Decommissioning Preparations																					
Period 3b Direct Decommissioning Activities																					
Detailed Work Procedures																					
3b.1.1.1	Plant systems	-	-	-	-	-	-	566	85	651	586	-	65	-	-	-	-	-	-	-	4,733
3b.1.1.2	Reactor internals	-	-	-	-	-	-	479	72	550	550	-	-	-	-	-	-	-	-	-	4,000
3b.1.1.3	Remaining buildings	-	-	-	-	-	-	162	24	186	46	-	139	-	-	-	-	-	-	-	1,350
3b.1.1.4	CRD housings & NIs	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.5	Incore instrumentation	-	-	-	-	-	-	120	18	138	138	-	-	-	-	-	-	-	-	-	1,000
3b.1.1.6	Removal primary containment	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000

Table E
Oyster Creek Nuclear Generating Station
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(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Detailed Work Procedures (continued)																					
3b.1.1.7	Reactor vessel	-	-	-	-	-	-	434	65	499	499	-	-	-	-	-	-	-	-	-	3,630
3b.1.1.8	Facility closeout	-	-	-	-	-	-	144	22	165	83	-	83	-	-	-	-	-	-	-	1,200
3b.1.1.9	Sacrificial shield	-	-	-	-	-	-	144	22	165	165	-	-	-	-	-	-	-	-	-	1,200
3b.1.1.10	Reinforced concrete	-	-	-	-	-	-	120	18	138	69	-	69	-	-	-	-	-	-	-	1,000
3b.1.1.11	Main Turbine	-	-	-	-	-	-	249	37	286	286	-	-	-	-	-	-	-	-	-	2,080
3b.1.1.12	Main Condensers	-	-	-	-	-	-	250	37	287	287	-	-	-	-	-	-	-	-	-	2,088
3b.1.1.13	Moisture separators & reheaters	-	-	-	-	-	-	239	36	275	275	-	-	-	-	-	-	-	-	-	2,000
3b.1.1.14	Radwaste building	-	-	-	-	-	-	327	49	376	338	-	38	-	-	-	-	-	-	-	2,730
3b.1.1.15	Reactor building	-	-	-	-	-	-	327	49	376	338	-	38	-	-	-	-	-	-	-	2,730
3b.1.1	Total	-	-	-	-	-	-	3,917	588	4,505	4,074	-	431	-	-	-	-	-	-	-	32,741
3b.1	Subtotal Period 3b Activity Costs	-	-	-	-	-	-	3,917	588	4,505	4,074	-	431	-	-	-	-	-	-	-	32,741
Period 3b Additional Costs																					
3b.2.1	Site Characterization	-	-	-	-	-	-	4,986	1,496	6,482	6,482	-	-	-	-	-	-	-	-	27,140	9,952
3b.2.2	Disposition of Liquid RCRA Waste (not Lead)	-	-	-	17	-	529	-	135	680	680	-	-	-	2,019	-	-	-	115,076	-	-
3b.2.3	Disposition of PCB Soil RCRA Waste (not Lead)	-	-	-	1,362	-	1,450	-	567	3,378	3,378	-	-	-	27,000	-	-	-	3,240,000	-	-
3b.2.4	Disposition of Lead Inventory	-	-	-	26	756	-	-	117	899	899	-	-	328	-	-	-	-	232,673	-	-
3b.2.5	Asbestos Remediation	-	12,217	2	279	-	1,030	-	3,354	16,883	16,883	-	-	-	19,193	-	-	-	249,515	150,230	-
3b.2	Subtotal Period 3b Additional Costs	-	12,217	2	1,684	756	3,009	4,986	5,669	28,323	28,323	-	-	328	48,212	-	-	-	3,837,264	177,370	9,952
Period 3b Collateral Costs																					
3b.3.1	Decon equipment	902	-	-	-	-	-	-	135	1,037	1,037	-	-	-	-	-	-	-	-	-	-
3b.3.2	DOC staff relocation expenses	-	-	-	-	-	-	1,124	169	1,292	1,292	-	-	-	-	-	-	-	-	-	-
3b.3.3	Small tool allowance	-	184	-	-	-	-	-	28	211	211	-	-	-	-	-	-	-	-	-	-
3b.3.4	Pipe cutting equipment	-	1,100	-	-	-	-	-	165	1,265	1,265	-	-	-	-	-	-	-	-	-	-
3b.3	Subtotal Period 3b Collateral Costs	902	1,284	-	-	-	-	1,124	496	3,806	3,806	-	-	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b.4.1	Decon supplies	28	-	-	-	-	-	-	7	35	35	-	-	-	-	-	-	-	-	-	-
3b.4.2	Insurance	-	-	-	-	-	-	287	29	316	316	-	-	-	-	-	-	-	-	-	-
3b.4.3	Property taxes	-	-	-	-	-	-	501	50	551	551	-	-	-	-	-	-	-	-	-	-
3b.4.4	Health physics supplies	-	879	-	-	-	-	-	220	1,099	1,099	-	-	-	-	-	-	-	-	-	-
3b.4.5	Heavy equipment rental	-	232	-	-	-	-	-	35	266	266	-	-	-	-	-	-	-	-	-	-
3b.4.6	Disposal of DAW generated	-	-	7	5	-	17	-	6	34	34	-	-	-	292	-	-	-	5,834	10	-
3b.4.7	Plant energy budget	-	-	-	-	-	-	962	144	1,106	1,106	-	-	-	-	-	-	-	-	-	-
3b.4.8	NRC Fees	-	-	-	-	-	-	136	14	150	150	-	-	-	-	-	-	-	-	-	-
3b.4.9	Site O&M Costs	-	-	-	-	-	-	155	23	178	178	-	-	-	-	-	-	-	-	-	-
3b.4.10	Security Staff Cost	-	-	-	-	-	-	1,819	273	2,092	2,092	-	-	-	-	-	-	-	-	-	32,679
3b.4.11	DOC Staff Cost	-	-	-	-	-	-	5,076	761	5,838	5,838	-	-	-	-	-	-	-	-	-	58,560
3b.4.12	Utility Staff Cost	-	-	-	-	-	-	10,277	1,542	11,819	11,819	-	-	-	-	-	-	-	-	-	129,669
3b.4	Subtotal Period 3b Period-Dependent Costs	28	1,111	7	5	-	17	19,214	3,103	23,484	23,484	-	-	-	292	-	-	-	5,834	10	220,907
3b.0	TOTAL PERIOD 3b COST	930	14,611	8	1,689	756	3,025	29,242	9,855	60,117	59,686	-	431	328	48,504	-	-	-	3,843,098	177,380	263,600
PERIOD 3 TOTALS		930	15,483	20	1,698	756	3,055	71,721	16,317	109,979	109,002	-	976	328	49,018	-	-	-	3,853,385	177,396	664,966

Table E
Oyster Creek Nuclear Generating Station
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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
PERIOD 4a - Large Component Removal																					
Period 4a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
4a.1.1.2	Recirculation Pumps & Motors	10	108	41	79	50	108	-	83	480	480	-	-	633	527	-	-	-	196,350	2,156	-
4a.1.1.3	CRDMs & NIs Removal	40	179	523	141	-	137	-	172	1,190	1,190	-	-	-	5,179	-	-	-	112,850	3,338	-
4a.1.1.4	Reactor Vessel Internals	96	2,500	5,060	1,039	-	4,014	175	5,481	18,366	18,366	-	-	-	1,573	1,127	344	-	299,030	18,150	858
4a.1.1.5	Vessel & Internals GTCC Disposal	-	-	-	-	-	4,450	-	667	5,117	5,117	-	-	-	-	-	-	1,428	282,300	-	-
4a.1.1.6	Reactor Vessel	-	6,060	1,354	827	-	1,912	175	6,072	16,399	16,399	-	-	-	15,440	-	-	-	1,579,847	18,150	858
4a.1.1	Totals	146	8,846	6,979	2,086	50	10,620	349	12,475	41,551	41,551	-	-	633	22,720	1,127	344	1,428	2,470,377	41,795	1,716
Removal of Major Equipment																					
4a.1.2	Main Turbine/Generator	-	326	1,861	391	1,707	-	-	582	4,867	4,867	-	-	80,711	-	-	-	-	3,632,000	4,957	-
4a.1.3	Main Condensers	-	1,000	1,291	271	1,184	-	-	597	4,344	4,344	-	-	56,000	-	-	-	-	2,520,000	15,180	-
New Radwaste Building System Components																					
4a.1.7.1	7EB	-	162	9	9	7	23	-	49	259	259	-	-	362	334	-	-	-	33,679	2,492	-
4a.1.7.2	N2G	-	11	0	0	1	-	-	3	16	16	-	-	49	-	-	-	-	2,007	178	-
4a.1.7.3	N2P	-	24	1	1	6	-	-	7	40	40	-	-	341	-	-	-	-	13,830	357	-
4a.1.7.4	N3A	-	68	1	2	8	-	-	18	96	96	-	-	398	-	-	-	-	16,151	1,000	-
4a.1.7.5	N3D	-	81	1	2	10	-	-	22	115	115	-	-	501	-	-	-	-	20,362	1,263	-
4a.1.7.6	N3I	-	17	0	0	1	0	-	4	23	23	-	-	27	5	-	-	-	1,390	273	-
4a.1.7.7	N3N	-	101	1	2	9	-	-	27	139	139	-	-	447	-	-	-	-	18,140	1,529	-
4a.1.7.8	N3P	-	26	0	1	3	-	-	7	37	37	-	-	179	-	-	-	-	7,267	383	-
4a.1.7.9	N3Q	-	17	0	0	2	-	-	5	24	24	-	-	80	-	-	-	-	3,260	271	-
4a.1.7.10	N3R	-	17	0	0	2	-	-	5	24	24	-	-	97	-	-	-	-	3,934	261	-
4a.1.7.11	N3S	-	25	0	1	4	-	-	7	37	37	-	-	187	-	-	-	-	7,583	400	-
4a.1.7.12	N3T	-	16	0	0	1	-	-	4	21	21	-	-	58	-	-	-	-	2,357	243	-
4a.1.7.13	N3U	-	113	14	14	12	38	-	43	234	234	-	-	610	548	-	-	-	55,829	1,727	-
4a.1.7.14	N3W	-	117	16	15	12	41	-	45	247	247	-	-	643	604	-	-	-	60,369	1,792	-
4a.1.7.15	N3Y	-	208	5	13	58	-	-	63	348	348	-	-	3,054	-	-	-	-	124,028	3,179	-
4a.1.7.16	N51	-	28	0	1	5	-	-	8	42	42	-	-	239	-	-	-	-	9,707	433	-
4a.1.7.17	N52	-	23	1	1	2	3	-	7	38	38	-	-	121	43	-	-	-	7,290	353	-
4a.1.7.18	N53	-	35	2	3	5	5	-	11	61	61	-	-	248	75	-	-	-	14,268	541	-
4a.1.7.19	N54	-	17	1	1	1	2	-	5	26	26	-	-	46	28	-	-	-	3,435	260	-
4a.1.7.20	N55	-	73	1	2	8	-	-	20	104	104	-	-	414	-	-	-	-	16,809	1,137	-
4a.1.7.21	N56	-	97	1	3	14	-	-	27	143	143	-	-	734	-	-	-	-	29,828	1,389	-
4a.1.7.22	N5A	-	42	1	2	6	2	-	12	64	64	-	-	290	26	-	-	-	13,205	663	-
4a.1.7.23	N5B	-	39	1	1	6	-	-	11	58	58	-	-	307	-	-	-	-	12,485	621	-
4a.1.7.24	N5C	-	18	0	0	2	-	-	5	25	25	-	-	106	-	-	-	-	4,294	267	-
4a.1.7.25	N5D	-	28	0	1	3	-	-	8	39	39	-	-	152	-	-	-	-	6,190	426	-
4a.1.7.26	N5E	-	19	0	0	2	-	-	5	26	26	-	-	110	-	-	-	-	4,453	278	-
4a.1.7.27	N5F	-	27	2	1	2	3	-	8	43	43	-	-	91	45	-	-	-	6,294	408	-
4a.1.7.28	N5G	-	13	0	0	1	-	-	3	18	18	-	-	40	-	-	-	-	1,645	205	-
4a.1.7.29	N5H	-	11	1	1	0	2	-	3	18	18	-	-	5	26	-	-	-	1,667	172	-
4a.1.7.30	N5I	-	15	0	0	1	-	-	4	21	21	-	-	51	-	-	-	-	2,090	238	-
4a.1.7.31	N5J	-	12	0	1	3	-	-	3	19	19	-	-	131	-	-	-	-	5,328	187	-
4a.1.7.32	N5K	-	15	0	0	1	-	-	4	21	21	-	-	75	-	-	-	-	3,050	224	-
4a.1.7.33	N5N	-	28	0	1	3	-	-	8	39	39	-	-	143	-	-	-	-	5,803	433	-
4a.1.7.34	N5O	-	72	1	3	13	-	-	21	110	110	-	-	670	-	-	-	-	27,221	1,105	-
4a.1.7.35	N5P	-	26	2	2	3	4	-	9	46	46	-	-	183	62	-	-	-	10,822	420	-

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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
New Radwaste Building System Components (continued)																					
4a.1.7.36	N5Q	-	26	2	2	3	4	-	8	46	46	-	-	182	61	-	-	-	10,719	414	-
4a.1.7.37	N5S	-	64	4	10	42	-	-	24	143	143	-	-	2,195	-	-	-	-	89,151	1,024	-
4a.1.7.38	N5T	-	59	2	3	12	3	-	18	97	97	-	-	606	40	-	-	-	26,812	930	-
4a.1.7.39	N5U	-	60	2	3	12	3	-	18	98	98	-	-	607	40	-	-	-	26,871	942	-
4a.1.7.40	N5Y	-	23	1	1	3	1	-	7	36	36	-	-	153	19	-	-	-	7,306	358	-
4a.1.7.41	N5Z	-	23	1	1	3	1	-	7	36	36	-	-	153	19	-	-	-	7,306	358	-
4a.1.7.42	PPA	-	75	1	3	11	-	-	21	110	110	-	-	572	-	-	-	-	23,240	1,139	-
4a.1.7	Totals	-	1,972	76	109	299	135	-	596	3,187	3,187	-	-	15,660	1,977	-	-	-	747,476	30,271	-
Old Radwaste Building System Components																					
4a.1.8.1	7BA	-	83	1	2	9	-	-	22	117	117	-	-	480	-	-	-	-	19,481	1,272	-
4a.1.8.2	7DA	-	48	5	5	2	14	-	17	92	92	-	-	122	206	-	-	-	16,640	738	-
4a.1.8.3	7FA	-	22	1	2	4	3	-	7	39	39	-	-	206	43	-	-	-	10,810	355	-
4a.1.8.4	PBA	-	147	12	12	17	26	-	49	263	263	-	-	893	388	-	-	-	57,934	2,324	-
4a.1.8.5	PDA	-	52	1	2	7	-	-	14	75	75	-	-	373	-	-	-	-	15,150	808	-
4a.1.8.6	PMA	-	12	0	0	1	-	-	3	17	17	-	-	54	-	-	-	-	2,174	190	-
4a.1.8.7	PRA	-	82	1	4	16	-	-	24	128	128	-	-	855	-	-	-	-	34,703	1,292	-
4a.1.8.8	PTK / PTP	-	13	0	0	1	-	-	3	17	17	-	-	30	-	-	-	-	1,199	202	-
4a.1.8	Totals	-	460	21	26	57	43	-	141	749	749	-	-	3,011	637	-	-	-	158,091	7,180	-
Turbine Building System Components																					
4a.1.9.1	7CA	-	260	21	22	33	46	-	87	468	468	-	-	1,755	663	-	-	-	108,906	4,017	-
4a.1.9.2	TB2	-	961	19	52	227	-	-	284	1,544	1,544	-	-	11,906	-	-	-	-	483,529	14,570	-
4a.1.9.3	TB23	-	5	0	0	1	-	-	1	8	8	-	-	42	-	-	-	-	1,699	83	-
4a.1.9.4	TB38	-	16	0	1	2	-	-	5	24	24	-	-	124	-	-	-	-	5,034	229	-
4a.1.9.5	TC2	-	1,562	70	188	820	-	-	549	3,190	3,190	-	-	42,978	-	-	-	-	1,745,363	23,871	-
4a.1.9.6	TE2	-	186	12	20	60	22	-	65	365	365	-	-	3,126	317	-	-	-	144,922	2,822	-
4a.1.9.7	TEE	-	320	7	18	79	-	-	95	519	519	-	-	4,115	-	-	-	-	167,126	4,871	-
4a.1.9.8	TEG	-	26	0	1	3	-	-	7	36	36	-	-	139	-	-	-	-	5,640	380	-
4a.1.9.9	TP2	-	170	4	12	51	-	-	52	289	289	-	-	2,659	-	-	-	-	107,977	2,613	-
4a.1.9.10	TP3	-	113	9	10	16	20	-	38	205	205	-	-	859	292	-	-	-	51,008	1,793	-
4a.1.9.11	TPE	-	102	10	10	12	23	-	36	193	193	-	-	647	335	-	-	-	45,003	1,572	-
4a.1.9	Totals	-	3,722	153	332	1,305	110	-	1,219	6,840	6,840	-	-	68,349	1,608	-	-	-	2,866,205	56,820	-
4a.1.12	Scaffolding in support of decommissioning	-	940	27	7	22	8	-	244	1,249	1,249	-	-	1,057	112	-	-	-	53,901	16,869	-
4a.1	Subtotal Period 4a Activity Costs	146	17,267	10,408	3,223	4,625	10,916	349	15,854	62,787	62,787	-	-	225,422	27,054	1,127	344	1,428	12,448,050	173,072	1,716
Period 4a Collateral Costs																					
4a.3.1	Process decommissioning water waste	6	-	7	19	-	35	-	15	83	83	-	-	-	102	-	-	-	6,149	20	-
4a.3.3	Small tool allowance	-	210	-	-	-	-	-	31	241	217	-	24	-	-	-	-	-	-	-	-
4a.3	Subtotal Period 4a Collateral Costs	6	210	7	19	-	35	-	47	324	300	-	24	-	102	-	-	-	6,149	20	-
Period 4a Period-Dependent Costs																					
4a.4.1	Decon supplies	52	-	-	-	-	-	-	13	65	65	-	-	-	-	-	-	-	-	-	-
4a.4.2	Insurance	-	-	-	-	-	-	539	54	593	593	-	-	-	-	-	-	-	-	-	-
4a.4.3	Property taxes	-	-	-	-	-	-	939	94	1,033	930	-	103	-	-	-	-	-	-	-	-
4a.4.4	Health physics supplies	-	1,186	-	-	-	-	-	297	1,483	1,483	-	-	-	-	-	-	-	-	-	-
4a.4.5	Heavy equipment rental	-	1,888	-	-	-	-	-	283	2,172	2,172	-	-	-	-	-	-	-	-	-	-
4a.4.6	Disposal of DAW generated	-	-	80	57	-	198	-	66	400	400	-	-	-	3,462	-	-	-	69,233	113	-
4a.4.7	Plant energy budget	-	-	-	-	-	-	1,712	257	1,969	1,969	-	-	-	-	-	-	-	-	-	-

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 4a Period-Dependent Costs (continued)																					
4a.4.8	NRC Fees	-	-	-	-	-	-	674	67	741	741	-	-	-	-	-	-	-	-	-	-
4a.4.9	Site O&M Costs	-	-	-	-	-	-	290	44	334	334	-	-	-	-	-	-	-	-	-	-
4a.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	364	55	419	419	-	-	-	-	-	-	-	-	-	-
4a.4.11	Security Staff Cost	-	-	-	-	-	-	3,410	511	3,921	3,921	-	-	-	-	-	-	-	-	-	61,250
4a.4.12	DOC Staff Cost	-	-	-	-	-	-	11,514	1,727	13,241	13,241	-	-	-	-	-	-	-	-	-	135,240
4a.4.13	Utility Staff Cost	-	-	-	-	-	-	19,437	2,916	22,353	22,353	-	-	-	-	-	-	-	-	-	245,000
4a.4	Subtotal Period 4a Period-Dependent Costs	52	3,075	80	57	-	198	38,880	6,383	48,724	48,621	-	103	-	3,462	-	-	-	69,233	113	441,490
4a.0	TOTAL PERIOD 4a COST	204	20,551	10,495	3,298	4,625	11,149	39,229	22,284	111,836	111,708	-	127	225,422	30,618	1,127	344	1,428	12,523,430	173,205	443,206
PERIOD 4b - Site Decontamination																					
Period 4b Direct Decommissioning Activities																					
4b.1.1	Remove spent fuel racks	545	64	142	226	-	744	-	523	2,243	2,243	-	-	-	10,858	-	-	-	615,095	1,071	-
Drywell System Components																					
4b.1.2.1	IAA/IAC	-	329	218	191	136	527	-	285	1,685	1,685	-	-	7,111	7,660	-	-	-	723,932	5,700	-
4b.1.2.2	IBA	-	164	19	19	17	50	-	61	330	330	-	-	880	734	-	-	-	77,321	2,588	-
4b.1.2.3	ICA	-	263	36	32	35	79	-	99	543	543	-	-	1,841	1,148	-	-	-	140,037	4,149	-
4b.1.2.4	IEA	-	70	9	11	18	22	-	28	157	157	-	-	926	320	-	-	-	55,719	1,176	-
4b.1.2.5	RC6	-	65	1	2	8	-	-	18	95	95	-	-	440	-	-	-	-	17,889	989	-
4b.1.2	Totals	-	890	282	255	214	678	-	491	2,809	2,809	-	-	11,199	9,861	-	-	-	1,014,897	14,602	-
Reactor Building System Components																					
4b.1.3.1	RB1	-	202	4	11	48	-	-	60	324	324	-	-	2,495	-	-	-	-	101,308	2,991	-
4b.1.3.2	RBB	-	106	2	6	25	-	-	31	170	170	-	-	1,306	-	-	-	-	53,019	1,597	-
4b.1.3.3	RBC	-	108	2	6	28	-	-	33	178	178	-	-	1,485	-	-	-	-	60,294	1,647	-
4b.1.3.4	RBE	-	142	2	6	26	-	-	41	217	217	-	-	1,381	-	-	-	-	56,063	2,156	-
4b.1.3.5	RBF	-	121	14	14	14	35	-	45	244	244	-	-	740	516	-	-	-	59,235	1,909	-
4b.1.3.6	RBO	-	526	18	49	214	-	-	173	981	981	-	-	11,229	-	-	-	-	456,005	8,678	-
4b.1.3.7	RBS	-	247	22	27	53	50	-	88	486	486	-	-	2,757	727	-	-	-	153,183	3,897	-
4b.1.3.8	RBSW	-	135	2	6	26	-	-	39	207	207	-	-	1,343	-	-	-	-	54,558	2,077	-
4b.1.3.9	RC1/RC3	-	4	0	0	0	-	-	1	6	6	-	-	14	-	-	-	-	577	63	-
4b.1.3.10	RC7	-	90	2	5	21	-	-	27	145	145	-	-	1,106	-	-	-	-	44,917	1,311	-
4b.1.3.11	RCA	-	47	3	3	3	8	-	15	79	79	-	-	147	109	-	-	-	12,175	725	-
4b.1.3.12	RCB	-	69	2	3	10	2	-	20	105	105	-	-	501	28	-	-	-	21,917	1,051	-
4b.1.3.13	RCD	-	352	7	17	76	-	-	103	555	555	-	-	3,974	-	-	-	-	161,384	5,318	-
4b.1.3.14	RCG	-	67	2	5	22	-	-	21	116	116	-	-	1,136	-	-	-	-	46,136	1,041	-
4b.1.3.15	RCJ	-	74	1	3	12	-	-	21	110	110	-	-	617	-	-	-	-	25,044	1,121	-
4b.1.3.16	RCM	-	109	2	6	28	-	-	33	179	179	-	-	1,481	-	-	-	-	60,136	1,694	-
4b.1.3.17	RCN	-	243	3	9	40	-	-	69	365	365	-	-	2,107	-	-	-	-	85,581	3,666	-
4b.1.3.18	RCS	-	87	15	14	12	38	-	37	204	204	-	-	636	561	-	-	-	57,657	1,365	-
4b.1.3.19	RCT	-	57	1	2	9	-	-	16	84	84	-	-	464	-	-	-	-	18,858	858	-
4b.1.3.20	RD8	-	87	66	66	36	189	-	91	535	535	-	-	1,861	2,761	-	-	-	231,971	1,484	-
4b.1.3.21	RDM	-	48	0	1	5	-	-	13	67	67	-	-	268	-	-	-	-	10,870	701	-
4b.1.3.22	REC	-	216	3	9	37	-	-	61	326	326	-	-	1,953	-	-	-	-	79,329	3,190	-
4b.1.3.23	REF	-	100	23	21	13	60	-	47	264	264	-	-	667	875	-	-	-	76,709	1,550	-
4b.1.3.24	REH/REI	-	121	2	6	25	-	-	35	189	189	-	-	1,325	-	-	-	-	53,806	1,846	-
4b.1.3.25	REL	-	215	5	14	63	-	-	66	364	364	-	-	3,286	-	-	-	-	133,445	3,285	-
4b.1.3.26	REM	-	57	1	2	10	-	-	16	87	87	-	-	538	-	-	-	-	21,846	868	-
4b.1.3.27	REO	-	122	21	22	21	57	-	53	296	296	-	-	1,115	827	-	-	-	92,099	1,930	-

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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Burial Volumes Class C Cu. Feet	Burial Volumes GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Reactor Building System Components (continued)																					
4b.1.3.28	REQ	-	169	9	11	25	17	-	53	284	284	-	-	1,311	254	-	-	-	67,684	2,610	-
4b.1.3.29	RER	-	56	5	4	3	11	-	19	98	98	-	-	177	167	-	-	-	16,663	881	-
4b.1.3.30	RET	-	32	1	1	4	1	-	9	48	48	-	-	185	18	-	-	-	8,515	500	-
4b.1.3.31	REW	-	28	0	1	3	-	-	8	39	39	-	-	146	-	-	-	-	5,936	432	-
4b.1.3.32	REX	-	31	0	1	3	-	-	8	43	43	-	-	165	-	-	-	-	6,710	477	-
4b.1.3.33	REY	-	36	0	1	4	-	-	10	50	50	-	-	192	-	-	-	-	7,781	543	-
4b.1.3.34	RFB	-	159	3	7	31	-	-	46	246	246	-	-	1,622	-	-	-	-	65,859	2,449	-
4b.1.3.35	RFC	-	104	12	9	6	24	-	35	190	190	-	-	337	351	-	-	-	33,707	1,649	-
4b.1.3.36	RFF	-	111	2	4	18	-	-	31	166	166	-	-	923	-	-	-	-	37,469	1,696	-
4b.1.3.37	RFH	-	152	25	22	13	61	-	61	335	335	-	-	692	893	-	-	-	78,810	2,337	-
4b.1.3.38	RFJ	-	133	23	21	13	59	-	56	305	305	-	-	690	866	-	-	-	77,154	2,052	-
4b.1.3.39	RFL	-	85	1	3	14	-	-	24	128	128	-	-	754	-	-	-	-	30,625	1,337	-
4b.1.3.40	RFN	-	115	2	5	21	-	-	33	176	176	-	-	1,118	-	-	-	-	45,418	1,768	-
4b.1.3.41	RFQ	-	167	2	4	18	-	-	45	236	236	-	-	942	-	-	-	-	38,243	2,456	-
4b.1.3.42	RGC	-	89	1	3	13	-	-	25	130	130	-	-	667	-	-	-	-	27,107	1,368	-
4b.1.3.43	RGD	-	251	7	19	84	-	-	79	441	441	-	-	4,427	-	-	-	-	179,773	3,921	-
4b.1.3.44	RGI	-	53	1	2	8	-	-	15	78	78	-	-	414	-	-	-	-	16,826	835	-
4b.1.3.45	RGL	-	62	1	2	11	-	-	18	94	94	-	-	555	-	-	-	-	22,545	967	-
4b.1.3.46	RGP	-	29	0	1	5	-	-	8	43	43	-	-	238	-	-	-	-	9,661	437	-
4b.1.3.47	RGR	-	190	3	7	31	-	-	54	284	284	-	-	1,633	-	-	-	-	66,314	2,876	-
4b.1.3.48	RGU	-	85	1	2	10	-	-	23	121	121	-	-	547	-	-	-	-	22,199	1,312	-
4b.1.3.49	RH1	-	50	1	1	6	-	-	14	72	72	-	-	339	-	-	-	-	13,754	762	-
4b.1.3.50	RH2	-	37	1	2	10	-	-	11	62	62	-	-	550	-	-	-	-	22,340	572	-
4b.1.3.51	RH3 / RH4 / RH6	-	127	1	3	11	-	-	34	176	176	-	-	592	-	-	-	-	24,061	1,896	-
4b.1.3.52	RHA	-	21	1	2	2	4	-	7	36	36	-	-	83	57	-	-	-	6,596	326	-
4b.1.3.53	RHJ	-	45	0	1	5	-	-	12	64	64	-	-	282	-	-	-	-	11,443	687	-
4b.1.3.54	RHL	-	29	0	1	2	-	-	8	40	40	-	-	121	-	-	-	-	4,913	431	-
4b.1.3.55	RHX	-	54	1	2	8	-	-	15	80	80	-	-	440	-	-	-	-	17,877	814	-
4b.1.3.56	RHY	-	49	1	2	7	-	-	13	71	71	-	-	369	-	-	-	-	14,998	750	-
4b.1.3.57	RMCC	-	98	2	4	19	-	-	28	151	151	-	-	989	-	-	-	-	40,165	1,468	-
4b.1.3	Totals	-	6,397	332	482	1,287	618	-	2,053	11,170	11,170	-	-	67,430	9,010	-	-	-	3,249,269	98,630	-
New Radwaste Building System Components																					
4b.1.4.1	N38	-	173	2	6	27	-	-	48	256	256	-	-	1,392	-	-	-	-	56,536	2,566	-
4b.1.4.2	N48	-	88	1	2	10	-	-	24	125	125	-	-	530	-	-	-	-	21,506	1,308	-
4b.1.4.3	N4A	-	29	2	2	3	4	-	9	50	50	-	-	183	63	-	-	-	10,949	470	-
4b.1.4.4	N4B	-	28	2	2	3	4	-	9	46	46	-	-	162	53	-	-	-	9,549	442	-
4b.1.4.5	N4D	-	91	1	2	9	-	-	24	127	127	-	-	459	-	-	-	-	18,650	1,350	-
4b.1.4.6	N4E	-	7	0	0	0	-	-	2	9	9	-	-	17	-	-	-	-	687	107	-
4b.1.4.7	N4F	-	19	0	0	2	-	-	5	27	27	-	-	98	-	-	-	-	3,986	289	-
4b.1.4.8	N4H	-	22	1	1	4	2	-	7	38	38	-	-	217	23	-	-	-	10,137	364	-
4b.1.4.9	N4K	-	24	0	1	3	-	-	7	35	35	-	-	176	-	-	-	-	7,138	364	-
4b.1.4.10	N4L	-	35	0	1	3	-	-	10	49	49	-	-	177	-	-	-	-	7,195	553	-
4b.1.4.11	N5R	-	77	2	4	20	-	-	23	125	125	-	-	1,029	-	-	-	-	41,782	1,188	-
4b.1.4.12	N5V	-	59	4	5	9	10	-	20	107	107	-	-	482	146	-	-	-	27,568	934	-
4b.1.4.13	N5W	-	9	0	0	0	-	-	2	12	12	-	-	10	-	-	-	-	401	148	-
4b.1.4.14	N5X	-	74	1	4	16	-	-	22	116	116	-	-	842	-	-	-	-	34,176	1,155	-
4b.1.4	Totals	-	734	16	31	110	19	-	211	1,122	1,122	-	-	5,774	286	-	-	-	250,260	11,236	-

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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Old Radwaste Building System Components																					
4b.1.5.1	ORW Pre D&D Desludge and Decon	-	203	-	-	-	-	-	30	234	234	-	-	-	-	-	-	-	-	2,839	-
4b.1.5.2	PRD	-	15	0	1	3	-	-	4	23	23	-	-	151	-	-	-	-	6,112	245	-
4b.1.5.3	PSB	-	139	2	5	23	-	-	39	209	209	-	-	1,198	-	-	-	-	48,634	2,135	-
4b.1.5.4	PTA	-	39	1	2	7	-	-	11	59	59	-	-	371	-	-	-	-	15,084	601	-
4b.1.5.5	PUA	-	208	2	6	27	-	-	57	300	300	-	-	1,389	-	-	-	-	56,392	3,154	-
4b.1.5.6	PUU	-	141	5	10	35	5	-	44	239	239	-	-	1,825	83	-	-	-	78,582	2,225	-
4b.1.5.7	PVA	-	9	0	0	0	-	-	2	12	12	-	-	13	-	-	-	-	519	148	-
4b.1.5.8	UAB	-	304	4	10	45	-	-	85	448	448	-	-	2,367	-	-	-	-	96,117	4,649	-
4b.1.5.9	UAS	-	208	4	10	43	-	-	61	326	326	-	-	2,277	-	-	-	-	92,465	3,222	-
4b.1.5	Totals	-	1,268	18	44	183	5	-	334	1,851	1,851	-	-	9,590	83	-	-	-	393,904	19,219	-
Turbine Building System Components																					
4b.1.6.1	TD2	-	60	1	2	7	-	-	17	87	87	-	-	390	-	-	-	-	15,850	875	-
4b.1.6.2	TF2	-	324	16	42	184	-	-	117	683	683	-	-	9,646	-	-	-	-	391,743	4,891	-
4b.1.6.3	TFG	-	23	0	1	3	-	-	6	34	34	-	-	150	-	-	-	-	6,106	361	-
4b.1.6.4	TG2	-	236	12	33	144	-	-	87	513	513	-	-	7,564	-	-	-	-	307,179	3,660	-
4b.1.6.5	TH2	-	459	21	56	243	-	-	162	940	940	-	-	12,740	-	-	-	-	517,385	7,040	-
4b.1.6.6	TKA	-	24	0	0	1	-	-	6	32	32	-	-	74	-	-	-	-	2,996	348	-
4b.1.6.7	TL2	-	100	7	6	10	14	-	32	168	168	-	-	523	201	-	-	-	32,662	1,480	-
4b.1.6.8	TMA	-	61	1	4	17	-	-	18	102	102	-	-	895	-	-	-	-	36,367	921	-
4b.1.6.9	TN2	-	320	7	19	85	-	-	96	528	528	-	-	4,447	-	-	-	-	180,585	4,873	-
4b.1.6.10	TO2	-	170	-	-	-	-	-	26	196	-	-	196	-	-	-	-	-	-	2,826	-
4b.1.6.11	TOA	-	87	2	4	19	-	-	26	138	138	-	-	1,014	-	-	-	-	41,172	1,303	-
4b.1.6.12	TOCR	-	74	3	7	32	-	-	25	141	141	-	-	1,692	-	-	-	-	68,697	1,058	-
4b.1.6.13	TOR	-	65	2	4	18	-	-	20	107	107	-	-	931	-	-	-	-	37,795	994	-
4b.1.6.14	TOV	-	19	0	0	2	-	-	5	27	27	-	-	98	-	-	-	-	3,978	292	-
4b.1.6.15	TOW	-	103	4	11	49	-	-	35	202	202	-	-	2,557	-	-	-	-	103,857	1,547	-
4b.1.6.16	TOX / TOY	-	28	0	1	2	-	-	8	39	39	-	-	124	-	-	-	-	5,052	423	-
4b.1.6.17	TS2	-	201	6	17	74	-	-	64	362	362	-	-	3,875	-	-	-	-	157,362	2,995	-
4b.1.6.18	TTA	-	60	1	4	17	-	-	18	101	101	-	-	899	-	-	-	-	36,508	957	-
4b.1.6.19	TU2	-	185	3	9	40	-	-	54	292	292	-	-	2,096	-	-	-	-	85,139	2,856	-
4b.1.6	Totals	-	2,599	87	221	949	14	-	820	4,691	4,495	-	196	49,717	201	-	-	-	2,030,434	39,701	-
Augmented Offgas System Components																					
4b.1.7.1	AY8	-	143	3	7	30	-	-	42	224	224	-	-	1,596	-	-	-	-	64,813	2,154	-
4b.1.7.2	AYA	-	30	1	2	10	-	-	9	53	53	-	-	512	-	-	-	-	20,775	459	-
4b.1.7.3	AYB	-	29	0	1	5	-	-	8	43	43	-	-	267	-	-	-	-	10,862	441	-
4b.1.7.4	AYC	-	73	2	4	19	-	-	22	120	120	-	-	1,012	-	-	-	-	41,078	1,127	-
4b.1.7.5	AYE	-	25	0	0	2	-	-	7	35	35	-	-	103	-	-	-	-	4,199	375	-
4b.1.7.6	AZ8	-	54	1	3	12	-	-	16	85	85	-	-	611	-	-	-	-	24,796	824	-
4b.1.7.7	AZA	-	12	0	0	1	-	-	3	17	17	-	-	40	-	-	-	-	1,638	188	-
4b.1.7.8	AZC	-	103	2	5	22	-	-	30	162	162	-	-	1,145	-	-	-	-	46,509	1,555	-
4b.1.7.9	AZD	-	17	0	0	1	-	-	5	24	24	-	-	75	-	-	-	-	3,063	267	-
4b.1.7.10	AZE	-	16	0	0	1	-	-	4	23	23	-	-	70	-	-	-	-	2,856	256	-
4b.1.7.11	AZF	-	15	0	0	2	-	-	4	22	22	-	-	90	-	-	-	-	3,672	239	-
4b.1.7.12	AZI	-	30	1	1	7	-	-	9	47	47	-	-	343	-	-	-	-	13,938	461	-
4b.1.7	Totals	-	547	10	26	112	-	-	158	853	853	-	-	5,865	-	-	-	-	238,198	8,345	-
Miscellaneous System Components																					
4b.1.8.1	BAA	-	262	5	14	62	-	-	77	421	421	-	-	3,241	-	-	-	-	131,602	3,979	-
4b.1.8.2	BBA	-	88	4	10	42	-	-	30	173	173	-	-	2,183	-	-	-	-	88,656	1,368	-

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Miscellaneous System Components (continued)																					
4b.1.8.3	BDA	-	11	0	0	1	-	-	3	14	14	-	-	27	-	-	-	-	1,083	167	-
4b.1.8.4	CAA	-	615	17	45	196	-	-	192	1,064	1,064	-	-	10,252	-	-	-	-	416,330	9,611	-
4b.1.8.5	DAA	-	64	1	2	7	-	-	17	91	91	-	-	376	-	-	-	-	15,277	1,005	-
4b.1.8.6	DAC	-	152	2	5	23	-	-	42	225	225	-	-	1,230	-	-	-	-	49,940	2,323	-
4b.1.8.7	DGB	-	82	-	-	-	-	-	12	94	-	-	94	-	-	-	-	-	-	1,336	-
4b.1.8.8	DOT	-	14	-	-	-	-	-	2	16	-	-	16	-	-	-	-	-	-	223	-
4b.1.8.9	DPH	-	95	-	-	-	-	-	14	109	-	-	109	-	-	-	-	-	-	1,527	-
4b.1.8.10	DWF	-	22	-	-	-	-	-	3	25	-	-	25	-	-	-	-	-	-	360	-
4b.1.8.11	FWP	-	127	-	-	-	-	-	19	146	-	-	146	-	-	-	-	-	-	2,018	-
4b.1.8.12	GAA / GCA	-	23	-	-	-	-	-	3	26	-	-	26	-	-	-	-	-	-	368	-
4b.1.8.13	INTAKE STRUCTURE	-	199	-	-	-	-	-	30	229	-	-	229	-	-	-	-	-	-	3,218	-
4b.1.8.14	MAA	-	127	2	6	28	-	-	37	200	200	-	-	1,469	-	-	-	-	59,650	1,920	-
4b.1.8.15	MBA	-	51	1	2	8	-	-	14	76	76	-	-	413	-	-	-	-	16,776	764	-
4b.1.8.16	MBS / MBT	-	38	0	0	2	-	-	10	50	50	-	-	108	-	-	-	-	4,371	575	-
4b.1.8.17	MS	-	40	-	-	-	-	-	6	46	-	-	46	-	-	-	-	-	-	676	-
4b.1.8.18	NMB ROOF	-	20	-	-	-	-	-	3	22	-	-	22	-	-	-	-	-	-	312	-
4b.1.8.19	OB	-	292	-	-	-	-	-	44	336	-	-	336	-	-	-	-	-	-	4,806	-
4b.1.8.20	PTB	-	43	-	-	-	-	-	6	49	-	-	49	-	-	-	-	-	-	688	-
4b.1.8.21	RSF ROOF	-	29	0	1	3	-	-	8	42	42	-	-	175	-	-	-	-	7,097	451	-
4b.1.8.22	UYARD	-	1,807	10	27	118	-	-	474	2,435	2,435	-	-	6,162	-	-	-	-	250,262	21,730	-
4b.1.8.23	WAA	-	166	2	5	23	-	-	46	242	242	-	-	1,197	-	-	-	-	48,603	2,479	-
4b.1.8.24	WHS	-	19	-	-	-	-	-	3	22	-	-	22	-	-	-	-	-	-	318	-
4b.1.8.25	YARD AREAS	-	408	-	-	-	-	-	61	470	-	-	470	-	-	-	-	-	-	6,583	-
4b.1.8.26	YDA / YFA / YLA	-	2	0	0	0	-	-	1	3	3	-	-	19	-	-	-	-	783	30	-
4b.1.8	Totals	-	4,796	44	117	513	-	-	1,159	6,629	5,037	-	1,592	26,851	-	-	-	-	1,090,429	68,833	-
4b.1.9	Scaffolding in support of decommissioning	-	1,410	41	11	34	11	-	366	1,873	1,873	-	-	1,586	168	-	-	-	80,852	25,304	-
Decontamination of Site Buildings																					
4b.1.10.1	New Radwaste Building - Systems Removal	0	146	103	156	0	233	-	129	767	767	-	-	6	4,340	-	-	-	382,187	2,226	-
4b.1.10.2	Old Radwaste Building - Systems Removal	0	4	11	17	0	25	-	11	67	67	-	-	6	461	-	-	-	40,787	66	-
4b.1.10.3	Turbine Building - Systems Removal	-	419	249	376	-	561	-	326	1,931	1,931	-	-	-	10,447	-	-	-	919,350	5,562	-
4b.1.10.4	Augmented Off Gas - Decon	19	117	15	23	1	34	-	52	261	261	-	-	45	629	-	-	-	57,149	1,961	-
4b.1.10.5	LLRW Storage - Decon	10	36	9	14	-	20	-	22	112	112	-	-	-	379	-	-	-	33,330	653	-
4b.1.10.6	Miscellaneous Buildings - Decon	10	48	9	13	-	20	-	25	126	126	-	-	-	372	-	-	-	32,778	831	-
4b.1.10.7	New Radwaste Building - Decon	47	441	58	88	4	130	-	186	955	955	-	-	235	2,420	-	-	-	222,115	7,003	-
4b.1.10.8	Old Radwaste Building - Decon	-	410	237	359	3	535	-	314	1,859	1,859	-	-	152	9,965	-	-	-	882,859	4,833	-
4b.1.10.9	Stack/Exhaust Tunnels - Remove & Decon	103	494	36	55	-	82	-	207	977	977	-	-	-	1,521	-	-	-	133,878	8,806	-
4b.1.10.10	Turbine Building 0ft - Decon	72	532	58	88	22	127	-	223	1,122	1,122	-	-	1,144	2,356	-	-	-	252,047	8,702	-
4b.1.10.11	Turbine Building 23ft - Decon	47	381	44	68	21	97	-	161	818	818	-	-	1,109	1,789	-	-	-	200,730	6,140	-
4b.1.10.12	Turbine Building 46ft - Decon	29	121	26	39	-	58	-	68	340	340	-	-	-	1,073	-	-	-	94,413	2,127	-
4b.1.10.13	Drywell - Decon	4	727	395	513	-	1,006	-	552	3,198	3,198	-	-	-	16,964	-	-	-	1,290,650	9,848	-
4b.1.10.14	Drywell - Liner Removal	2,063	1,197	74	105	422	71	-	1,435	5,366	5,366	-	-	22,108	1,022	-	-	-	956,216	47,924	-
4b.1.10.15	RB0 - Torus Removal	2,765	1,375	110	156	626	105	-	1,881	7,017	7,017	-	-	32,774	1,515	-	-	-	1,417,560	60,646	-
4b.1.10.16	Reactor Building - Systems Removal	-	6	18	27	-	40	-	17	107	107	-	-	-	736	-	-	-	64,800	101	-
4b.1.10.17	Reactor Building -19ft - Decon	33	277	28	44	39	57	-	115	593	593	-	-	2,052	1,043	-	-	-	172,007	4,412	-
4b.1.10.18	Reactor Building 119ft - Decon	442	537	16	24	30	29	-	372	1,450	1,450	-	-	1,563	526	-	-	-	107,572	14,581	-
4b.1.10.19	Reactor Building 23ft - Decon	21	128	19	29	-	43	-	60	299	299	-	-	-	796	-	-	-	70,017	2,140	-
4b.1.10.20	Reactor Building 51ft - Decon	24	133	21	32	-	48	-	64	322	322	-	-	-	887	-	-	-	78,096	2,253	-
4b.1.10.21	Reactor Building 75ft - Decon	8	71	7	11	-	16	-	28	141	141	-	-	-	297	-	-	-	26,136	1,155	-
4b.1.10.22	Reactor Building 91ft - Decon	17	111	15	23	-	34	-	50	250	250	-	-	-	634	-	-	-	55,770	1,847	-

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
4b.1.10	Totals	5,715	7,712	1,558	2,257	1,168	3,369	-	6,297	28,076	28,076	-	-	61,196	60,173	-	-	-	7,490,445	193,816	-
4b.1	Subtotal Period 4b Activity Costs	6,260	26,416	2,530	3,671	4,569	5,459	-	12,412	61,317	59,530	-	1,787	239,206	90,639	-	-	-	16,453,780	480,758	-
Period 4b Additional Costs																					
4b.2.1	ISFSI License Termination	-	2,577	-	-	-	1,587	1,411	1,253	6,827	-	6,827	-	-	19,521	-	-	-	2,578,520	-	-
4b.2.2	ISFSI License Termination - Cascading Costs	-	1,480	-	-	-	-	524	301	2,305	-	2,305	-	-	-	-	-	-	-	-	-
4b.2.3	License Termination Survey Planning	-	-	-	-	-	-	1,948	584	2,532	2,532	-	-	-	-	-	-	-	-	-	12,480
4b.2.4	Contaminated Soil Removal	-	111	2	500	-	5,702	-	1,529	7,844	7,844	-	-	-	106,200	-	-	-	8,071,193	834	-
4b.2	Subtotal Period 4b Additional Costs	-	4,169	2	500	-	7,289	3,883	3,666	19,509	10,376	9,133	-	-	125,721	-	-	-	10,649,710	834	12,480
Period 4b Collateral Costs																					
4b.3.1	Process decommissioning water waste	15	-	18	47	-	85	-	38	202	202	-	-	-	250	-	-	-	14,985	49	-
4b.3.3	Small tool allowance	-	615	-	-	-	-	-	92	707	707	-	-	-	-	-	-	-	-	-	-
4b.3.4	Decommissioning Equipment Disposition	-	-	155	49	127	44	-	53	427	427	-	-	6,000	635	-	-	-	305,961	88	-
4b.3	Subtotal Period 4b Collateral Costs	15	615	172	96	127	129	-	182	1,336	1,336	-	-	6,000	885	-	-	-	320,946	137	-
Period 4b Period-Dependent Costs																					
4b.4.1	Decon supplies	1,124	-	-	-	-	-	-	281	1,404	1,404	-	-	-	-	-	-	-	-	-	-
4b.4.2	Insurance	-	-	-	-	-	-	850	85	935	935	-	-	-	-	-	-	-	-	-	-
4b.4.3	Property taxes	-	-	-	-	-	-	1,481	148	1,629	1,629	-	-	-	-	-	-	-	-	-	-
4b.4.4	Health physics supplies	-	2,768	-	-	-	-	-	692	3,460	3,460	-	-	-	-	-	-	-	-	-	-
4b.4.5	Heavy equipment rental	-	2,955	-	-	-	-	-	443	3,398	3,398	-	-	-	-	-	-	-	-	-	-
4b.4.6	Disposal of DAW generated	-	-	171	121	-	424	-	141	857	857	-	-	-	7,415	-	-	-	148,298	242	-
4b.4.7	Plant energy budget	-	-	-	-	-	-	2,132	320	2,452	2,452	-	-	-	-	-	-	-	-	-	-
4b.4.8	NRC Fees	-	-	-	-	-	-	1,063	106	1,170	1,170	-	-	-	-	-	-	-	-	-	-
4b.4.9	Site O&M Costs	-	-	-	-	-	-	458	69	527	527	-	-	-	-	-	-	-	-	-	-
4b.4.10	Liquid Radwaste Processing Equipment/Services	-	-	-	-	-	-	574	86	661	661	-	-	-	-	-	-	-	-	-	-
4b.4.11	Security Staff Cost	-	-	-	-	-	-	5,378	807	6,185	6,185	-	-	-	-	-	-	-	-	-	96,607
4b.4.12	DOC Staff Cost	-	-	-	-	-	-	17,703	2,655	20,358	20,358	-	-	-	-	-	-	-	-	-	207,126
4b.4.13	Utility Staff Cost	-	-	-	-	-	-	29,142	4,371	33,513	33,513	-	-	-	-	-	-	-	-	-	364,789
4b.4	Subtotal Period 4b Period-Dependent Costs	1,124	5,722	171	121	-	424	58,782	10,205	76,548	76,548	-	-	-	7,415	-	-	-	148,298	242	668,521
4b.0	TOTAL PERIOD 4b COST	7,398	36,922	2,876	4,388	4,696	13,301	62,664	26,465	158,711	147,791	9,133	1,787	245,206	224,659	-	-	-	27,572,740	481,970	681,001
PERIOD 4f - License Termination																					
Period 4f Direct Decommissioning Activities																					
4f.1.1	ORISE confirmatory survey	-	-	-	-	-	-	161	48	210	210	-	-	-	-	-	-	-	-	-	-
4f.1.2	Terminate license									a											
4f.1	Subtotal Period 4f Activity Costs	-	-	-	-	-	-	161	48	210	210	-	-	-	-	-	-	-	-	-	-
Period 4f Additional Costs																					
4f.2.1	License Termination Survey	-	-	-	-	-	-	8,201	2,460	10,661	10,661	-	-	-	-	-	-	-	-	118,801	6,240
4f.2	Subtotal Period 4f Additional Costs	-	-	-	-	-	-	8,201	2,460	10,661	10,661	-	-	-	-	-	-	-	-	118,801	6,240
Period 4f Collateral Costs																					
4f.3.1	DOC staff relocation expenses	-	-	-	-	-	-	1,124	169	1,292	1,292	-	-	-	-	-	-	-	-	-	-
4f.3	Subtotal Period 4f Collateral Costs	-	-	-	-	-	-	1,124	169	1,292	1,292	-	-	-	-	-	-	-	-	-	-

Table E
Oyster Creek Nuclear Generating Station
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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
Period 4f Period-Dependent Costs																					
4f.4.2	Property taxes	-	-	-	-	-	-	753	75	828	828	-	-	-	-	-	-	-	-	-	-
4f.4.3	Health physics supplies	-	802	-	-	-	-	-	201	1,003	1,003	-	-	-	-	-	-	-	-	-	-
4f.4.4	Disposal of DAW generated	-	-	8	6	-	20	-	7	41	41	-	-	-	351	-	-	-	7,025	11	-
4f.4.5	Plant energy budget	-	-	-	-	-	-	289	43	332	332	-	-	-	-	-	-	-	-	-	-
4f.4.6	NRC Fees	-	-	-	-	-	-	579	58	637	637	-	-	-	-	-	-	-	-	-	-
4f.4.7	Site O&M Costs	-	-	-	-	-	-	233	35	268	268	-	-	-	-	-	-	-	-	-	-
4f.4.8	Security Staff Cost	-	-	-	-	-	-	1,087	163	1,250	1,250	-	-	-	-	-	-	-	-	-	18,857
4f.4.9	DOC Staff Cost	-	-	-	-	-	-	5,156	773	5,929	5,929	-	-	-	-	-	-	-	-	-	57,357
4f.4.10	Utility Staff Cost	-	-	-	-	-	-	6,703	1,005	7,708	7,708	-	-	-	-	-	-	-	-	-	74,643
4f.4	Subtotal Period 4f Period-Dependent Costs	-	802	8	6	-	20	14,800	2,361	17,997	17,997	-	-	-	351	-	-	-	7,025	11	150,857
4f.0	TOTAL PERIOD 4f COST	-	802	8	6	-	20	24,286	5,038	30,161	30,161	-	-	-	351	-	-	-	7,025	118,812	157,097
PERIOD 4 TOTALS		7,602	58,275	13,379	7,693	9,321	24,469	126,180	53,787	300,707	289,660	9,133	1,915	470,628	255,628	1,127	344	1,428	40,103,200	773,987	1,281,305
PERIOD 5b - Site Restoration																					
Period 5b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
5b.1.1.1	Stack/Exhaust Tunnels - Remove & Decon	-	1,019	-	-	-	-	-	153	1,172	-	-	1,172	-	-	-	-	-	-	1,665	-
5b.1.1.2	Administration Building	-	506	-	-	-	-	-	76	582	-	-	582	-	-	-	-	-	-	6,477	-
5b.1.1.3	Augmented Off Gas Building	-	338	-	-	-	-	-	51	388	-	-	388	-	-	-	-	-	-	3,399	-
5b.1.1.4	Chlorination Building	-	32	-	-	-	-	-	5	36	-	-	36	-	-	-	-	-	-	407	-
5b.1.1.5	Diesel Generator Building	-	137	-	-	-	-	-	21	157	-	-	157	-	-	-	-	-	-	1,268	-
5b.1.1.6	Dilution Structure	-	178	-	-	-	-	-	27	205	-	-	205	-	-	-	-	-	-	1,758	-
5b.1.1.7	Domestic Water Facility	-	11	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	147	-
5b.1.1.8	Fire Pump House	-	4	-	-	-	-	-	1	5	-	-	5	-	-	-	-	-	-	54	-
5b.1.1.9	Fresh Water Pump House	-	22	-	-	-	-	-	3	26	-	-	26	-	-	-	-	-	-	293	-
5b.1.1.10	Heating Boiler House	-	41	-	-	-	-	-	6	48	-	-	48	-	-	-	-	-	-	546	-
5b.1.1.11	Intake Structure	-	632	-	-	-	-	-	95	727	-	-	727	-	-	-	-	-	-	6,322	-
5b.1.1.12	Low Level Radwaste Storage	-	444	-	-	-	-	-	67	511	-	-	511	-	-	-	-	-	-	5,435	-
5b.1.1.13	Machine Shop	-	226	-	-	-	-	-	34	260	-	-	260	-	-	-	-	-	-	2,858	-
5b.1.1.14	Main Gate Security	-	101	-	-	-	-	-	15	116	-	-	116	-	-	-	-	-	-	1,059	-
5b.1.1.15	Maintenance Building	-	326	-	-	-	-	-	49	375	-	-	375	-	-	-	-	-	-	4,274	-
5b.1.1.16	Materials Warehouse	-	879	-	-	-	-	-	132	1,011	-	-	1,011	-	-	-	-	-	-	8,908	-
5b.1.1.17	Miscellaneous Structures	-	617	-	-	-	-	-	93	710	-	-	710	-	-	-	-	-	-	6,565	-
5b.1.1.18	New Radwaste Building	-	745	-	-	-	-	-	112	857	-	-	857	-	-	-	-	-	-	8,009	-
5b.1.1.19	New Sample Pump House	-	9	-	-	-	-	-	1	11	-	-	11	-	-	-	-	-	-	128	-
5b.1.1.20	Office Building	-	374	-	-	-	-	-	56	430	-	-	430	-	-	-	-	-	-	4,459	-
5b.1.1.21	Old Radwaste Building	-	680	-	-	-	-	-	102	782	-	-	782	-	-	-	-	-	-	6,852	-
5b.1.1.22	Plant Engineering	-	170	-	-	-	-	-	25	195	-	-	195	-	-	-	-	-	-	1,784	-
5b.1.1.23	Pretreatment Building	-	31	-	-	-	-	-	5	35	-	-	35	-	-	-	-	-	-	420	-
5b.1.1.24	Reactor Building	-	6,127	-	-	-	-	-	919	7,046	-	-	7,046	-	-	-	-	-	-	61,454	-
5b.1.1.25	Sample Pool	-	15	-	-	-	-	-	2	18	-	-	18	-	-	-	-	-	-	180	-
5b.1.1.26	Security Modifications	-	1,256	-	-	-	-	-	188	1,444	-	-	1,444	-	-	-	-	-	-	10,330	-
5b.1.1.27	Site Emergency Building	-	316	-	-	-	-	-	47	363	-	-	363	-	-	-	-	-	-	3,285	-
5b.1.1.28	Tank Pads & Misc. Yard	-	772	-	-	-	-	-	116	887	-	-	887	-	-	-	-	-	-	8,326	-
5b.1.1.29	Turbine Building	-	4,209	-	-	-	-	-	631	4,840	-	-	4,840	-	-	-	-	-	-	41,424	-
5b.1.1.30	Turbine Pedestal	-	574	-	-	-	-	-	86	660	-	-	660	-	-	-	-	-	-	5,050	-
5b.1.1	Totals	-	20,789	-	-	-	-	-	3,118	23,908	-	-	23,908	-	-	-	-	-	-	203,134	-

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Site Closeout Activities																					
5b.1.2	Remove Rubble	-	798	-	-	-	-	-	120	917	-	-	917	-	-	-	-	-	-	4,211	-
5b.1.3	Grade & landscape site	-	634	-	-	-	-	-	95	729	-	-	729	-	-	-	-	-	-	1,304	-
5b.1.4	Final report to NRC	-	-	-	-	-	-	187	28	215	215	-	-	-	-	-	-	-	-	-	1,560
5b.1	Subtotal Period 5b Activity Costs	-	22,221	-	-	-	-	187	3,361	25,769	215	-	25,554	-	-	-	-	-	-	208,649	1,560
Period 5b Additional Costs																					
5b.2.1	Concrete Crushing	-	756	-	-	-	-	9	115	880	-	-	880	-	-	-	-	-	-	3,219	-
5b.2.2	Install Cofferdams - Intake & Dilution	-	975	-	-	-	-	-	146	1,122	-	-	1,122	-	-	-	-	-	-	8,296	-
5b.2.3	ISFSI Site Restoration	-	144	-	-	-	-	6	22	172	-	172	-	-	-	-	-	-	-	-	-
5b.2	Subtotal Period 5b Additional Costs	-	1,875	-	-	-	-	15	284	2,174	-	172	2,002	-	-	-	-	-	-	11,516	-
Period 5b Collateral Costs																					
5b.3.1	Small tool allowance	-	265	-	-	-	-	-	40	305	-	-	305	-	-	-	-	-	-	-	-
5b.3	Subtotal Period 5b Collateral Costs	-	265	-	-	-	-	-	40	305	-	-	305	-	-	-	-	-	-	-	-
Period 5b Period-Dependent Costs																					
5b.4.2	Property taxes	-	-	-	-	-	-	1,552	155	1,708	-	-	1,708	-	-	-	-	-	-	-	-
5b.4.3	Heavy equipment rental	-	4,438	-	-	-	-	-	666	5,104	-	-	5,104	-	-	-	-	-	-	-	-
5b.4.4	Plant energy budget	-	-	-	-	-	-	298	45	343	-	-	343	-	-	-	-	-	-	-	-
5b.4.5	Site O&M Cost	-	-	-	-	-	-	480	72	552	-	-	552	-	-	-	-	-	-	-	-
5b.4.6	Security Staff Cost	-	-	-	-	-	-	2,242	336	2,578	-	-	2,578	-	-	-	-	-	-	-	38,880
5b.4.7	DOC Staff Cost	-	-	-	-	-	-	10,204	1,531	11,735	-	-	11,735	-	-	-	-	-	-	-	110,160
5b.4.8	Utility Staff Cost	-	-	-	-	-	-	5,737	861	6,598	-	-	6,598	-	-	-	-	-	-	-	63,180
5b.4	Subtotal Period 5b Period-Dependent Costs	-	4,438	-	-	-	-	20,514	3,665	28,617	-	-	28,617	-	-	-	-	-	-	-	212,220
5b.0	TOTAL PERIOD 5b COST	-	28,799	-	-	-	-	20,716	7,350	56,865	215	172	56,478	-	-	-	-	-	-	220,165	213,780
PERIOD 5 TOTALS		-	28,799	-	-	-	-	20,716	7,350	56,865	215	172	56,478	-	-	-	-	-	-	220,165	213,780
TOTAL COST TO DECOMMISSION		16,345	110,088	13,794	10,132	10,077	29,059	766,001	160,818	1,116,314	873,828	183,117	59,369	470,956	314,989	1,127	344	1,428	44,296,250	1,262,856	6,773,869

Table E
Oyster Creek Nuclear Generating Station
SAFSTOR Decommissioning Cost Estimate
(thousands of 2011 dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			

TOTAL COST TO DECOMMISSION WITH 16.83% CONTINGENCY:	$1,116,314	thousands of 2011 dollars
TOTAL NRC LICENSE TERMINATION COST IS 78.28% OR:	$873,828	thousands of 2011 dollars
SPENT FUEL MANAGEMENT COST IS 16.4% OR:	$183,117	thousands of 2011 dollars
NON-NUCLEAR DEMOLITION COST IS 5.32% OR:	$59,369	thousands of 2011 dollars
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC):	316,460	cubic feet
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED:	1,428	cubic feet
TOTAL SCRAP METAL REMOVED:	24,292	tons
TOTAL CRAFT LABOR REQUIREMENTS:	1,262,856	man-hours

End Notes:
n/a - indicates that this activity not charged as decommissioning expense.
a - indicates that this activity performed by decommissioning staff.
0 - indicates that this value is less than 0.5 but is non-zero.
a cell containing " - " indicates a zero value

APPENDIX F

WORK DIFFICULTY FACTOR ADJUSTMENTS

GUIDELINES FOR APPLYING WORK DURATION ADJUSTMENT FACTORS

TLG has historically applied work duration adjustment factors in determining unit cost factors to account for working in a radiologically controlled environment. In performing an area-by-area decommissioning estimate, the work duration factors are applied on an "area" basis based on the nominal area conditions. Where practical, areas are established based on similar working conditions.

The WDFs fall into five categories: access, respiratory protection, ALARA, protective clothing (PC), and work breaks. The guidelines of how these factors are assessed for each area is described below. Table F-1 details the WDFs used for each of the seven unit cost factor sets contained in the estimates. Table F-2 outlines the unit cost factors used for each area of the Oyster Creek plant.

1) Access Factor:

Controlling Variables:
- Height of the component above the working floor
- Difficulty in working around the component (restricted access)

Source of Variable Information:
- Estimators observation or judgment
- Plant drawings

Range of Access Factor Adjustments:

0% - Components are accessible and located near a working level floor or platform

10% - Scaffolding (component less than <12 feet above floor) is required to access the majority of the components *or* the area around the components is congested.

20% - Scaffolding (component less than <12 feet above floor) is required to access the majority of the components *and* the area around the components is congested.

30% - Scaffolding (component between 12 - 20 feet above floor) is required to access the majority of the components *or* the area around the components are extremely congested.

40% - Scaffolding (component between 20 - 45 feet above floor) is required to access the majority of the components).

50% - Scaffolding (component greater than 45 feet above floor) is required to access the majority of the components).

2) Respiratory Protection Factor:

Controlling Variables:
- Component surface contamination levels (internal or external)
- Type of work (potential to create an airborne problem)
- General area surface contamination levels
- Site specific requirements for maintaining respirator qualifications (initial qualification, requalification, etc.)
- Personal air sampler requirements

Sources of Variable Information:
- Radiation Work Permit Requirements
- Area Survey Maps
- Site Radiation Protection Program Manual

Range of Respiratory Protection Factor Adjustments:

0% - Respiratory protection is not required (clean system or loose surface contamination has been removed).

25% - Respiratory protection is only required during limited segments of the work (i.e., physical cutting)

50% - Respiratory protection is continuously required while working on the component.

3) Radiation/ALARA Factor:

Controlling Variables:
- Component contact dose rate
- General area dose rate
- Site specific requirements for maintaining radiation worker qualification (initial qualification, requalification, etc.)
- Dosimetry requirements

Sources of Variable Information:
- Area Survey Maps
- Site Radiation Protection Program Manual
- Radiation Work Permit Requirements

Range of Radiation/ALARA Factor Adjustments:
(Note that surface contamination levels are principally accounted for in protective clothing requirements and respiratory protection requirements)

0% - The component is clean and is not located in a radiologically controlled area

10% - The component is located in a radiologically controlled area (General Area Radiation field < 2 .5 mrem/hr).

20% - The component is located in a radiologically controlled area (General Area Radiation field between 2. 5 to 15 mrem/hr).

40% - The component is located in a radiologically controlled area (General Area Radiation field between 16 and 99 mrem/hr).

100% - The component is located in a radiologically controlled area (General Area Radiation field > 100 mrem/hr).

4) Protective Clothing Factor:

Controlling Variables:
- Component surface contamination levels (internal or external)
- General area surface contamination levels
- Type of activity (wet/dry work, potential to create a surface contamination problem)
- Site specific work schedule arrangements

Sources of Variable Information:
- Radiation Work Permit Requirements
- Area Survey Maps
- Site Radiation Protection Program Manual

Range of Protective Clothing Factor Adjustments (alternate site-specific schedules may dictate alternate adjustments):

0% - The component is clean and is not located in a radiologically controlled area.

30% - The component is clean or contaminated and is located in a surface contamination controlled area. Work is to be completed in accordance with the requirements of an RWP, which specifies a single or double set of "PCs", or "PCs" with plastics.

50% - The components is located in a surface contamination controlled area. Work is to be completed in accordance with the requirements of an RWP, which specifies "plastics" in addition to double PCs for protective clothing.

100% - The component is located in a surface contamination controlled area. Work is to be completed in accordance with the requirements of an RWP, which specifies double "PCs" and double "plastics". (extremely wet or humid working environment).

5) Work Break Factor:

Controlling Variables:
- Site specific work schedule arrangements

Sources of Variable Information:
- Typical site work schedule

Range of Work Break Factor Adjustments:

8.33% - Workday schedule outlined in AIF/NESP-036 (alternate site-specific schedules may dictate alternate adjustments).

TABLE F-1

UNIT COST FACTOR SETS AND THEIR WORK DIFFICULTY ADJUSTMENT FACTORS

	DECON / Clean				DECON / Contaminated			
	Percentage				Percentage			
UCF Set ID	Access	Resp.	PCs	ALARA	Access	Resp.	PCs	ALARA
1	10	0	0	10	10	0	0	10
2	20	0	30	10	20	0	30	10
3	20	25	30	30	20	25	30	30
4	30	25	50	30	30	25	50	30
5	50	25	50	40	50	25	50	40
6	30	25	50	100	30	25	50	100
7	20	0	0	0	20	25	30	30

	SAFSTOR / Clean				SAFSTOR / Contaminated			
	Percentage				Percentage			
UCF Set ID	Access	Resp.	PCs	ALARA	Access	Resp.	PCs	ALARA
1	10	0	0	10	10	0	0	10
2	20	0	30	10	20	0	30	10
3	20	25	30	10	20	25	30	10
4	30	25	50	10	30	25	50	10
5	50	25	50	10	50	25	50	10
6	30	25	50	10	30	25	50	10
7	20	0	0	0	20	25	30	10

TABLE F-2

OYSTER CREEK STN DESIGNATIONS AND ASSOCIATED UNIT COST FACTORS

AREA	AREA DESCRIPTION	UCF SET
Drywell System Components		
IAA	DRYWELL RECIRC LOOP	5
IAC	DRYWELL EL. 13 - SUB PILE ROOM	5
ICA	DRYWELL EL. 51 & 75'	5
IEA	DRYWELL EL. 95	4
RC6	DRYWELL LABRYNTH	3
Reactor Building System Components		
RB1	REACTOR BUILDING - 19' GENERAL	3
RBB	19' NE	3
RBC	19' SE	3
RBE	CRD SYSTEM PUMP ROOM	3
RBF	REACTOR BUILDING EQUIPMENT DRAIN TANK ROOM	3
RBO	19' INSIDE TORUS	4
RBS	TOP OF TORUS SEGMENT N/E	4
RBSW	REACTOR BUILDING SWITCHGEAR ROOM	2
RC1	SOUTHEAST AIRLOCK	3
RC7	SW RAD MONITOR ENCLOSURE	2
RCA	NORTH SCRAM DISCHARGE VOLUME	3
RCB	LAUNDRY & LAB DRAIN TANKS/PUMPS	3
RCD	NORTH BANK HCU's	3
RCG	NORTH CONTAINMENT SPRAY HEAT EXCHANGERS	3
RCJ	CRD SYSTEM FILTER/VALVING AREA	3
RCM	SOUTH BANK CSS HEAT EXCHANGERS	3
RCN	SOUTH BANK CONTROL ROD DRIVE MODULES	3
RCS	SOUTH SCRAM DISCHARGE VOLUME (RCS15VM)	3
RCT	REACTOR BUILDING EL.23-6 - ALL AREAS GENERAL	3
RD8	RX33' SHUTDOWN COOLING RM GENERAL ALL AREAS	3
RDM	TIP DRIVE ROOM WEST	3
REC	CORE SPRAY BOOSTER PUMPS	3
REF	SHUTDOWN COOLING HEAT EXCHANGER ROOM	1
REH	NITROGEN COMPRESSOR AREA	3
REI	REACTOR 51' TOOL CRIB	3
REL	RBCCW HEAT EXCHANGER/PUMP AREA	3
REM	SOUTHEAST ACCESS AREA	3
REO	CLEANUP SYSTEM HEAT EXCHANGER ROOM	4
REQ	CLEANUP SYSTEM PUMP AREA	3
RER	CLEANUP SYSTEM VALVE NEST EL.64	5
RET	CLEANUP FILTER SLUDGE PUMP HALLWAY	6
REW	INSTRUMENT RACK RK01	3

TABLE F-2

OYSTER CREEK STN DESIGNATIONS AND ASSOCIATED UNIT COST FACTORS (continued)

AREA	AREA DESCRIPTION	UCF SET
Reactor Building System Components (continued)		
REX	INSTRUMENT RACK RK02 AREA	3
REY	REACTOR BUILDING 51' GENERAL ALL AREAS	3
RFB	SOUTH EAST GENERAL AREA (C.U. SURGE TANK)	3
RFC	RWCU VALVE AISLE AND CONTROL AREA	5
RFF	CLEANUP SYSTEM FILTER AID/PRECOAT TANK AREA	3
RFH	OLD FUEL POOL HEAT EXCHANGERS & PUMPS AREA	3
RFJ	ASFP HEAT EXCHANGERS/PUMPS AREA	3
RFL	CONTROL ROD DRIVE REBUILD ROOM	3
RFN	EMERGENCY CONDENSER VALVE AREA	3
RFQ	REACTOR BUILDING 75' GENERAL ALL AREAS	3
RGC	NORTHEAST ACCESS AREA	3
RGD	"B" EMERGENCY CONDENSER NE01-B	3
RGI	SOUTHEAST ACCESS AREA	3
RGL	SOUTHWEST ACCESS AREA	3
RGP	CLEANUP DEMINERALIZER VAULT (RGP16FM)	4
RGR	LIQUID POISON TANK/PUMPS AREA	3
RGU	REACTOR BUILDING EL.95 - GENERAL ALL AREAS	3
RH1	NORTH FLOOR AREA	3
RH2	WEST FLOOR AREA	3
RH3	RB EL119 ALL AREAS	3
RH4	REACTOR BUILDING CRANE	3
RH6	ELEVATOR CONTROL EQUIP AREA	3
RHA	REACTOR CAVITY	6
RHJ	CASK WASHDOWN / DECONTAMINATION AREA	3
RHL	BRIDGE CRANE AND TRACKS	3
RHX	SOUTH FLOOR AREA	3
RHY	SOUTH EAST FLOOR AREA	3
RMCC	REACTOR BUILDING MCC ROOM	2
New Radwaste Building System Components		
7EB	NRW TUNNEL GENERAL ALL AREAS	5
N2G	NRW BUILDING GENERAL ALL ELEVATIONS	3
N2P	NRW BUILDING PENTHOUSE	3
N38	NRW 23' GENERAL ALL AREAS	3
N3A	NRW TRUCK BAY	3
N3D	NEW RADWASTE FILL AISLE	4
N3I	NRW #2 SUMP ROOM	4
N3N	NRW SOUTH OPERATING GALLERY EAST	4

TABLE F-2

OYSTER CREEK STN DESIGNATIONS AND ASSOCIATED UNIT COST FACTORS (continued)

AREA	AREA DESCRIPTION	UCF SET
New Radwaste Building System Components (continued)		
N3P	NRW HIGH PURITY PUMP ROOM	3
N3Q	NRW WC-P-1B WASTE CHEM PUMP ROOM	3
N3R	NRW VALVE AREA WEST	3
N3S	NRW WC-P-1A WASTE CHEM PUMP ROOM	4
N3T	NRW #1 SUMP ROOM	4
N3U	NRW CONCENTRATOR SKID ROOM 'A'	4
N3W	NRW CONCENTRATOR SKID ROOM 'B'	4
N3Y	NRW HEAT EXCHANGER BUILDING	3
N48	NRW 38' GENERAL ALL AREAS	3
N4A	NRW 'A' HOLD-UP TANK SL-T-3A ROOM	5
N4B	B' HOLD-UP TANK SL-T-3B ROOM	5
N4D	LARGE CONTAINER FILL SKID ROOM SL-Y-6	4
N4E	NRW LARGE CONTAINER FILL SKID ROOM	3
N4F	CLW PROCESS AREA	4
N4H	SPENT RESIN TRANSFER PIPING	4
N4K	NRW SPENT RESIN VALVE GALLERY	4
N4L	PIPE GALLERY WEST	4
N51	NRW HP-D-1A DEMINERALIZER ROOM	5
N52	NRW HP-F-2A RESIN TRAP ROOM	5
N53	NRW HP-D-1B DEMINERALIZER ROOM	5
N54	NRW HP-F-2B RESIN TRAP ROOM	5
N55	NRW MEZZANINE/VALVING AREA	4
N56	NRW 48-0 ELEVATION GENERAL ALL AREAS	3
N5A	NRW "A" CONCENTRATED LIQUID WASTE TANK ROOM SL-T-1A	5
N5B	NRW "B" CONCENTRATED LIQUID WASTE TANK ROOM SL-T-1B	5
N5C	NRW CHEMICAL WASTE FILTER ROOM 1A	4
N5D	NRW HIGH PURITY FILTER ROOM 1A	4
N5E	NRW CHEMICAL WASTE FILTER ROOM 1B	4
N5F	NRW HIGH PURITY FILTER ROOM 1B	4
N5G	NRW CONCENTRATED LIQUID WASTE PUMP SL-P-1A ROOM	5
N5H	NRW VALVE GALLERY EAST	4
N5I	NRW CONCENTRATED LIQUID WASTE PUMP SL-P-1B ROOM	5
N5J	NRW SAMPLE SINK AREA	3
N5K	NRW NEUTRALIZATION FEED SKID AREA	3
N5N	NRW LAUNDRY/DECON AREA	3
N5O	NRW FILTER PRECOAT/BODY FEED ROOM	3
N5P	NRW SL-T-2A SPENT RESIN TANK	5
N5Q	NRW SL-T-2B SPENT RESIN TANK	5
N5R	NRW CONTROL ROOM	3

TABLE F-2

OYSTER CREEK STN DESIGNATIONS AND ASSOCIATED UNIT COST FACTORS (continued)

AREA	AREA DESCRIPTION	UCF SET
New Radwaste Building System Components (continued)		
N5S	NRW BUILDING HVAC ROOM	3
N5T	NRW CHEM WASTE/FLR DRAIN TANK ROOM WC-T-1A	5
N5U	NRW CHEM WASTE/FLR DRAIN TANK ROOM WC-T-1B	5
N5V	NRW CHEM WASTE/FLR DRAIN TANK ROOM WC-T-1C	5
N5W	NRW CRANE BAY-STORAGE/LAYDOWN ROOM	3
N5X	NRW HIGH PURITY TANK & ROOM 1A	5
N5Y	NRW WC-D-1A DEMISTER ROOM	5
N5Z	NRW WC-D-1B DEMISTER ROOM	5
PAA	OLD RADWASTE BUILDING GENERAL ALL AREAS	3
Old Radwaste Building System Components		
7BA	1-12 SUMP AREA GENERAL	4
7DA	ORW TUNNEL GENERAL ALL AREAS	4
7FA	ORW AIR FILTER ROOM	5
PBA	ORW SMALL PUMP ROOM	5
PDA	ORW 35' & 45' CENTRIFUGE AND HOPPER	5
PMA	ORW OVERBOARD DISCHARGE MONITOR	3
PRA	ORW ROOF GENERAL ALL AREAS	4
PRD	ORW FUEL POOL FILTERS / KELLY BUILDING	4
PSB	ORW CONTROL ROOM OPERATION AREA	3
PTA	ORW COMPACTOR AREA	3
PTK	ORW - NORTH ANNEX	3
PTP	DRUM STORAGE AREA GENERAL	3
PUA	ORW LARGE PUMP ROOM	4
PUU	ORW INSIDE TANK ROOM GENERAL	4
PVA	ORW NORTH ANNEX KELLY BUILDING	2
UAB	ORW OUTSIDE TANKS & MOAT AREA	4
UAS	ORW SURGE TANK & PUMP AREA	4
ORW	ORW PRE D&D DESLUDGE AND DECON	4
Turbine Building System Components		
7CA	TURBINE TUNNEL GENERAL ALL AREAS	5
TB2	TURBINE BUILDING BASEMENT GENERAL ALL AREAS	3
TB23	TB23 HALLWAY AREA	1
TB38	TB38 HALLWAY AREA	1
TC2	CONDENSER BAY OVERHEAD GENERAL ALL AREAS	3
TD2	CONDENSER BAY DRAIN TANK PIT	3

TABLE F-2

OYSTER CREEK STN DESIGNATIONS AND ASSOCIATED UNIT COST FACTORS (continued)

AREA	AREA DESCRIPTION	UCF SET
Turbine Building System Components (continued)		
TE2	SPARE EXCITER GENERAL ALL AREAS	2
TEE	4160 VOLT ROOM	3
TEG	RCA EXIT	1
TF2	FEED PUMP ROOM GENERAL ALL AREAS	3
TFG	OFF GAS SAMPLE AREA	3
TG2	CONDENSATE PUMP PIT	3
TH2	HEATER BAY AREA	3
TKA	TB EAST AND WEST PASSAGEWAY	2
TL2	HI-LO CONDUCTIVITY ROOM	3
TMA	MECHANICAL VACUUM PUMP ROOM	3
TN2	TB BASEMENT NORTH	3
TO2	OPERATING FLOOR	3
TOA	HEATER BAY ROOF	3
TOCR/DCA	TURBINE BUILDING CONTROL ROOM	1
TOR	TURBINE BYPASS VALVE AREA	3
TOV	CONTAMINATED INSTRUMENT SHOP EL.55-4	2
TOW	EL.46-6 WEST ROOF AREA	3
TOX	TURBINE RAGEMS II BUILDING	3
TOY	TURBINE REPAIR OFFICE	3
TP2	CONDENSATE DEMINERALIZER AREA	3
TP3	CONDENSATE DEMINERALIZER TANK ROOM	4
TPE	REGEN TANK ROOM ENTRANCE AREA	3
TS2	STEAM JET AIR EJECTOR ROOM	3
TTA	TRUNNION ROOM GENERAL ALL AREAS	4
TU2	TB NORTH MEZZANINE	3
Augmented Offgas System Components		
AY8	AOG NORTH ACCESS AREA (AYFOGZI)	3
AYA	RECOMBINER ROOM 'A'	3
AYB	RECOMBINER ROOM 'B'	3
AYC	CHARCOAL ADSORBER ROOM	3
AYE	AOG PIPE TUNNEL & SUMP AREA	4
AZ8	REFRIGERATION EQOT AREA ALL AREAS	3
AZA	HEPA FILTER ROOM 'A'	3
AZC	AOG CONTROL ROOM AREA	3
AZD	WATER REMOVAL TRAIN #1 ROOM	3
AZE	WATER REMOVAL TRAIN #2 ROOM	3
AZF	WATER REMOVAL TRAIN #3 ROOM	3

TABLE F-2

OYSTER CREEK STN DESIGNATIONS AND ASSOCIATED UNIT COST FACTORS (continued)

AREA	AREA DESCRIPTION	UCF SET
Augmented Offgas System Components (continued)		
AZI	AOG BUILDING HVAC ROOM	3
Miscellaneous System Components		
BAA	BOILER HOUSE ALL AREAS	3
BBA	STACK ALL AREAS	3
BDA	RAGEMS I BUILDING	3
CAA	CONDENSATE STORAGE TANK	3
DAA	CHEMISTRY LA GENERAL ALL AREAS	3
DAC	CABLE SPREADING ROOM EL.36-0	3
DGB	DIESEL GENERATOR #1 & #2 W/ STORAGE TANK	1
DOT	DIRTY OIL TANK	1
DPH14-6	DILUTION PUMP HOUSE	1
DPH6-0	DILUTION PUMP HOUSE	1
DWF	DOMESTIC WATER FACILITY	1
FWP	FRESH WATER PUMP HOUSE	1
GAA	NORTH GUARD HOUSE AND PARKING LOT	1
GCA	MAIN GATE SECURITY BUILDING AND PARKING LOT	1
MAA	NMB ;HOT MACHINE SHOP	3
MBA	NMB RWP OFFICE	2
MBS	NMB HOT TOOL ROOM	2
MBT	RESP MAINT FACILITY	2
MS23-6	MACHINE SHOP	1
MS34-6	HEALTH PHYSICS STORAGE AREA	1
MSROOF	MACHINE SHOP ROOF	1
NMBROOF	HOT MACHINE SHOP ROOF AREA	1
OB35-0	OFFICE BUILDING A/B BATTERY ROOM	1
OB46-6	OFFICE BUILDING	1
OBROOF	OFFICE BUILDING ROOF	1
PTB23-6	PRETREATMENT BLDG	1
RSFROOF	SERVICE HEAD ROOF	2
WAA	LLRWSF	2
WHS	CONTROL ROOM	1
YDA	DRYWELL PROCESSING FACILITY	2
YFA	YARD LAUNDRY TRAILER	2
YLA	YARD RADWASTE SHIPPING CENTER	2
INTAKE STR	INTAKE STRUCTURE	1
UYARD	YARD	2
YARD AREAS	YARD AREAS	1

APPENDIX G

WORK AREA DESIGNATION

GPU SURVEY TRACKING NUMBER (STN) INDEX

GPU STN INDEX

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REACTOR BUILDING

GPU STN INDEX
(continued)

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REACTOR BUILDING

23' ELEVATION - CONTINUED

RCM	SOUTH CONTAINMENT SPRAY HEAT EXCHANGERS (1-3 & 1-4) & FRONT OF TRUCK (RAILROAD) BAY AIRLOCK
RCN	SOUTH BANK OF CRD ACCUMULATORS (HCU'S)
RCS	SOUTH SCRAM DISCHARGE VOLUME AREA/ CORE SPRAY BOOSTER PUMPS /TORUS VACUUM BREAKERS

38' ELEVATION

RDM	TIP SYSTEM AREA-GENERAL
RD8	SHUTDOWN COOLING PUMP ROOM-GENERAL

51' ELEVATION

REY	51' ELEVATION-GENERAL ALL AREAS
REC	INSTRUMENT RACK RK-03 AREA & CORE SPRAY BOOSTER PUMPS
REF	SHUTDOWN COOLING HEAT EXCHANGER ROOM
REH	QA/QC STORAGE AREA & NITROGEN COMPRESSOR AREA
REI	TOOL CRIB & LAYDOWN AREA
REL	RX BLDG. CLOSED COOLING WATER (RBCCW) HEAT EXCHANGER & PUMP AREA
REM	SOUTH EAST ACCESS AREA
REO	CLEANUP SYSTEM HEAT EXCHANGER ROOM
REQ	CLEANUP SYSTEM PUMP AREA
RER	CLEANUP SYSTEM VALVE NEST
RET	CLEANUP FILTER SLUDGE TANK ROOM AND HALLWAY
REV	AREA OVER STEAM TUNNEL
REW	RK-01 INSTRUMENT RACK
REX	RK-02 INSTRUMENT RACK

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REACTOR BUILDING - CONTINUED

75' ELEVATION

RFB	SE GENERAL AREA (CLEANUP SURGE TANK IN OVERHEAD)
RFC	CLEANUP VALVE AISLE & CONTROL AREA
RFF	CLEANUP SYSTEM FILTER TANK/RK-05 INSTRUMENT RACK/TANK AREA
RFH	OLD FUEL POOL HEAT EXCHANGER & PUMP AREA
RFJ	AUGMENTED (NEW) SPENT FUEL POOL HEAT EXCHANGER & PUMP AREA
RFL	CONTROL ROD DRIVE (CRD) REBUILD ROOM/ WASH TANK AREA
RFN	EMERGENCY CONDENSER VALVE (OVERHEAD) AREA/CRD STORAGE & STAGING AREA
RFQ	75' ELEVATION-GENERAL ALL AREAS
REW	RK-01 INSTRUMENT RACK-SEE 51' RX BLDG. MAP

95' ELEVATION

RGA	LICENSED SOURCE STORAGE CAGE
RGC	NE ACCESS AREA/REACTOR BLDG. CLOSED COOLING WATER (RBCCW) SURGE TANK
RGD	"A" & "B" EMERGENCY CONDENSER AREA
RGF	RECIRC SEAL REBUILD ROOM
RGI	SOUTH EAST AREA
RGL	SOUTH WEST AREA
RGP	CLEANUP DEMINERALIZER VAULT
RGR	LIQUID POISON TO NORTH CORRIDOR
RGU	95' ELEVATION-GENERAL ALL AREAS

119' ELEVATION

RH1	NORTH FLOOR AREA/SKIMMER SURGE TANK/ OBSERVATION TOWER
RH2	WEST FLOOR AREA
RH3	119' ELEVATION-GENERAL ALL AREAS

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(continued)

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REACTOR BUILDING

119' ELEVATION - CONTINUED

RH4	RX BLDG. CRANE
RH5	RX BLDG. ROOF
RH6	ELEVATOR CONTROL/EQUIPMENT LANDING AREA
RHA	REACTOR CAVITY
RHB	SPENT FUEL POOL
RHC	NEW FUEL STORAGE
RHD	EQUIPMENT STORAGE POOL (ESP)
RHJ	CASK WASHDOWN/DECONTAMINATION/ NORTH EAST FLOOR AREA
RHX	SOUTH FLOOR AREA
RHY	SOUTH EAST FLOOR AREA
RHL	REFUEL BRIDGE

DRYWELL

IGA	DRYWELL-GENERAL ALL AREAS
IAA	13' ELEVATION-ALL AREAS ***EXCEPT CRD ROOM***
IAC	13' ELEVATION - CRD ROOM
IBA	23' ELEVATION
IBB	DRYWELL AIRLOCK
ICA	46' ELEVATION
IEA	82' ELEVATION
RC6	DRYWELL LABYRINTH & FRONT OF DRYWELL SHIELD DOORS

TURBINE BUILDING

TAA	TURBINE BLDG.-GENERAL ALL AREAS
TB2	BASEMENT SOUTH-GENERAL ALL AREAS
TC2	CONDENSER BAY-GENERAL ALL AREAS
TE2	SPARE EXCITER AREA-GENERAL ALL AREAS
TEE	4160 VOLT ROOM
TEG	RAD CON COUNT ROOM/TURBINE BLDG. EXIT
TF2	FEEDPUMP ROOM-GENERAL ALL AREAS

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(continued)

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TURBINE BUILDING - CONTINUED

TFG	OFF GAS SAMPLE AREA
TG2	CONDENSATE PUMP PIT-GENERAL ALL AREAS
TH2	HEATER BAY-GENERAL ALL AREAS
TKA	NE PASSAGEWAY & NE HALLWAY
TL2	HI/LO CONDUCTIVITY ROOM-GENERAL ALL AREAS
TMA	MECHANICAL VACUUM PUMP ROOM
TN2	BASEMENT NORTH-GENERAL ALL AREAS
TO2	TURBINE BLDG. OPERATING FLOOR (TBOF)-GENERAL ALL AREAS
TOW	WEST & NORTH WEST ROOF AREA
TOX	TURBINE RAGEMS BUILDING
TOY	TURBINE REPAIR OFFICE
TOA	HEATER BAY ROOF
TOS	TURBINE FLOOR TOOL ROOM
TOV	CONTAMINATED (HOT) I & C SHOP
TOR	BYPASS VALVE AREA BELOW TBOF
TP2	CONDENSATE DEMINERALIZER CONTROL ROOM-ALL AREAS
TP3	CONDENSATE DEMINERALIZER TANK ROOM-ALL AREAS
TPE	CONDENSATE DEMINERALIZER REGEN TANK ROOM-ALL AREAS
TS2	STEAM JET AIR EJECTOR ROOM-ALL AREAS
TTA	TRUNNION ROOM-GENERAL ALL AREAS
TU2	NORTH MEZZANINE-ALL AREAS

NEW RAD WASTE

N2G	NEW RAD WASTE-GENERAL ALL AREAS
N2P	PENTHOUSE & ROOF

23' ELEVATION

N38	23' ELEVATION-GENERAL ALL AREAS
N3A	TRUCK BAY & CATALYST/PROCESSING ROOM
N3D	FILL AISLE/LINER STORAGE & RB2 CONTROL PANEL

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(continued)

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NEW RAD WASTE

23' ELEVATION - CONTINUED

38' ELEVATION

48' & 58' ELEVATIONS

GPU STN INDEX
(continued)

INDEX

NEW RAD WASTE

48' & 58' ELEVATIONS - CONTINUED

GPU STN INDEX
(continued)

INDEX

OLD RAD WASTE

AUGMENTED OFF GAS (AOG)

23' ELEVATION

38' ELEVATION

GPU STN INDEX
(continued)

INDEX

AUGMENTED OFF GAS (AOG)

38' ELEVATION - CONTINUED

AZH	FLAME ARRESTOR ROOM
AZI	HVAC ROOM
AZJ	38' STAIRWELL & LANDING AREA

YARD

YAA	YARD-GENERAL ALL AREAS
YDA	DRYWELL (DW) PROCESS FACILITY & BRIEF AREA
YFA	LAUNDRY TRAILERS
YHA	RCT/GATE 20 TRAILER
YKA	SCAFFOLD STORAGE SHED
YLA	SHIPPING SURVEYS
BAA	BOILER HOUSE-ALL AREAS
BBA	STACK - ALL AREAS
BCA	STACK PAD - ALL AREAS
BDA	RAGEMS BUILDING-GENERAL ALL AREAS
PPA	NRW PUMP HOUSE - ALL AREAS
UAB	ORW OUTSIDE TANK MOAT AREA (HP-T-2A/2B & WC-T-3A/3B)
UAS	ORW SURGE TANK NV-04 & PUMP AREA
7BA	1-12 SUMP AREA - GENERAL ALL AREAS
7CA	TURBINE & RX BLDG. TUNNELS-GENERAL ALL AREAS
7DA	ORW TUNNEL-GENERAL ALL AREAS
7EB	NRW TUNNEL-GENERAL ALL AREAS & 1-3 SUMP
7FA	HEPA FILTER ROOM UNDER ORW
7EB	NRW 1-3 SUMP

CONDENSATE TRANSFER/TORUS WATER STORAGE

CAA	CONDENSATE WATER STORAGE TANK/ TORUS WATER STORAGE TANK (TWST) - GENERAL ALL AREAS

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(continued)

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CONDENSATE TRANSFER/TORUS WATER STORAGE - CONTINUED

CBA	CONDENSATE TRANSFER PUMP HOUSE - GENERAL ALL AREAS

MAC/NEW MAINTENANCE BUILDING

MAA	HOT MACHINE SHOP
MAB	CLEAN TOOL ROOM
MBA	RWP OFFICE/MAC
MBS	HOT TOOL ROOM
MBT	RESPIRATOR MAINTENANCE FACILITY
MGG	NEW MAINTENANCE BLDG.-GENERAL ALL AREAS

LOW LEVEL RAD WASTE

WAA	LOW LEVEL RAD WASTE STORAGE FACILITY

MAIN OFFICE/SERVICE BUILDING

DAA	CHEM LAB/PASS ROOM
DBA	480 VOLT ROOM
DCA	CONTROL ROOM
DDA	THIRD FLOOR M&C/EXIT
DEA	MAIN OFFICE BLDG. ROOF
DFA	OLD CABLE SPREADING ROOM
DQQ	BATTERY ROOM/MG SET ROOM/ NEW CABLE SPREADING ROOM/OPS COORDINATION OFFICE/OFFICE BLDG./ SERVICE BLDG.-GENERAL ALL AREAS

MISCELLANEOUS

GAA	NORTH GATE GUARD HOUSE & NORTH PARKING LOT

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MISCELLANEOUS - CONTINUED

GCA	MAIN GATE GUARD HOUSE & MAIN PARKING LOT
XEA	AUXILIARY OFFICE BUILDING (AOB) RAD CON & SAFETY
XFA	BLDG. 3 - STATION SERVICES (SS)/ INSTRUMENT & CALIBRATION (I&C) SHOP/ FIRE PROTECTION DEPT.-*NOT INCLUDING COUNT ROOM/TURBINE BLDG. EXIT)*
XGA	SITE EMERGENCY BUILDING (SEB)
XIA	TOOL CALIBRATION TRAILER (OLD SS TRAILER)
XJA	REFUEL CAFE
XLA	MAINTENANCE FAB SHOPS
XMA	WAREHOUSE
YCA	AUXILIARY OFFICE BLDG. (AOB) CHEMISTRY LAB
YJA	BLDG. 4/MECHANICAL WELDING SHOP
YSA	RADIAC TRAILER
ZFA	CONTRACTOR TRAILERS 90-105 @ NORTH GATE
ZHA	TRAILER 300 COMPLEX @ NORTH GATE
ZJA	FORKED RIVER SITE
QQQ	MISCELLANEOUS - GENERAL ALL AREAS

ATTACHMENT 2

SPENT FUEL MANAGEMENT PLAN
FOR
OYSTER CREEK NUCLEAR GENERATING STATION

ATTACHMENT 2

**SPENT FUEL MANAGEMENT PLAN
FOR
OYSTER CREEK NUCLEAR GENERATING STATION**

Background

Exelon Generation Company, LLC (Exelon) provided notice of its intention to permanently terminate operations at Oyster Creek Nuclear Generating Station (OCNGS) on December 31, 2019, pursuant to an Administrative Consent Order between Exelon and the New Jersey Department of Environmental Protection dated December 9, 2010.

A preliminary decommissioning cost estimate that evaluates three options for decommissioning OCNGS has been prepared. For the purpose of demonstrating the adequacy of funding to meet regulatory requirements, the SAFSTOR decommissioning option has been selected. This Spent Fuel Management Plan is similarly based on the SAFSTOR analysis, although the discussion below includes all three decommissioning options. Exelon has not made a final determination of the decommissioning approach for OCNGS. Exelon reserves the right to choose the ultimate decommissioning option in accordance with its business needs, recognizing that it needs to assure the chosen option meets U.S. Nuclear Regulatory Commission (NRC) requirements for decommissioning funding assurance.

There is an Independent Spent Fuel Storage Installation (ISFSI) on the OCNGS site operating under a NRC general license.

Spent Fuel Management Strategy

The NRC requires (as discussed in 10 CFR 50.54(bb)) that licensees establish a program "*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."* Pending transfer of the fuel to the U.S. Department of Energy (DOE), Exelon will store fuel on an interim basis in the storage pool and/or the ISFSI located at the OCNGS site.

A licensed ISFSI is currently operational at OCNGS. For the DECON and SAFSTOR scenarios, the ISFSI facility will be expanded to accommodate the inventory of spent fuel in the spent fuel pool at the conclusion of the required cooling period. Once the spent fuel pool is emptied of fuel, the reactor building can be either decontaminated and dismantled or prepared for long-term storage. In the delayed DECON scenario, the spent fuel pool and the existing ISFSI facility would remain operational and used for the interim storage of the fuel until such time as the DOE takes title and possession of the fuel. The balance of the facility will be placed in a SAFSTOR condition. In all three decommissioning scenarios, the existing ISFSI will continue to operate until such time of the transfer of spent fuel to the DOE is complete.

Assuming that the DOE's generator allocation/receipt schedules are based upon the oldest fuel receiving the highest priority and that the DOE begins removing spent fuel from commercial facilities in 2025 with an annual capacity of 3,000 metric tons of uranium, spent fuel is projected to remain at the OCNGS site for approximately 17 years after the termination of operations

(spent fuel is projected to be removed from the OCNGS site by the end of 2036). Any delay in transfer of fuel to DOE or decrease in the rate of acceptance will correspondingly prolong the transfer process and result in spent fuel remaining at the site longer than anticipated.

Operation and maintenance costs for the storage facilities (ISFSI and spent fuel pool) are reflected in the cost estimate and include the costs for staffing the facilities, maintenance of necessary operational requirements as well as security, insurance, and licensing fees. The estimate includes the costs to purchase, load, and transfer the fuel storage canisters to the ISFSI and to decommission the ISFSI for each decommissioning scenario.

A discussion of site-specific considerations for the management of spent fuel at OCNGS under each decommissioning scenario may be found in Section 3.4.1 of the Decommissioning Cost Estimate Report.

When OCNGS terminates operations in 2019, OCNGS will continue to comply with existing NRC licensing requirements, including the operation and maintenance of the systems and structures needed to support continued operation of the OCNGS spent fuel pool and ISFSI, as necessary, under the decommissioning scenario ultimately selected. In addition, OCNGS will also comply with applicable license termination requirements in accordance with 10 CFR 50.82, *"Termination of license,"* with respect to plant shutdown and post-shutdown activities, including seeking NRC approvals as appropriate for the continued storage of irradiated fuel until transfer of the fuel to the DOE is complete.

Cost Estimate and Funding For Spent Fuel Management Based on the SAFSTOR Decommissioning Option

Annual costs for spent fuel management under the SAFSTOR scenario range from approximately $3.3 million to $26.9 million with a total cost of $188.5 million (2014 dollars).

As of November 30, 2014, the OCNGS decommissioning trust fund balance was $869.9 million. At this time, there are no annual contributions to the fund and none are anticipated through the decommissioning period. To the extent that the trust fund balance exceeds costs required for radiological decommissioning, trust fund monies (subject to receipt of an exemption), in conjunction with EGC operating revenues, will be used to pay for spent fuel management costs.

An additional potential source of funding for OCNGS spent fuel management costs is the Settlement Agreement between Exelon and the DOE, under which the United States Government has agreed to reimburse Exelon for costs incurred attributable to DOE's failure to meet its contractual obligations for the transfer of spent fuel from OCNGS and other Exelon nuclear plants (Reference A).

NRC Approvals

This Spent Fuel Management Plan contemplates potential withdrawals from the decommissioning trust for spent fuel management purposes. Prior to any such withdrawals, in accordance with 10 CFR 50.12, *"Specific exemptions,"* Exelon will make appropriate submittals seeking an exemption from the requirements of 10 CFR 50.82(a)(8)(i)(A) in order to use the decommissioning trust funds for spent fuel management expenses. Exelon will monitor the funding level of the decommissioning fund to ensure that spent fuel management withdrawals will not inhibit the ability of Exelon to complete radiological decommissioning.

References

A. Settlement Agreement between the U.S. Department of Energy and Exelon Generation Company, LLC (including Commonwealth Edison Company and AmerGen Energy Company), signed and executed August 5, 2004, as amended by the Addendum to the Settlement Agreement signed May 4, 2009.

ATTACHMENT 3

ANNUAL SAFSTOR DECOMMISSIONING COST CASH FLOW
FOR
OYSTER CREEK NUCLEAR GENERATING STATION

ATTACHMENT 3

ANNUAL SAFSTOR DECOMMISSIONING COST CASH FLOW FOR OYSTER CREEK NUCLEAR GENERATING STATION

(thousands of 2014 dollars)

Year	Radiological Decommissioning Cost	Spent Fuel Management Cost	ISFSI Decommissioning Cost	Site Restoration Cost	Total Cost[a]
2019[b]	176	59	0	0	236
2020	65,146	21,625	0	0	86,771
2021	62,592	21,073	0	0	83,665
2022	7,277	26,780	0	0	34,057
2023	7,277	26,780	0	0	34,057
2024	7,297	26,853	0	0	34,150
2025	7,204	14,931	0	0	22,135
2026	7,133	3,275	0	0	10,408
2027	7,133	3,275	0	0	10,408
2028	7,152	3,284	0	0	10,436
2029	7,133	3,275	0	0	10,408
2030	7,133	3,275	0	0	10,408
2031	7,133	3,275	0	0	10,408
2032	7,152	3,284	0	0	10,436
2033	7,133	3,275	0	0	10,408
2034	7,133	3,890	0	0	11,023
2035	7,133	8,808	0	0	15,940
2036	7,152	8,808	0	0	15,960
2037	7,100	0	0	0	7,100
2038	7,100	0	0	0	7,100
2039	7,100	0	0	0	7,100
2040	7,120	0	0	0	7,120
2041	7,100	0	0	0	7,100
2042	7,100	0	0	0	7,100
2043	7,100	0	0	0	7,100
2044	7,120	0	0	0	7,120
2045	7,100	0	0	0	7,100
2046	7,100	0	0	0	7,100
2047	7,100	0	0	0	7,100
2048	7,120	0	0	0	7,120
2049	7,100	0	0	0	7,100
2050	7,100	0	0	0	7,100
2051	7,100	0	0	0	7,100
2052	7,120	0	0	0	7,120
2053	7,100	0	0	0	7,100
2054	7,100	0	0	0	7,100

[a] Cash flows may not add due to rounding
[b] 2019 costs are for decommissioning planning

ATTACHMENT 3

ANNUAL SAFSTOR DECOMMISSIONING COST CASH FLOW FOR OYSTER CREEK NUCLEAR GENERATING STATION

(thousands of 2014 dollars)

(Continued)

Year	Radiological Decommissioning Cost	Spent Fuel Management Cost	ISFSI Decommissioning Cost	Site Restoration Cost	Total Cost[(a)]
2055	7,100	0	0	0	7,100
2056	7,120	0	0	0	7,120
2057	7,100	0	0	0	7,100
2058	7,100	0	0	0	7,100
2059	7,100	0	0	0	7,100
2060	7,120	0	0	0	7,120
2061	7,100	0	0	0	7,100
2062	7,100	0	0	0	7,100
2063	7,100	0	0	0	7,100
2064	7,120	0	0	0	7,120
2065	7,100	0	0	0	7,100
2066	7,100	0	0	0	7,100
2067	7,100	0	0	0	7,100
2068	7,120	0	0	0	7,120
2069	7,100	0	0	0	7,100
2070	7,100	0	0	0	7,100
2071	7,100	0	0	0	7,100
2072	7,120	0	0	0	7,120
2073	7,100	0	0	0	7,100
2074	7,100	0	0	0	7,100
2075	37,974	0	0	395	38,369
2076	103,487	0	0	675	104,162
2077	122,204	396	1,174	418	124,192
2078	106,601	1,663	4,924	1,289	114,477
2079	58,238	406	1,201	421	60,266
2080	148	119	0	38,976	39,243
2081	81	65	0	21,298	21,444
Totals[(a)]	**934,208**	**188,471**	**7,299**	**63,471**	**1,193,450**

[(a)]Cash flows may not add due to rounding

ATTACHMENT 4

ANNUAL SAFSTOR DECOMMISSIONING FUND CASH FLOW
FOR
OYSTER CREEK NUCLEAR GENERATING STATION

ATTACHMENT 4

ANNUAL SAFSTOR DECOMMISSIONING FUND CASH FLOW FOR OYSTER CREEK NUCLEAR GENERATING STATION

(thousands of dollars)

Year	Total Cost[a] (2014 dollars)	BOY Trust Fund Value	BOY Trust Fund Less Cost	Trust Fund Earnings[c]	EOY Trust Fund Value[b]
2019[d]	236	960,460	960,224	1,600	961,825
2020	86,771	961,825	875,054	17,501	892,555
2021	83,665	892,555	808,890	16,178	825,068
2022	34,057	825,068	791,011	15,820	806,831
2023	34,057	806,831	772,775	15,455	788,230
2024	34,150	788,230	754,080	15,082	769,162
2025	22,135	769,162	747,027	14,941	761,967
2026	10,408	761,967	751,559	15,031	766,591
2027	10,408	766,591	756,183	15,124	771,306
2028	10,436	771,306	760,870	15,217	776,087
2029	10,408	776,087	765,679	15,314	780,993
2030	10,408	780,993	770,585	15,412	785,997
2031	10,408	785,997	775,589	15,512	791,101
2032	10,436	791,101	780,664	15,613	796,278
2033	10,408	796,278	785,870	15,717	801,587
2034	11,023	801,587	790,564	15,811	806,376
2035	15,940	806,376	790,435	15,809	806,244
2036	15,960	806,244	790,284	15,806	806,090
2037	7,100	806,090	798,989	15,980	814,969
2038	7,100	814,969	807,869	16,157	824,026
2039	7,100	824,026	816,926	16,339	833,265
2040	7,120	833,265	826,145	16,523	842,668
2041	7,100	842,668	835,568	16,711	852,279
2042	7,100	852,279	845,179	16,904	862,082
2043	7,100	862,082	854,982	17,100	872,082
2044	7,120	872,082	864,962	17,299	882,261
2045	7,100	882,261	875,161	17,503	892,664
2046	7,100	892,664	885,564	17,711	903,275
2047	7,100	903,275	896,175	17,924	914,099
2048	7,120	914,099	906,979	18,140	925,119
2049	7,100	925,119	918,018	18,360	936,379
2050	7,100	936,379	929,278	18,586	947,864
2051	7,100	947,864	940,764	18,815	959,579
2052	7,120	959,579	952,459	19,049	971,509
2053	7,100	971,509	964,408	19,288	983,697
2054	7,100	983,697	976,596	19,532	996,128

[a] Annual SAFSTOR decommissioning cost (radiological + spent fuel + ISFSI decommissioning + site restoration)
[b] Cash flows may not add due to rounding
[c] A 2% annual real rate of return is used as allowed by 10 CFR 50.75(e)(1)(i)
[d] The 2019 BOY Trust Fund Value is the value of the decommissioning trust prior to the 2019 decommissioning planning expenses

ATTACHMENT 4

ANNUAL SAFSTOR DECOMMISSIONING FUND CASH FLOW FOR OYSTER CREEK NUCLEAR GENERATING STATION

(thousands of dollars)

(Continued)

Year	Total Cost[a] (2014 dollars)	BOY Trust Fund Value	BOY Trust Fund Less Cost	Trust Fund Earnings[c]	EOY Trust Fund Value[b]
2055	7,100	996,128	989,028	19,781	1,008,809
2056	7,120	1,008,809	1,001,689	20,034	1,021,723
2057	7,100	1,021,723	1,014,622	20,292	1,034,915
2058	7,100	1,034,915	1,027,815	20,556	1,048,371
2059	7,100	1,048,371	1,041,271	20,825	1,062,096
2060	7,120	1,062,096	1,054,976	21,100	1,076,076
2061	7,100	1,076,076	1,068,976	21,380	1,090,355
2062	7,100	1,090,355	1,083,255	21,665	1,104,920
2063	7,100	1,104,920	1,097,820	21,956	1,119,776
2064	7,120	1,119,776	1,112,657	22,253	1,134,910
2065	7,100	1,134,910	1,127,810	22,556	1,150,366
2066	7,100	1,150,366	1,143,265	22,865	1,166,131
2067	7,100	1,166,131	1,159,031	23,181	1,182,211
2068	7,120	1,182,211	1,175,091	23,502	1,198,593
2069	7,100	1,198,593	1,191,493	23,830	1,215,323
2070	7,100	1,215,323	1,208,223	24,164	1,232,387
2071	7,100	1,232,387	1,225,287	24,506	1,249,793
2072	7,120	1,249,793	1,242,673	24,853	1,267,526
2073	7,100	1,267,526	1,260,426	25,209	1,285,635
2074	7,100	1,285,635	1,278,535	25,571	1,304,105
2075	38,369	1,304,105	1,265,736	25,315	1,291,051
2076	104,162	1,291,051	1,186,889	23,738	1,210,626
2077	124,192	1,210,626	1,086,435	21,729	1,108,163
2078	114,477	1,108,163	993,686	19,874	1,013,560
2079	60,266	1,013,560	953,294	19,066	972,360
2080	39,243	972,360	933,117	18,662	951,780
2081	21,444	951,780	930,336	18,607	948,942
Total[b]	**1,193,450**				

[a] Annual SAFSTOR decommissioning cost (radiological + spent fuel + ISFSI decommissioning + site restoration)
[b] Cash flows may not add due to rounding
[c] A 2% annual real rate of return is used as allowed by 10 CFR 50.75(e)(1)(i)