

ENCLOSURE 3

**Decommissioning Cost Estimate Study for the Duane Arnold Energy Center
Revision 1**

Decommissioning Cost Estimate Study for the Duane Arnold Energy Center

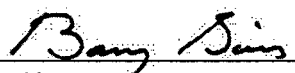
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Revision 1

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TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 EXECUTIVE SUMMARY	4
2.0 INTRODUCTION	8
2.1 Study Objective.....	8
2.2 Regulatory Framework	9
3.0 STUDY METHODOLOGY	11
3.1 General Description	11
3.2 Schedule Analysis.....	11
3.3 Decommissioning Staff.....	12
3.4 Waste Disposal.....	13
3.5 Final Status Survey	16
3.6 Contingency	16
3.7 Cost Reporting	17
4.0 SITE SPECIFIC TECHNICAL APPROACH.....	18
4.1 Facility Description.....	18
4.2 Decommissioning Periods for Scenario 1	18
4.3 Decommissioning Periods for Scenario 2.....	20
4.4 Decommissioning Periods for Scenario 3.....	22
4.5 Decommissioning Periods for Scenario 4.....	24
4.6 Decommissioning Staff.....	26
4.7 Spent Fuel Management Staff.....	26
4.8 Spent Fuel Shipments	27
5.0 BASES OF ESTIMATE AND KEY ASSUMPTIONS.....	28
6.0 STUDY RESULTS BY SCENARIO	33
6.1 Scenario 1 – Base Case	33
6.2 Scenario 2 – Base Case, Except SAFSTOR	40
6.3 Scenario 3 – Base Case, Except License Extension	47
6.4 Scenario 4 – Base Case, Except SAFSTOR and License Extension	51
7.0 REFERENCES	58

FIGURES

Figure 1-1	Scenario 1 Summary Schedule	7
Figure 6-1	Scenario 1 Summary Schedule	35
Figure 6-2	Scenario 2 Summary Schedule	41
Figure 6-3	Scenario 3 Summary Schedule	48
Figure 6-4	Scenario 4 Summary Schedule	52

TABLES

Table 1-1	License Termination Cost Summary by Scenario	5
Table 1-2	Spent Fuel Cost Summary by Scenario	6
Table 1-3	Greenfield Cost Summary by Scenario.....	6
Table 6-1	Scenario 1 Cost and Schedule Summary	36
Table 6-2	Scenario 1 DAEC Staff Levels	37
Table 6-3	Scenario 1 DGC Staff Levels.....	38
Table 6-4	Scenario 1 Waste Disposal Volumes	39
Table 6-5	Scenario 2 Cost and Schedule Summary	42
Table 6-6	Scenario 2 DAEC Staff Levels	43
Table 6-7	Scenario 2 DGC Staff Levels.....	45
Table 6-8	Scenario 2 Waste Disposal Volumes	46
Table 6-9	Scenario 3 Cost and Schedule Summary	49
Table 6-10	Scenario 3 Waste Disposal Volumes	50
Table 6-11	Scenario 4 DAEC Staff Levels	53
Table 6-12	Scenario 4 DGC Staff Levels.....	55
Table 6-13	Scenario 4 Cost and Schedule Summary	56
Table 6-14	Scenario 4 Waste Disposal Volumes	57

APPENDICES

Appendix A	List of Systems and Structures
Appendix B	Spent Fuel Shipping Schedules
Appendix C	Detailed Project Schedules
Appendix D	Detailed Cost Tables
Appendix E	Annual Cash Flow Tables
Appendix F	Detailed Annual Cash Flow Tables

1.0 EXECUTIVE SUMMARY

This report presents the results of a site-specific decommissioning cost estimate for FPL Energy Duane Arnold, LLC's (FPLE) Duane Arnold Energy Center (DAEC)¹. The study has been performed to furnish an estimate, for financial planning purposes, of the costs for (1) decommissioning DAEC to the extent required to terminate the plant's operating license pursuant to 10 CFR 50.75(c), (2) post-shutdown management of spent fuel until acceptance by the U.S. Department of Energy (DOE) pursuant to 10 CFR 50.54(bb), and (3) clean demolition of structures and restoration of the site to Greenfield conditions (Ref. No. 1).

The study methodology follows the basic approach originally presented in the Atomic Industrial Forum/National Environmental Studies Project Report AIF/NESP-036, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," (Ref. No. 2). The report was prepared in accordance with Nuclear Regulatory Commission (NRC) Regulatory Guide 1.202, "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors," (Ref. No. 3). The estimate is based on compliance with current regulatory requirements and proven decommissioning technologies.

NRC requirements set forth in Title 10 of the Code of Federal Regulations (CFR) differentiate between the post-shutdown costs associated with storage of spent fuel on-site and those associated with the decommissioning of the facility. 10 CFR 50.75(c) requires funding by the licensee of the facility for the decommissioning program, but specifically excludes the cost of removal and disposal of spent fuel and the removal of clean structures. 10 CFR 50.75(c) also excludes the cost of site restoration activities that do not involve the removal of residual radioactivity necessary to terminate the NRC license, which restore the site to either "Brownfield" or "Greenfield" conditions depending on the desired end-state. 10 CFR 50.54 (bb) requires funding by the licensee "for the management of all irradiated fuel at the reactor upon expiration of the reactor operating license 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, the costs and schedules for all activities are segregated for regulatory purposes as follows: costs for "License Termination" (10 CFR 50.75(c)); costs for "Spent Fuel Management" (10 CFR 50.54(bb)); and costs for "Greenfield" (clean removal and site restoration) final site conditions. EnergySolutions has established a Work Breakdown Structure (WBS) and cost accounting system to differentiate between these three project accounts.

The study analyzes the following four decommissioning scenarios for DAEC, as defined by FPLE:

Scenario 1 Base Case

- DECON methodology.
- No license extension, with shutdown on February 21, 2014.
- Terminate spent fuel pool operation five years after permanent unit shutdown.
- Spent fuel will be stored at the existing Independent Spent Fuel Storage Installation (ISFSI).

¹ FPLE owns 70% of and operates DAEC. The other owners of DAEC are Central Iowa Power Cooperative (20%) and Corn Belt Power Cooperative (10%). All numbers presented in this report are on a 100% basis.

- Class B and C waste will be temporarily stored in an on-site interim waste storage facility to be built during decommissioning. Class B and C waste are assumed to be stored on-site until 2025, which is the assumed date a licensed facility would be available to receive these wastes.
- The DOE Yucca Mountain repository, or other approved method of spent fuel disposition, will be available starting in 2025.

Scenario 2 Base case, except using SAFSTOR methodology.

- Class B and C waste generated during operations and SAFSTOR preparations will be stored in the existing Low Level Radwaste Storage Building until 2025, which is the assumed date a licensed facility would be available to receive these wastes.

Scenario 3 Base case, except 20-year license extension, and no requirement for on-site interim storage of Class B and C waste.

Scenario 4 Scenario 2, except with 20-year license extension, and no requirement for on-site interim storage of Class B and C waste.

Each scenario incorporates the spent fuel schedules developed by FPLE. All scenarios are based on performance of decommissioning by a Decommissioning General Contractor (DGC) under the management and supervision of DAEC staff. DAEC staff will be supplemented with a professional engineering consulting firm for planning and preparation, engineering design, and final status survey.

The cost estimate results for all four scenarios are provided in 2008 dollars in Tables 1-1, 1-2, and 1-3. Table 1-1 contains License Termination costs, which correspond to 10 CFR 50.75 (c) requirements.

**Table 1-1
License Termination Cost Summary by Scenario
(2008 Dollars in Thousands)**

Scenario	License Termination – 50.75(c)
1	\$499,002
2	\$578,297
3	\$486,398
4	\$578,144

Table 1-2 contains Spent Fuel Management costs, which correspond to 10 CFR 50.54 (bb) requirements.

Table 1-2
Spent Fuel Cost Summary by Scenario
(2008 Dollars in Thousands)

Scenario	Spent Fuel Management – 50.54 (bb)
1	\$278,300
2	\$274,041
3	\$234,468
4	\$230,667

Table 1-3 contains Greenfield costs, which correspond to activities such as clean building demolition and site grading and re-seeding.

Table 1-3
Greenfield Cost Summary by Scenario
(2008 Dollars in Thousands)

Scenario	Greenfield
1	\$40,731
2	\$41,298
3	\$40,731
4	\$41,298

The estimate is based on site-specific plant systems and buildings inventories developed from material take-offs performed by EnergySolutions. These inventories and EnergySolutions' proprietary Unit Cost Factors (UCFs) were used to generate required manhours, activity schedule hours and costs, and waste volume, weight, and classification. Based on the activity schedule hours and a decommissioning activities analysis, a Critical Path Method (CPM) analysis was performed to determine the decommissioning schedules. These schedules reflect the effects of sequenced activity-dependent or distributed decommissioning elements such as planning and preparations, major component removal, building decontamination, and spent fuel shipping. The schedules are divided into project phases (periods) and presented, as noted previously, by cost account "License Termination," "Spent Fuel Management," or "Greenfield." The summary schedule for Scenario 1 is shown in Figure 1-1. The summary schedules for all the scenarios may be found in sections 6.1 through 6.4 of this report.

Figure 1-1

Scenario 1 Summary Schedule

2.0 INTRODUCTION

2.1 Study Objective

This report presents the results of a site-specific decommissioning cost estimate for FPL Energy Duane Arnold, LLC's (FPLE) Duane Arnold Energy Center (DAEC). The study has been performed to furnish an estimate, for financial planning purposes, of the costs for (1) decommissioning DAEC to the extent required to terminate the plant's operating license pursuant to 10 CFR 50.75(c), (2) post-shutdown management of spent fuel until acceptance by the U.S. Department of Energy (DOE) pursuant to 10 CFR 50.54(bb), and (3) clean demolition of structures and restoration of the site to Greenfield conditions (Ref. No. 1).

The study methodology follows the basic approach originally presented in the Atomic Industrial Forum/National Environmental Studies Project Report AIF/NESP-036, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," (Ref. No. 2). The report was prepared in accordance with Nuclear Regulatory Commission (NRC) Regulatory Guide 1.202, "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors," (Ref. No. 3). The estimate is based on compliance with current regulatory requirements and proven decommissioning technologies.

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Scenario 1 Base Case

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- Terminate spent fuel pool operation five years after permanent unit shutdown.
- Spent fuel will be stored at the existing Independent Spent Fuel Storage Installation (ISFSI).
- Class B and C waste will be temporarily stored in an on-site interim waste storage facility to be built during decommissioning. Class B and C waste are assumed to be stored on-site until 2025, which is the assumed date a licensed facility would be available to receive these wastes.
- The DOE Yucca Mountain repository, or other approved method of spent fuel disposition, will be available starting in 2025.

Scenario 2 Base case, except using SAFSTOR methodology.

- Class B and C waste generated during operations and SAFSTOR preparations will be stored in the existing Low Level Radwaste Storage Building until 2025, which is the assumed date a licensed facility would be available to receive these wastes.

Scenario 3 Base case, except 20-year license extension, and no requirement for on-site interim storage of Class B and C waste.

Scenario 4 Scenario 2, except with 20-year license extension, and no requirement for on-site interim storage of Class B and C waste.

2.2 Regulatory Framework

Provisions of current laws and regulations affecting decommissioning, waste management and spent fuel management are as follows:

1. Current NRC policy requires either: (a) removal of all spent fuel from a facility licensed under 10 CFR 50, or (b) on-site storage of spent fuel at an ISFSI under the general license set forth in 10 CFR 72, or (c) on-site storage of spent fuel under a site-specific ISFSI Part 72 license, before the license can be terminated
2. 10 CFR 50.75(c) requires funding by the licensee of the facility for the decommissioning program, but specifically excludes the cost of removal and disposal of spent fuel and the removal of clean structures.
3. 10 CFR 50.54 (bb) requires the licensee, within two years following permanent cessation of operation of the reactor or five years before expiration of the operating license, whichever occurs first, to submit written notification to the NRC for its review and preliminary approval of the program by which the licensee intends to manage and provide funding "for the management of all irradiated fuel at the reactor upon expiration of the reactor operating license until title to the irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository." However, the NRC does not currently consider post-shutdown spent fuel management costs to be decommissioning costs.
4. 10 CFR Part 961 (Ref. No. 4), Appendix E, requires spent fuel to be cooled in the spent fuel pool for at least five years before it can be accepted by DOE.
5. A bill to enact the "Atlantic Interstate Low-Level Radioactive Waste Compact Implementation Act" was signed by the Governor of South Carolina on June 6, 2000. The Atlantic Compact consists of South Carolina, Connecticut and New Jersey. Under the Act, effective June 2008, the Atlantic compact now prohibits out-of-region low level waste (LLW) generators, including FPLE, from disposing of LLW at the Barnwell disposal facility. Barnwell is one of only two facilities in the United States currently licensed to dispose of Class B and C LLW.

Decommissioning Alternatives

The three basic methods for decommissioning are DECON, SAFSTOR, and ENTOMB, which are summarized as follows:

1. DECON: The equipment, structures, and portions of the facility and site that contain radioactive contaminants are promptly removed or decontaminated to a level that permits termination of the license after cessation of operations.
2. SAFSTOR: The facility is placed in a safe, stable condition and maintained in that state (safe storage). The facility is decontaminated and dismantled at the end of the storage period to levels that permit license termination. NRC regulations require decommissioning to be completed within 60 years of cessation of

operation. Durations less than the regulatory-allowed maximum may be referred to as Modified SAFSTOR.

3. ENTOMB: Radioactive structures, systems, and components are encased in a structurally long-lived substance, such as concrete. The entombed structure is appropriately maintained and monitored until radioactivity decays to a level that permits termination of the license. Since entombment will exceed the requirement for decommissioning to be completed within 60 years of cessation of operation, NRC handles entombment requests on a case-by-case basis.

The selection of a preferred decommissioning alternative is influenced by a number of factors pertinent at the time of final plant shutdown. These factors include the cost of each decommissioning alternative, minimization of occupational radiation exposure, availability of a low-level waste disposal facility, availability of a high-level waste (spent fuel) repository, regulatory requirements, and public concerns.

Post-Shutdown Spent Fuel Management Alternatives

The earliest date for start-up of the DOE's Yucca Mountain repository is currently 2020². However, there is considerable uncertainty associated with this scheduled opening. Per guidance from FPLE, this study assumes that the DOE Yucca Mountain repository, or other approved method of spent fuel disposition, will be available starting in 2025. Therefore, long-term post-shutdown spent fuel storage must be addressed as an integral element of decommissioning planning. The basic options for long-term post-shutdown spent fuel management are (1) wet storage consisting of continued maintenance and operation of the spent fuel pool, (2) dry storage consisting of transfer of spent fuel from the fuel pool to on-site dry storage modules following the minimum cooling period, and (3) off-site storage at a licensed private or commercial storage facility. The third option is not commercially viable as of the date of this study.

The selection of a spent fuel management alternative has a significant impact on decommissioning. Maintaining the spent fuel pool for an extended duration following cessation of operations prevents termination of the Part 50 license and typically has a higher annual maintenance and operating cost than the dry storage alternative. Transfer of spent fuel to an ISFSI requires (1) capital expenditures for purchase and construction of the ISFSI, if needed, and (2) dismantlement and disposal of the ISFSI following completion of spent fuel transfer to DOE.

² Summary, Edward F. Sproat, III, Director Office of Civilian Radioactive Waste Management, U.S. Department of Energy Before the Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, U.S. House of Representatives, July 15, 2008

3.0 STUDY METHODOLOGY

3.1 General Description

EnergySolutions maintains a proprietary decommissioning cost model based upon the fundamental technical approach established in AIF/NESP-036, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," dated May 1986 (Ref. No. 2). The cost model has been continuously updated in accordance with regulatory requirements and industry experience. The cost model includes elements for estimating distributed and undistributed costs. Distributed costs are activity specific and include planning and preparation costs as well as the decontamination, packaging, disposal, and removal of major components and systems. For example, the segmentation, packaging, and disposal of the reactor internals is a distributed cost. Undistributed costs, sometimes referred to as collateral costs, are typically time dependent costs such as utility and decommissioning general contractor staff, property taxes, insurance, regulatory fees and permits, energy costs, and security staff.

The methodology for preparing cost estimates for a selected decommissioning alternative requires development of a site-specific detailed work activity sequence based upon the plant inventory. The activity sequence is used to define the labor, material, equipment, energy resources, and duration required for each activity. In the case of major components, individual work sequence activity analyses are performed based on the physical and radiological characteristics of the component and the packaging, transportation, and disposal options available.

In the case of structures and small components and equipment such as piping, pumps, and tanks, the work durations and costs are calculated based on Unit Cost Factors (UCFs). UCFs are economic parameters developed to express costs per unit of work output, piece of equipment, or time. They are developed using decommissioning experience, information on the latest technology applicable to decommissioning, and engineering judgment. The total cost of a specific decommissioning activity can be determined by multiplying the total number of units associated with that activity by the UCF, expressed as \$/unit, for that activity. For example, the estimated demolition cost of a non-contaminated concrete structure can be obtained by multiplying the volume of concrete in the structure by the UCF for non-contaminated reinforced concrete demolition, expressed in \$/unit volume. Each UCF has associated with it a man-hours/unit and schedule-hours/unit. From these values, total man-hours and total schedule-hours can be determined for a particular activity.

3.2 Schedule Analysis

Once the work activity durations are calculated for all distributed activities, a critical path schedule analysis is performed using MS Project. The schedule accounts for constraints such as spent fuel cooling periods and regulatory reviews. The schedule is typically delineated into phases or time periods (hereinafter referred to as period or periods) that differentiate manpower requirements and undistributed costs.

In order to differentiate between License Termination, Spent Fuel and Greenfield elements of the entire decommissioning scope of work, EnergySolutions has established a Work Breakdown Structure (WBS) and cost accounting system to treat each element as a subproject. Accordingly, the overall project schedule is divided into interrelated periods with major milestones defining

the beginning and ending of each period. The major milestones also serve as the basis for integrating the periods of the three subprojects. The License Termination and Greenfield project periods are scheduled sequentially while the Spent Fuel periods occur in parallel.

3.3 Decommissioning Staff

EnergySolutions' philosophy towards decommissioning is to assume the project will be performed in an efficiently planned and executed manner using project personnel experienced in decommissioning. EnergySolutions assumes that the decommissioning will be performed by a highly experienced and qualified Decommissioning General Contractor (DGC), with oversight and management of the decommissioning operations performed by DAEC staff. It was also assumed that DAEC staff would be supplemented by professional consulting engineering, particularly in the planning and preparation phase. EnergySolutions analyzed the DAEC operational staff and developed a site-specific staffing plan. The DAEC existing salary structure was then used as the basis for calculating DAEC staff labor costs. EnergySolutions used industry data to develop DGC salary costs.

Staffing levels, for both staffing plans and for each project period, are based on the AIF guidelines and industry experience. The sizes of the staffs are varied in each period in accordance with the requirements of the work activities. DAEC staffing has been organized into the following departments or functional groups:

- Administration
- Engineering
- Health Physics
- Management
- Plant Maintenance
- Plant Operations
- Quality Assurance
- Security Administration
- Security Guard Force
- Waste Operations
- Fuel Pool Maintenance and Operation Staff
- Additional Staff for Spent Fuel Shipping
- DGC Staff

3.4 Waste Disposal

Waste management costs comprise a significant portion of the decommissioning cost estimate. Additionally, limited future access to disposal sites licensed for receipt of Class B and C wastes introduces a significant level of uncertainty with respect to the appropriateness of using existing rate structures to estimate disposal costs of these wastes. *EnergySolutions'* approach to estimating waste disposal costs is discussed in the following paragraphs.

Waste Classification

Regulations governing disposal of radioactive waste are stringent in order to ensure control of the waste and preclude adverse impact on public health and safety. At present, low-level radioactive waste (LLRW) disposal is controlled by NRC Regulation 10 CFR 61 (Ref. No. 4), which went into effect in December, 1983. This regulation stipulates the criteria for the establishment and operation of shallow-land LLRW burial facilities. Embodied within this new regulation are criteria and classifications for packaging LLRW such that it is acceptable for burial at licensed LLRW disposal sites.

For each waste classification, 10 CFR 61 stipulates specific criteria for physical and chemical properties that the LLRW must meet in order to be accepted at a licensed disposal site. The LLRW disposal criteria of 10 CFR 61 require that LLRW generators determine the proportional amount of a number of specific radioactive isotopes present in each container of disposable LLRW. This requirement for isotopic analysis of each container of disposable LLRW is met by employing a combination of analytical techniques such as computerized analyses based upon scaling factors, sample laboratory analyses, and direct assay methods. Having performed an isotopic analysis of each container of disposable LLRW, the waste must then be classified according to one of the classifications (Class A, B, C or Greater Than Class C (GTCC)) as defined in 10 CFR 61.

EnergySolutions' classification of LLRW resulting from decommissioning activities is based on AIF/NESP-036 (Ref. No. 2), NUREG/CR-0130 (Ref. No. 5), NUREG/CR-0672 (Ref. No. 6), and recent industry experience. The estimated curie content of the reactor vessel and internals at shutdown is derived from NUREG/CR-0130 for Pressurized Water Reactors (PWRs) and NUREG/CR-0672 for Boiling Water Reactors (BWRs) and adjusted for the different mass of components as well as the MWt rating and period of decay.

Packaging

Selection of the type and quantity of containers required for Class B and C wastes is based on the most restrictive of either curie content, dose-rate, container weight limit, or container volume limit. GTCC wastes from segmentation of the reactor vessel internals is packaged in fuel bundle canisters. The selection of container type for Class A waste is based on the transportation mode (rail, truck, barge, etc.) and waste form. The quantity of Class A waste containers is determined by the most restrictive of either container weight limit or container volume limit. Large components, such as steam generators, pressurizers, and reactor recirculation pumps, are shipped as their own container with shielding as required.

Container costs are obtained from manufacturers. Shielded transport cask and liner costs are obtained from the cask owners and operators.

Transportation

Transportation routes to processing and disposal facilities are determined based on available transportation modes (truck, rail, barge or combinations). Routes and distances are determined using the Transportation Routing Analysis Geographic Information System (TRAGIS) software developed by the Oak Ridge National Laboratory National Transportation Research Center (Ref. No. 7).

Transportation costs for the selected routes and modes are obtained from vendor quotes or published tariffs whenever possible.

Class A Disposal Options and Rates

In accordance with the existing Life-of-Plant Disposal Agreement (Ref. No. 8), all Class A waste that meets the Clive facility waste acceptance criteria is to be disposed of at Clive. All reported waste disposal costs include packaging, transportation, and any applicable surcharges.

Class B and C Disposal Options and Rates

Currently, within the United States, there are only two commercial disposal facilities licensed to accept Class B and C LLRW: the Barnwell facility, operated by *EnergySolutions* in Barnwell, South Carolina, and the U.S. Ecology facility in Richland, Washington. However, Barnwell only accepts waste from states within the Atlantic Compact, and U.S. Ecology only accepts waste from states within the Northwest and Rocky Mountain Compacts.

The Low-Level Waste Policy Act (LLWPA), passed by Congress in 1980, placed the responsibility of LLRW disposal in the hands of individual states. The LLWPA provided a six-year time frame within which each state was required to develop its own means for radioactive disposal. The LLWPA also provided for a group of states to form a compact, which could then establish the means for LLRW disposal on a regional basis.

The intent of the LLWPA was to have new LLRW disposal sites in operation before January 1, 1986, therefore permitting closures of the three existing burial sites located in South Carolina, Washington, and Nevada. Since no new disposal sites were in operation by 1986, it is evident that the LLWPA failed to motivate the individual states to comply with its purpose.

On January 15, 1986, Congress amended the LLWPA with passage of Public Law 99-240. In June of 1992, the U.S. Supreme Court ruled that the provisions of the amendment requiring any state to take title to the waste of its generators, if that state had not met its program milestones dates, were unconstitutional. The Supreme Court's invalidation of the "take title" provision has contributed to a lack of significant progress by many States in coming to grips with the problem.

The question then becomes: what disposal rate is to be used in the decommissioning cost estimate for Class B and C LLRW and where is it to go? Since the cost estimate is based on current or present day dollars, the disposal cost for Class B and C LLRW should be equivalent to the cost that would be incurred if a new disposal facility were to be licensed and begin operations today. *EnergySolutions* has reviewed several studies developed in an attempt to quantify the disposal costs associated with a new disposal facility constructed in today's environment. Based

on this review, it is *EnergySolutions*' belief that Class B and C LLRW disposal rates based on the published base rate and surcharge structure for the Barnwell facility is the most reasonable approach. This approach is also based on the fact that NRC requires utilities to update their decommissioning cost estimates every five years so that changes in disposal options and costs can be taken into account.

Greater Than Class C (GTCC)

Wastes identified as 10 CFR 61 Class A, B, and C may be disposed at a near-surface disposal facility. Certain components are highly activated and may exceed the radionuclide concentration limitations for 10 CFR 61 Class C waste. In accordance with 10 CFR 61, these components cannot be disposed of in a near-surface LLRW disposal facility and must be transferred to a geologic repository or a similar site approved by the NRC.

Highly activated sections of the reactor vessel internals will result in GTCC waste. Presently, a facility does not exist for the disposal of wastes exceeding 10 CFR 61 Class C limitations. *EnergySolutions* assumes that the DOE will accept this waste at the Yucca Mountain repository facility along with spent fuel. However, unlike spent fuel, the disposal cost is not addressed by DOE's 1-mill/kWhr surcharge. Therefore, *EnergySolutions* estimates a GTCC waste disposal cost based upon the maximum curie surcharges currently in effect at Barnwell. *EnergySolutions* assumes that the GTCC waste will be packaged in fuel bundle canisters, either stored in the fuel pool or dry storage containers, and be shipped to Yucca Mountain by DOE along with the spent fuel. Additionally, *EnergySolutions* assumes shipping costs for GTCC waste to be equivalent to the commercial cost of shipping a Type B licensed, shielded cask such as the CNS 8-120B cask which is owned and operated by *EnergySolutions*.

Non-Radioactive Non-Hazardous Waste Disposal

EnergySolutions assumes that recyclable, non-radioactive scrap metal resulting from the decommissioning program will be removed from the site by a scrap metal dealer at no cost to the project. Concrete debris is assumed to be processed by size reduction, with removal of structural reinforcing steel, and used on site as engineered fill for voids. All other demolition debris is removed from the site and disposed of at a local construction debris landfill.

Hazardous and Industrial Waste Disposal

Uncontaminated lead shielding remaining after shutdown was assumed to be removed from its installed locations and shipped offsite by entities having a need for the material. The entities receive the lead at no charge in return for providing the removal and shipping services. In accordance with information furnished by FPLE seven percent of insulated systems in radiologically controlled areas are assumed to contain asbestos, therefore; the decommissioning cost estimate includes a line item for asbestos abatement. The decommissioning estimate also includes an estimate for hazardous and industrial waste disposal based on information provided in the "DAEC 2007 Hazardous Waste Report." The cost of hazardous and industrial waste disposal includes FPLE's estimated cost for closure of Resource Conservation and Recovery Act (RCRA) storage area.

3.5 Final Status Survey

The cost of performing a final status survey (FSS) is based on NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)" (Ref. No. 9). Estimates of MARSSIM Class I, II and III survey designations are based on radiological characterization data furnished by DAEC and assumptions regarding contamination resulting from small and large component removal activities. The FSS activity cost calculation includes the in-place remote survey of underground metal and concrete pipe, soil, and groundwater sampling and analysis. Estimated costs for NRC and Oak Ridge Institute for Science and Education (ORISE) verification are also included, and the NRC review period is incorporated into the project schedule.

3.6 Contingency

Contingencies are applied to cost estimates primarily to allow for unknown or unplanned occurrences during the actual program, e.g. increased radioactive waste materials volumes over that expected; equipment breakdowns; weather delays; labor strikes, etc. This is consistent with the definition provided in the DOE Cost Estimating Guide, DOE G 430.1-1, 3-28-97 (DOE G) (Ref. No. 10): Contingency "Covers costs that may result from incomplete design, unforeseen and unpredictable conditions, or uncertainties within the defined project scope. The amount of contingency will depend on the status of design, procurement, and construction; and the complexity and uncertainties of the component parts of the project. Contingency is not to be used to avoid making an accurate assessment of expected costs." *EnergySolutions* determines site-specific contingency factors to be applied to each estimate based on industry practices.

The DOE has established a recommended range of contingencies as a function of completeness of program design, DOE G. The ranges are:

<u>Type of Estimate</u>	<u>Contingency Range as a % of Total Estimate</u>
Planning Phase Estimate	20-30
Budget Estimate	15-25
Title I (Preliminary Design Estimate)	10-20
Title II (Definitive Design Estimate)	5-15

EnergySolutions' approach to assigning appropriate contingency rates is based on adaptations of published values for the specific decommissioning activities. One source for such published information is AIF/NESP-0036 "Guidelines for Producing Nuclear Plant Decommissioning Cost Estimates" (AIF) (Ref. No. 2). This document identifies contingencies for activities specific to a nuclear power plant decommissioning, such as reactor internals removal. The contingencies presented in this document are based on the assumption that the estimated costs are optimistic; therefore, the published contingencies are greater than they would be if the estimated costs were most probable. With the exception of the system decontamination, reactor vessel and reactor internals removal, and disposal, the contingencies presented in AIF are consistent with the values presented in DOE G 430.1-1 for a Budget/Title I estimate. The system decontamination, reactor vessel and reactor internals removal, and disposal contingencies are significantly higher than the ranges identified by the DOE, even for a planning phase document. This is due to the unique nature of these activities and the relatively small amount of historical data available at the time the AIF document was written.

EnergySolutions has developed contingencies specific to decommissioning estimates utilizing the information presented in AIF and consistent with DOE G. The decommissioning costs generated by EnergySolutions are considered most probable and, as such, the contingencies presented in AIF were reduced for each category of costs. There have also been a number of large-scale decommissioning projects since AIF was published, providing some historical information that can be used in preparing current estimates. This allows for additional reduction in contingency costs. The following table provides a summary of contingency values used in EnergySolutions' estimates where the plant structures, systems, and major component material inventories are well defined, as with this study.

<u>Category</u>	<u>Labor</u>	<u>Material & Equipment</u>	<u>Package Ship & Bury</u>	<u>Other</u>
Engineering, Utility & DGC	13%			
Contaminated components/Concrete	23%	23%	23%	
Clean components	13%	23%	13%	
Reactor Vessel and Reactor Internals	50%	23%	25%	
Other				15%

A reactor decommissioning program will be conducted under an NRC-approved Quality Assurance Program which meets the requirements of 10 CFR 50, Appendix B, of the Code of Federal Regulations. However, the development of the quality assurance program, the performance of work under that program, and the effort required to ensure compliance with the program, is already included in the detailed cost estimate. Therefore, EnergySolutions does not include quality assurance as an element of the contingency allowance. The same is true for contamination. Where radioactive contamination or activated materials are dealt with, the EnergySolutions unit cost factors and associated calculations fully reflect the cost impact of that material, and a separate contingency is not required specifically due to working with contamination.

3.7 Cost Reporting

Total project costs are aggregated from the distributed activity and undistributed costs into the following categories – Labor, Materials and Equipment, Waste Disposal, and Other costs. Other costs include property taxes, insurance, license fees, permits, and energy. Waste disposal costs are the summation of packaging, transportation, base disposal rate, and any applicable surcharges. Health physics (HP) supplies and small tool costs are calculated as a component of each distributed activity cost and included in the category of Material and Equipment, with the exception that HP supplies for DAEC HP staff are calculated and reported as an undistributed line item. A line item specific contingency is then calculated for each activity cost element.

4.0 SITE SPECIFIC TECHNICAL APPROACH

4.1 Facility Description

DAEC is a nuclear powered electrical generating facility consisting of one BWR located on a site near Palo in Linn County, Iowa. The plant site comprises approximately 500 acres adjacent to the Cedar River approximately 2.5 miles northeast of the Village of Palo, Iowa.

The nuclear system includes a single-cycle, forced-circulation, General Electric (GE) BWR producing steam for direct use in the steam turbine. The nuclear steam supply system (NSSS) and the turbine-generator were furnished by GE. The balance of plant was designed and constructed by Bechtel Power Corporation (Bechtel) as architect engineer and constructor.

The unit was originally designed, analyzed, and licensed for a steady-state core power of 1658 MWt, although the plant Technical Specifications restricted operation to a rated power of 1593 MWt. In 1985, the Technical Specifications were amended to allow the DAEC to operate at a steady-state power level of 1658 MWt (License Amendment #115). Then, in 2001, the rated power level was increased again to 1912 MWt (License Amendment #243). The current shutdown date is February 21, 2014.

Spent fuel assemblies are stored in the spent fuel storage racks in the fuel pool or may, after appropriate decay, be transferred to an ISFSI for interim onsite storage. The DAEC has been authorized by NRC to increase the storage capacity of the DAEC spent fuel pool to 2829 assemblies. In addition, a Cask Pit is also licensed to contain a rack with storage capacity of 323 assemblies. The Cask Pit rack is used as a means to retain full-core offload capability after such capacity is exhausted in the spent fuel pool. The DAEC may or may not exercise this option in the future. The re-rack project of 1994 increased the spent fuel pool capacity to 2411 assemblies. Subsequent re-rack projects will be undertaken only if the DAEC chooses to do so after having considered all other practicable options.

There is an ISFSI on site that houses 10 CFR 72 licensed spent fuel storage systems that can provide interim on-site storage of spent fuel, high-level radioactive waste, and reactor-related GTCC waste.

Appendix A provides a list of the DAEC systems and structures included in the material inventory for this study.

4.2 Decommissioning Periods for Scenario 1

The project periods defined for Scenario 1 (Base Case, DECON) consist of five License Termination periods, four Spent Fuel Management periods, and two Greenfield periods. The License Termination periods and Spent Fuel Management periods occur simultaneously. The Greenfield periods follow the License Termination periods sequentially. The project periods defined for this site-specific study and the major activities performed during each period are as follows:

License Termination

Decon Pd 1 - Decommissioning Planning Prior to Shutdown

- Preparation of Decommissioning Licensing Documents
- Decommissioning Planning and Design
- Prepare Integrated Work Sequence and Schedule
- Preparation of License Termination Plan
- Select Decommissioning General Contractor
- Design and License Interim Storage Facility for Greater than Class A Waste

Decon Pd 2 – Site Modifications and Preparations

- Perform Baseline Radiation Survey
- Construct Interim Storage Facility for Greater than Class A Waste
- Perform Primary System Decontamination
- Flush and Drain Nonessential Systems
- Modify Containment Access and Implement Cold and Dark
- Design, Specify, and Procure Special Items and Materials
- Asbestos Abatement

Decon Pd 3 – Major Component Removal

- Reactor Pressure Vessel and Internals Removal and Disposal
- NSSS Removal and Disposal
- Turbine Generator and Condenser Removal and Disposal
- Nonessential Systems Removal and Disposal

Decon Pd 4 – Balance of Plant Decontamination

- Removal and Disposal of Spent Fuel Racks
- Drain Spent Fuel Pool
- Spent Fuel Pool Island Equipment Removal and Disposal
- Removal and Disposal of Remaining Plant Systems
- Decontaminate Plant Structures
- Perform Final Status Survey
- Prepare Dismantling Program Final Report
- Partial Part 50 License Termination

Decon Pd 5 – Interim Waste Storage Facility Operation

- Transport and Dispose of Waste in Facility
- Perform FSS of Facility
- Clean Demolition of Facility

Spent Fuel Management

Dry Pd 1 – Fuel Pool Island Design

- Design Spent Fuel Support System Modifications
- Design Control Room Relocation
- Design Spent Fuel Storage Security Modifications

Dry Pd 2 – Spent Fuel Cooling and Transfer to Dry Storage

- Install Spent Fuel Pool System Modifications
- Implement Control Room Modifications
- Implement Spent Fuel Pool Security Modifications
- Purchase Dry Storage Modules

Dry Pd 3 – Dry Storage During Decommissioning

- Maintenance and Inspection of ISFSI
- Spent fuel shipments to DOE

Dry Pd 4 – Dry Storage Only

- Maintenance and Inspection of ISFSI
- Continued spent fuel shipments to DOE

Dry Pd 5 – ISFSI Decommissioning

- Horizontal Storage Module Verification Survey
- Preparation of Final Report on Decommissioning and NRC review
- Clean Demolition of ISFSI
- Part 50 License Termination

Greenfield

Grn Pd 1 – Clean Building Demolition

- Install temporary structures
- Demolition of all permanent structures

Grn Pd 2 – Site Restoration

- Remove Temporary Structures
- Finish Grading and Seeding

4.3 Decommissioning Periods for Scenario 2

The project periods defined for Scenario 2 (SAFSTOR) consist of eleven License Termination periods, four Spent Fuel Management periods, and two Greenfield periods. The License Termination periods and Spent Fuel Management periods occur simultaneously. The Greenfield periods follow the License Termination periods sequentially. The project periods defined for this site-specific study and the major activities performed during each period are as follows:

License Termination

SAFSTOR Pd 1 - SAFSTOR Planning Prior to Shutdown

- Preparation of SAFSTOR Licensing Documents
- SAFSTOR Planning and Design
- Prepare Integrated SAFSTOR Work Sequence and Schedule
- Preparation of SAFSTOR Plan
- Select SAFSTOR General Contractor

SAFSTOR Pd 2 – SAFSTOR Preparations Following Shutdown

- Procure Non-Engineered Standard Equipment
- Perform pre-SAFSTOR Baseline Radiation Survey
- Perform Primary System Decontamination
- Flush and Drain Nonessential Systems
- General Area Cleanup
- Asbestos Abatement
- Prepare SAFSTOR Report

SAFSTOR Pd 3 – SAFSTOR Preparation Delay During Spent Fuel Pool Operations

- Surveillance and Maintenance

SAFSTOR Pd 4 – Completion of SAFSTOR Preparations

- Drain Spent Fuel Pool
- Flush and Drain Remaining Systems
- Spent Fuel Pool Island Equipment Removal and Disposal
- Secure Site

SAFSTOR Pd 5 – Dormancy with Interim Waste Storage and Dry Spent Fuel Storage

- Surveillance and Maintenance
- Transport and Dispose of Greater Than Class A Waste in Interim Storage

SAFSTOR Pd 6 – Dormancy with Dry Storage

- Surveillance and Maintenance

SAFSTOR Pd 7 – Dormancy Only

- Surveillance and Maintenance

SAFSTOR Pd 8 - Decommissioning Planning During Dormancy

- Preparation of Decommissioning Licensing Documents
- Decommissioning Planning and Design
- Select Decommissioning General Contractor
- Plan Site Revitalization
- Prepare Integrated Work Sequence and Schedule
- Preparation of License Termination Plan

SAFSTOR Pd 9 – Dismantlement Site Modifications and Preparations

- Revitalize Infrastructure and Re-power Site
- Perform Post-SAFSTOR Baseline Radiation Survey
- Modify Containment Access
- Design, Specify, and Procure Special Items and Materials

SAFSTOR Pd 10 – Major Component Removal

- Reactor Pressure Vessel and Internals Removal and Disposal
- NSSS Removal and Disposal
- Turbine Generator and Condenser Removal and Disposal
- Systems Removal and Disposal
- Removal and Disposal of Spent Fuel Racks

SAFSTOR Pd 11 – Site Decontamination

- Decontaminate Plant Structures
- Perform Final Status Survey
- Preparation of Final Report on Dismantling
- Partial Part 50 License Termination

Spent Fuel Management

Dry Pd 1 – Fuel Pool Island Design

- Design Spent Fuel Support System Modifications
- Design Control Room Relocation
- Design Spent Fuel Storage Security Modifications

Dry Pd 2 – Spent Fuel Cooling and Transfer to Dry Storage

- Install Spent Fuel Pool System Modifications
- Implement Control Room Modifications
- Implement Spent Fuel Pool Security Modifications
- Purchase Dry Storage Modules

Dry Pd 3 – Dry Storage During Dormancy

- Maintenance and Inspection of ISFSI
- Spent fuel shipments to DOE

Dry Pd 4 – ISFSI Decommissioning

- Horizontal Storage Module Verification Survey
- Preparation of Final Report on Decommissioning and NRC review
- Clean Demolition of ISFSI
- Part 50 License Termination

Greenfield

Grn Pd 1 – Clean Building Demolition

- Demolition of all permanent structures

Grn Pd 2 – Site Restoration

- Remove Temporary Structures
- Finish Grading and Seeding

4.4 Decommissioning Periods for Scenario 3

The project periods defined for Scenario 3 (DECON with license extension) consist of four License Termination periods, four Spent Fuel Management periods, and two Greenfield periods. The License Termination periods and Spent Fuel Management periods occur simultaneously. The Greenfield periods follow the License Termination periods sequentially. The project periods defined for this site-specific study and the major activities performed during each period are as follows:

License Termination

Decon Pd 1 - Decommissioning Planning Prior to Shutdown

- Preparation of Decommissioning Licensing Documents
- Decommissioning Planning and Design
- Prepare Integrated Work Sequence and Schedule
- Preparation of License Termination Plan
- Select Decommissioning General Contractor

Decon Pd 2 – Site Modifications and Preparations

- Perform Baseline Radiation Survey
- Perform Primary System Decontamination
- Flush and Drain Nonessential Systems
- Modify Containment Access and Implement Cold and Dark
- Design, Specify, and Procure Special Items and Materials
- Asbestos Abatement

Decon Pd 3 – Major Component Removal

- Reactor Pressure Vessel and Internals Removal and Disposal
- NSSS Removal and Disposal
- Turbine Generator and Condenser Removal and Disposal
- Nonessential Systems Removal and Disposal

Decon Pd 4 – Balance of Plant Decontamination

- Removal and Disposal of Spent Fuel Racks
- Drain Spent Fuel Pool
- Spent Fuel Pool Island Equipment Removal and Disposal
- Removal and Disposal of Remaining Plant Systems
- Decontaminate Plant Structures
- Remediate Soil Contamination
- Perform Final Status Survey
- Prepare Dismantling Program Final Report
- Partial Part 50 License Termination

Spent Fuel Management

Dry Pd 1 – Fuel Pool Island Design

- Design Spent Fuel Support System Modifications
- Design Control Room Relocation
- Design Spent Fuel Storage Security Modifications

Dry Pd 2 – Spent Fuel Cooling and Transfer to Dry Storage

- Install Spent Fuel Pool System Modifications
- Implement Control Room Modifications
- Implement Spent Fuel Pool Security Modifications
- Purchase Dry Storage Modules

Dry Pd 3 – Dry Storage During Decommissioning

- Maintenance and Inspection of ISFSI
- Spent fuel shipments to DOE

Dry Pd 4 – Dry Storage Only

- Maintenance and Inspection of ISFSI
- Continued spent fuel shipments to DOE

Dry Pd 5 – ISFSI Decommissioning

- Horizontal Storage Module Verification Survey
- Preparation of Final Report on Decommissioning and NRC review
- Clean Demolition of ISFSI
- Part 50 License Termination

Greenfield

Grn Pd 1 – Clean Building Demolition

- Install temporary structures
- Demolition of all permanent structures

Grn Pd 2 – Site Restoration

- Remove Temporary Structures
- Finish Grading and Seeding

4.5 Decommissioning Periods for Scenario 4

The project periods defined for Scenario 4 (SAFSTOR with license extension) consist of ten License Termination periods, four Spent Fuel Management periods, and two Greenfield periods. The License Termination periods and Spent Fuel Management periods occur simultaneously. The Greenfield periods follow the License Termination periods sequentially. The project periods defined for this site-specific study and the major activities performed during each period are as follows:

License Termination

SAFSTOR Pd 1 - SAFSTOR Planning Prior to Shutdown

- Preparation of SAFSTOR Licensing Documents
- SAFSTOR Planning and Design
- Prepare Integrated SAFSTOR Work Sequence and Schedule
- Preparation of SAFSTOR Plan
- Select SAFSTOR General Contractor

SAFSTOR Pd 2 – Site Preparations Following Shutdown

- Procure Non-engineered Standard Equipment
- Perform pre-SAFSTOR Baseline Radiation Survey
- Perform Primary System Decontamination
- Flush and Drain Nonessential Systems
- General Area Cleanup
- Asbestos Abatement

- Prepare SAFSTOR Report

SAFSTOR Pd 3 – SAFSTOR Preparation Delay During Spent Fuel Pool Operations

- Surveillance and Maintenance

SAFSTOR Pd 4 – Completion of SAFSTOR Preparations

- Drain Spent Fuel Pool
- Spent Fuel Pool Island Equipment Removal and Disposal
- Secure Site

SAFSTOR Pd 5 – Dormancy with Dry Storage

- Surveillance and Maintenance

SAFSTOR Pd 6 – Dormancy Only

- Surveillance and Maintenance

SAFSTOR Pd 7 - Decommissioning Planning During Dormancy

- Preparation of Decommissioning Licensing Documents
- Decommissioning Planning and Design
- Select Decommissioning General Contractor
- Plan Site Revitalization
- Prepare Integrated Work Sequence and Schedule
- Preparation of License Termination Plan

SAFSTOR Pd 8 – Dismantlement Site Modifications and Preparations

- Revitalize Infrastructure and Re-power Site
- Perform Post-SAFSTOR Baseline Radiation Survey
- Modify Containment Access
- Design, Specify, and Procure Special Items and Materials

SAFSTOR Pd 9 – Major Component Removal

- Reactor Pressure Vessel and Internals Removal and Disposal
- NSSS Removal and Disposal
- Turbine Generator and Condenser Removal and Disposal
- Systems Removal and Disposal
- Removal and Disposal of Spent Fuel Racks

SAFSTOR Pd 10 – Site Decontamination

- Decontaminate Plant Structures
- Perform Final Status Survey
- Preparation of Final Report on Dismantling
- Partial Part 50 License Termination

Spent Fuel Management

Dry Pd 1 – Fuel Pool Island Design

- Design Spent Fuel Support System Modifications
- Design Control Room Relocation
- Design Spent Fuel Storage Security Modifications

Dry Pd 2 – Spent Fuel Cooling and Transfer to Dry Storage

- Install Spent Fuel Pool System Modifications
- Implement Control Room Modifications
- Implement Spent Fuel Pool Security Modifications
- Purchase Dry Storage Modules

Dry Pd 3 – Dry Storage During Dormancy

- Maintenance and Inspection of ISFSI
- Continued spent fuel shipments to DOE

Dry Pd 4 – ISFSI Decommissioning

- Horizontal Storage Module Verification Survey
- Preparation of Final Report on Decommissioning and NRC review
- Clean Demolition of ISFSI
- Part 50 License Termination

Greenfield

Grn Pd 1 – Clean Building Demolition

- Demolition of all permanent structures

Grn Pd 2 – Site Restoration

- Remove Temporary Structures
- Finish Grading and Seeding

4.6 Decommissioning Staff

For this study, *EnergySolutions* developed staffing based on the assumption that decommissioning will be performed by an experienced and qualified DGC, with oversight and management of the decommissioning operations performed by DAEC staff. It is also assumed that DAEC staff is supplemented by professional consulting engineering, particularly in the planning and preparation phase. The sizes of the staffs are varied in each period in accordance with the requirements of the work activities. Details on the staff levels by functional group during each period are provided in Section 6.0 for each scenario.

4.7 Spent Fuel Management Staff

The largest spent fuel staff occurs while the fuel pool is operational during the minimum cooling period and the fuel assemblies are being transferred to either the DOE repository or dry storage. Once all spent fuel has been removed from the spent fuel pool, the staff is reduced. During spent fuel pool operations and the dry storage period, the full-time spent fuel management staff is supplemented with part-time staff to support fuel movements. Details on the staff levels by functional group during each period are provided in Section 6.0 for each scenario.

4.8 Spent Fuel Shipments

The spent fuel shipment schedules for each scenario are based on information from FPLE regarding existing fuel inventory, planned transfers to dry storage, planned off-loads during outages, the DOE shipment schedule, and the full core off-load. The spent fuel shipping schedules are also based, in part, on the DOE's "Acceptance Priority Ranking & Annual Capacity Report," dated July 2004 (Ref. No. 11). Spent fuel shipping schedules for each scenario are provided in Appendix B.

5.0 BASES OF ESTIMATE AND KEY ASSUMPTIONS

The bases of and key assumptions for this site-specific decommissioning estimate are presented below:

1. All cost data used in this study is current as of 2008 or has been escalated to 2008 dollars. Totals and subtotals have been rounded to significant figures.
2. The decommissioning will be performed under the current regulations. These regulations require a Post-Shutdown Decommissioning Activities Report (PSDAR) to be submitted prior to, or within, two years after permanent shutdown. In addition, a certificate of permanent cessation of operations must be submitted to the NRC within 30 days of permanent cessation of operations. Certification of the final core off-load must also be submitted to the NRC upon completion of this activity. Ninety days after the NRC receives the PSDAR and after submittal of both certifications, major decommissioning activities that meet the criteria of 10 CFR Part 50.59 may be performed, provided the NRC does not notify DAEC of any deficiencies.
3. The decommissioning will be performed using currently available technologies.
4. *EnergySolutions* developed prompt dismantlement (DECON) and delayed dismantlement (SAFSTOR) project schedules based on a shutdown date of February 21, 2014 for Scenarios 1 and 2. For Scenarios 3 and 4, with a 20 year license extension, a shutdown date of February 21, 2034 was used.
5. A DOE repository is assumed to exist by an opening date of January 1, 2025.
6. This estimate's material inventory is based on *EnergySolutions* takeoffs from the site drawings and information furnished by FPLE.
7. All transformers on site following shutdown are assumed to be PCB-free.
8. No PCBs will be on site at shutdown.
9. Clean scrap metal is assumed to be recycled at no cost to the project. Concrete debris is assumed to be processed by size reduction, with removal of structural reinforcing steel, and used on site as engineered fill for voids. All other demolition debris is removed from the site and disposed of at a local off-site construction landfill.
10. All scenarios are based on final site restoration to Greenfield conditions, in which all existing and proposed structures, with the exception of the switchyard, will be removed. Clean demolition costs are based on structures removal to three feet below grade. Clean topsoil will be imported and placed on the top three feet. The entire disturbed area of the site is to be graded, to restore the natural grade to the extent possible, and seeded.

11. Uncontaminated lead shielding remaining after shutdown was assumed to be removed from its installed locations and shipped offsite by entities having a need for the material. The entities receive the lead at no charge in return for providing the removal and shipping services.
12. No known areas of radiologically contaminated soil have been identified. Additionally, documented tritium levels in groundwater are below drinking water standards. Therefore, no soil or groundwater remediation costs will be assumed. However, costs for environmental monitoring performed during decommissioning will include groundwater monitoring.
13. A budget for hazardous material is included in the estimate, based on the 2007 EPA report provided by FPLE. All other chemicals and hazardous materials present at shutdown are assumed to be removed and disposed of by the plant staff prior to decommissioning, as a normal part of plant operations.
14. DAEC provided information on the current amount of asbestos insulation on systems piping. It is assumed that asbestos not replaced during an outage and still remaining at shutdown will be limited to areas with higher dose rates. Therefore, this study considers that 7% of the insulation on contaminated and insulated piping will be asbestos, and disposed of as Class A waste.
15. All Class A waste is assumed to be disposed of at EnergySolutions' facility in Clive, Utah, in accordance with the existing Life-of-Plant Disposal Agreement between EnergySolutions and FPL Energy Duane Arnold, LLC dated January 2007. The following 2008 disposal rates will be applied:
 - Demolition Debris and Soil - \$52.00/Cubic Foot plus 5% Utah taxes
 - Oversized Debris - \$100.00/Cubic Foot plus 5% Utah taxes
 - Containerized Waste Facility - \$193.00/Cubic Foot plus 12% Utah taxes
 - Large Components - \$260.00/Cubic Foot plus 5% Utah taxes
 - Cask Shipments - \$39,513/Cask
16. Class B, C and Greater-than-Class-C (GTCC) wastes disposal costs are based on the July 2008 published rates for the Barnwell facility, including applicable curie and dose rate surcharges.
17. It is assumed that all Class A low-level waste currently being accumulated on-site will be removed to a low-level waste processing and/or disposal facility prior to the end of the operating life of the plant. The disposition of such materials is assumed not to be a decommissioning cost.
18. GTCC waste generated from the segmentation of the reactor internals will be packaged in fuel bundle sized containers and stored on-site in NUHOMS canisters placed in horizontal storage modules (HSMs) at the ISFSI for final disposition at a DOE repository.

19. Vessel and internals curie estimates were derived from the values for the Reference BWR vessel and internals in NUREG/CR-0672 (Ref. No. 6). These values were adjusted for MWt rating, weight and decay period.
20. Scenarios 1 and 2 (existing license termination) assume that Class B and C waste generated during operations will be stored on site until 2025, at which time a facility licensed to dispose of Class B and C wastes will become available.
21. Scenarios 3 and 4 (license extension) assume that all Class B and C waste generated during operations, and wastes stored on site on an interim basis, will be disposed of prior to the end of the operating life of the plant. Therefore, the disposition of such materials is not assumed to be a decommissioning cost.
22. The spent fuel shipping schedules developed by *EnergySolutions* are based on data provided by FPLE. The shipping schedules assume a five year spent fuel cooling period prior to transfer to dry storage canisters or the DOE. The number of spent fuel assemblies shipped from the ISFSI to the DOE have been adjusted to full cask shipments, with residual allocations carried forward to subsequent years.
23. Spent fuel management costs include the purchase of NUHOMS-61BT dry storage canisters and HSMs required for spent fuel following shutdown, based on the requirements of each scenario. Costs of \$695,662 per canister and \$400,155 per HSM were assumed for this study.
24. The HSMs are assumed to have no activated concrete. The ISFSI demolition cost also assumes no activation or surface contamination of the HSMs.
25. Emergency Preparedness (FEMA) fees and Environmental Affairs costs are based on data furnished by FPLE and were adjusted by *EnergySolutions* to meet the requirements of each period based on the status of on-site spent fuel. The annual operating costs for these items are as follows:

FEMA fees - \$1,016,289/year
Environmental Affairs - \$7,367/year
26. Annual property taxes in the amount of \$10,000/year through the end of the project are included.
27. *EnergySolutions* has included the annual NRC 10 CFR 171.15 fees, for reactors in decommissioning, of \$135,000/yr per unit until decommissioning is completed.
28. *EnergySolutions* has included the annual NRC 10 CFR 171.15 fees of \$135,000/yr for on-site dry storage during all post-shutdown years with dry storage. *EnergySolutions* has assumed that the 10 CFR Part 50 license will be continued until all fuel is offsite.
29. Annual insurance premiums are based on 2008 data supplied by FPLE, and adjusted by *EnergySolutions* to meet the requirements of each period. The applicable 2008 premiums provided are as follows:

Nuclear Property - \$508,159
Nuclear Liability - \$687,577
Excess Liability - \$973,058
Non-Nuclear Liability - \$250,000

30. Supplies and services costs were calculated based on information provided by FPLE and adjusted by *EnergySolutions* to match the requirements of each period, based on staffing levels.
31. No severance costs have been included in this estimate in accordance with existing FPLE policy.
32. The decommissioning will be performed by a DGC under the management and supervision of DAEC staff. DAEC staff will be supplemented with a professional engineering consulting firm for planning and preparation, engineering design, and final status survey.
33. DAEC staff positions and average direct burdened salary data was supplied by FPLE. These rates were current as of August 2008. An overhead rate of 43% was applied to the direct salaries to account for fringe benefits, overhead and payroll taxes.
34. Health Physics technicians used during vessel and internals removal will be supplied by DAEC staff.
35. DGC staff salaries, including overhead and profit, were determined by *EnergySolutions* and represent *EnergySolutions*' standard assumptions for these rates.
36. The professional personnel, used for the planning and preparation activities, and DGC personnel are assumed to be paid per diem at the rate of \$114/day based on per diem rates in CONUS for Des Moines, Iowa.
37. Craft labor rates, for labor categories not furnished by FPLE, have been taken from the 2008 RS Means Labor Rates for the Construction Industry (Ref. No. 12), for Des Moines, Iowa. Since the skilled laborers are assumed to be supplied by the local union hall they will not be paid per diem.
38. This study has considered the impact of the September 11, 2001 terrorist attack on security force staffing and requirement. The security guard force included in this estimate has been sized accordingly.
39. This study follows the occupational exposure principles of As Low As Reasonably Achievable (ALARA) through the use of productivity loss factors that incorporate such items as the use of respiratory protection and personnel protective clothing. These factors increase the work duration and cost.

40. The costs of all required safety analyses and safety measures for the protection of the general public, the environment, and decommissioning workers are included in the cost estimates. This reflects the requirements of:

10 CFR 20	Standards for Protection Against Radiation
10 CFR 50	Domestic Licensing of Production and Utilization Facilities
10 CFR 61	Licensing Requirements for Land Disposal of Radioactive Waste
10 CFR 71	Packaging of Radioactive Material for Transport
10 CFR 72	Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste
29 CFR 1910	Occupational Safety and Health Standards
49 CFR 170-189	Department of Transportation Regulations Governing the Transport of Hazardous Materials
Reg. Guide 1.159	Assuring the Availability of Funds for Decommissioning Nuclear Reactors

41. Activity labor costs do not include any allowance for delays between activities, nor is there any cost allowance for craft labor retained on site while waiting for work to become available.

6.0 STUDY RESULTS BY SCENARIO

The study results for the four scenarios analyzed are presented in the following sections.

6.1 Scenario 1 – Base Case

This scenario is based on the following:

- DECON methodology.
- No license extension, with shutdown on February 21, 2014.
- Terminate spent fuel pool operation five years after permanent unit shutdown.
- Spent fuel will be stored at the existing ISFSI.
- Class B and C waste will be temporarily stored in an on-site interim waste storage facility to be built during decommissioning. Class B and C waste are assumed to be stored on-site until 2025, which is the assumed date a licensed facility would be available to receive these wastes.
- The DOE Yucca Mountain repository, or other approved method of spent fuel disposition, will be available starting in 2025.

Spent Fuel Shipping Schedule

The spent fuel shipment schedules for each scenario are based on information from FPLE and are also based, in part, on the DOE's "Acceptance Priority Ranking & Annual Capacity Report," dated July 2004 (Ref. No. 11). Spent fuel shipping schedules for each scenario are provided in Appendix B.

The schedule for Scenario 1 includes the disposition of 2 GTCC waste containers. Spent fuel shipments to the DOE repository from the spent fuel pool will begin in 2027. In 2011, 610 spent fuel assemblies will be transferred to MPCs as required to maintain full-core off-load capacity. All spent fuel and GTCC will be removed from the ISFSI by 2054.

Cost and Schedule

Figure 6-1 is a summary project schedule. A detailed schedule is provided in Appendix C. Table 6-1 summarizes the period durations and total costs, including contingency, for License Termination, Spent Fuel, and Greenfield activities. A detailed cost table is provided in Appendix D, and a table of annual cash flows is provided in Appendix E. Appendix F provides an annual cash flow with the costs broken out by Labor, Equipment & Materials, Waste, Other, and Contingency categories.

Project Staffing

This scenario is based on the assumption that decommissioning will be performed by an experienced and qualified DGC, with oversight and management of the decommissioning operations performed by DAEC staff. DAEC staffing levels, by organizational department and function, for each period are provided in Table 6-2. The DGC staffing levels, by organizational department and function, for each period are provided in Table 6-3.

Waste Disposal Volumes

Waste disposal is a significant element of the decommissioning project. The estimated cubic feet of waste are summarized as follows:

Class A	377,510
Class B	1,866
Class C	756
GTCC	128

Waste disposal volumes and costs, itemized by packaging, transportation, surcharges and disposal costs by waste class and facility, are provided in Table 6-4. The waste disposal cost provided in Table 6-4 does not include contingency.

Figure 6-1

Task Name	Start	Finish
Spent Fuel Management	06/22/2013	10/22/2054
Spent Fuel Shipping to DOE Begins	02/21/2027	02/21/2027
Spent Fuel Shipping Complete	02/21/2054	02/21/2054
Dry Pd 1 - Fuel Pool Island Design	06/22/2013	2/21/2014
Dry Pd 2 - Spent Fuel Cooling and Transfer to Dry Storage	2/21/2014	02/21/2019
Dry Pd 3 - Dry Storage During Decommissioning	02/21/2019	10/30/2025
Dry Pd 4 - Dry Storage Only	10/30/2025	07/26/2053
Dry Pd 5 - ISFSI Decommissioning	07/26/2053	10/22/2054
License Termination	12/29/2012	10/30/2025
Unit 1 Shutdown	02/21/2014	02/21/2014
Decon Pd 1 - Decommissioning Planning Prior to Shutdown	12/29/2012	2/21/2014
Decon Pd 2 - Site Modifications and Preparations	2/21/2014	02/24/2016
Decon Pd 3 - Major Component Removal	02/24/2016	05/28/2019
Decon Pd 4 - Balance of Plant Decontamination	05/28/2019	03/31/2021
Decon Pd 5 - Interim Waste Storage Facility Operation	08/10/2021	10/30/2025
Grn Pd 1 - Clean Building Demolition	03/31/2022	05/18/2022
Grn Pd 2 - Site Restoration	05/18/2022	08/10/2022

Table 6-1
Scenario 1 Cost and Schedule Summary
(2008 Dollars in Thousands)

Period No.	Period Description	Start	End	Years	Total Cost
License Termination (50.75(c))					
Decon Pd 1	Decommissioning Planning Prior to Shutdown	12/29/2012	2/21/2014	1.14	\$14,484
Decon Pd 2	Site Modifications and Preparations	2/21/2014	2/24/2016	2.00	\$108,630
Decon Pd 3	Major Component Removal	2/24/2016	5/28/2019	3.25	\$231,249
Decon Pd 4	Balance of Plant Decontamination	5/28/2019	3/31/2021	1.84	\$99,678
Decon Pd 5	Interim Waste Storage Facility Operation	8/10/2022	10/30/2025	3.22	\$44,961
Account Total				11.45	\$499,002
Spent Fuel (50.54(bb))					
Dry Pd 1	Fuel Pool Island Design	6/22/2013	2/21/2014	0.66	\$1,257
Dry Pd 2	Spent Fuel Cooling and Transfer to Dry Storage	2/21/2014	2/21/2019	4.99	\$129,721
Dry Pd 3	Dry Storage During Decommissioning	2/21/2019	10/30/2025	6.68	\$26,136
Dry Pd 4	Dry Storage Only	10/30/2025	7/26/2053	27.73	\$113,834
Dry Pd 5	ISFSI Decommissioning	7/26/2053	10/22/2054	1.24	\$7,352
Account Total				41.30	\$278,300
Greenfield					
Grn Pd 1	Clean Building Demolition	3/31/2021	5/18/2022	1.13	\$38,078
Grn Pd 2	Site Restoration	5/18/2022	8/10/2022	0.22	\$2,653
Account Total				1.35	\$40,731
Scenario Total					\$818,033

Table 6-2
Scenario 1 DAEC Staff Levels

License Termination – 50.75(c) DAEC Staff

Department	Decon Pd 1	Decon Pd 2	Decon Pd 3	Decon Pd 4	Decon Pd 5
Administration	2.5	29	21	20	0.25
Engineering	7.75	25	21	17	0.25
Health Physics	2.25	27	25	34	0.75
Management		2	2	2	
Plant Maintenance	1.5	27	16	5	0.25
Plant Operations	3.75	31	32	17	
Quality Assurance		5	3	1	
Security Administration	0	2	2	3	
Security Guard Force	0	12	12	12	1
	17.75	160	134	111	2.5

Spent Fuel - 50.54(bb) DAEC Staff

Department	Dry Pd 1	Dry Pd 2	Dry Pd 3	Dry Pd 4	Dry Pd 5
Additional Staff for Spent Fuel					
Shipping			2	2	
Administration					1.2
Engineering	0.75		1	1	1
Fuel Pool Maintenance and Operation Staff		19			
Health Physics		7	4	4	1.5
Management					0.25
Plant Maintenance	0.25		2	2	
Security Admin		5	5	5	0.5
Security Guard Force		50	5	5	5
	1	81	19	19	9.45

Greenfield - DAEC Staff

Department	Grn Pd 1	Grn Pd 2
Administration	9	8
Engineering	7	5
Health Physics	3	1
Management	2	1
Plant Maintenance	3	1
Quality Assurance	2	1
Security Admin	1	1
Security Guard Force	5	5
	32	23

Table 6-3
Scenario 1 DGC Staff Levels

License Termination – 50.75(c) DGC Staff

Department	Decon Pd 1	Decon Pd 2	Decon Pd 3	Decon Pd 4
Administration	8	17	17	11
Engineering	5.5	16	16	9
Field Operations	2	11	11	8
Health Physics	3	23	35	19
Management	3	3	3	3
Quality Assurance	2	4	5	3
Waste Operations		2	16	16
	23.5	76	103	69

Spent Fuel - 50.54(bb) DGC Staff

Department	Dry Pd 5
Administration	0
Engineering	0
Field Operations	1
Health Physics	0
Management	0
Quality Assurance	.5
Waste Operations	.3
	1.8

Greenfield - DGC Staff

Department	Gm Pd 1	Gm Pd 2
Administration	10	9
Engineering	11	6
Field Operations	10	5
Health Physics	1	1
Management	3	3
Quality Assurance	2	2
	37	26

Table 6-4
Scenario 1 Waste Disposal Volumes
(Cost Excludes Contingency - 2008 Dollars)

Facility and Waste Class	Waste Weight (LBs)	Waste Volume (CF)	Burial Volume (CF)	Packaging Cost	Transportation Cost	Surcharge Cost	Base Burial Cost	Total Disposal Cost
Class B and C Facility								
Class B	191,340	1,866	3,223	\$778,943	\$474,600	\$6,805,322	\$1,852,615	\$9,911,481
Class C	105,840	756	1,365	\$903,000	\$177,840	\$5,264,805	\$784,739	\$7,130,384
GTCC	62,590	128	823	\$0	\$91,480	\$14,924,178	\$473,258	\$15,488,915
	359,770	2,750	5,411	\$1,681,943	\$743,920	\$26,994,305	\$3,110,612	\$32,530,780
EnergySolutions								
Class A – Debris	13,091,562	222,365	223,801	\$567,787	\$2,363,643	\$0	\$12,219,485	\$15,150,915
Class A – Oversized Debris	4,488,865	67,190	67,190	\$47,153	\$447,470	\$0	\$7,054,916	\$7,549,539
Class A – CWF	2,808,407	38,430	38,489	\$496,994	\$3,846,607	\$0	\$8,319,692	\$12,663,294
Class A – Large Component	3,715,042	49,526	66,049	\$1,172,945	\$3,429,086	\$0	\$18,031,466	\$22,633,497
	24,103,876	377,510	395,529	\$2,284,880	\$10,086,805	\$0	\$45,625,559	\$57,997,244
Other								
Local Construction Debris								
Landfill	61,500,530	469,161	469,161	\$0	\$23,001	\$0	\$2,385,703	\$2,408,705
Process for On-Site Fill	230,100,750	3,528,212	3,528,212	\$0	\$0	\$0	\$851,373	\$851,373
Scrap Metal Recycler	161,197,811	1,100,763	1,100,763	\$0	\$354,635	\$0	\$0	\$354,635
Grand Total	477,262,737	5,478,396	5,499,076	\$3,966,823	\$11,208,362	\$26,994,305	\$51,973,247	\$94,142,736

6.2 Scenario 2 – Base Case, Except SAFSTOR

This scenario is identical to Scenario 1 (the Base Case) with the exception that the decommissioning alternative is a SAFSTOR rather than DECON methodology, and Class B and C waste generated during operations and SAFSTOR preparations will be stored in the existing Low Level Radwaste Storage Building until 2025, which is the assumed date a licensed facility would be available to receive these wastes.

Spent Fuel Shipping Schedule

The spent fuel shipping schedule for Scenario 2 is identical to Scenario 1. Due to the decay of activation products in the reactor internals over the SAFSTOR dormancy no GTCC waste is generated in this scenario.

Cost and Schedule

Figure 6-2 is a summary project schedule. A detailed schedule is provided in Appendix C. Table 6-5 summarizes the period durations and total costs, including contingency, for License Termination, Spent Fuel, and Greenfield activities. A detailed cost table is provided in Appendix D, and a table of annual cash-flows is provided in Appendix E. Appendix F provides an annual cash flow with the costs broken out by Labor, Equipment & Materials, Waste, Other, and Contingency categories.

Project Staffing

This scenario is based on the assumption that decommissioning will be performed by an experienced and qualified DGC, with oversight and management of the decommissioning operations performed by DAEC staff. DAEC staffing levels, by organizational department and function, for each period are provided in Table 6-6. The DGC staffing levels, by organizational department and function, for each period are provided in Table 6-7.

Waste Disposal Volumes

Waste disposal is a significant element of the decommissioning project. The estimated cubic feet of waste are summarized as follows:

Class A	379,944
Class B	1,287
Class C	884

Waste disposal volumes and costs, itemized by packaging, transportation, surcharges and disposal costs by waste class and facility, are provided in Table 6-8. The waste disposal cost provided in Table 6-8 does not include contingency.

Figure 6-2

Task Name	Start	Finish
Spent Fuel Management	06/22/2013	10/21/2054
Spent Fuel Shipping to DOE Repository Begins	02/21/2027	02/21/2027
Spent Fuel Shipping Complete	02/21/2054	02/21/2054
Dry Pd 1 - Fuel Pool Island Design	06/22/2013	02/21/2014
Dry Pd 2 - Spent Fuel Cooling and Transfer to Dry Storage	2/21/2014	02/20/2019
Dry Pd 3 - Dry Storage During Dormancy	02/20/2019	07/26/2053
Dry Pd 4 - ISFSI Decommissioning	07/26/2053	10/21/2054
License Termination	12/29/2012	10/23/2074
Unit 1 Shutdown	02/21/2014	02/21/2014
SAFSTOR Pd 1 - SAFSTOR Planning Prior to Shutdown	12/29/2012	2/21/2014
SAFSTOR Pd 2 - SAFSTOR Preparations Following Shutdown	2/21/2014	02/23/2015
SAFSTOR Pd 3 - SAFSTOR Preparations Delay During Wet Fuel Storage	02/23/2015	02/20/2019
SAFSTOR Pd 4 - Completion of SAFSTOR Preparations	02/20/2019	12/18/2019
SAFSTOR Pd 5 - Dormancy With Interim Waste and Dry Spent Fuel Storage	12/18/2019	04/01/2025
SAFSTOR Pd 6 - Dormancy With Dry Storage	04/01/2025	10/21/2054
SAFSTOR Pd 7 - Dormancy Only	10/21/2054	05/31/2066
SAFSTOR Pd 8 - Decommissioning Planning During Dormancy	05/31/2066	02/20/2068
SAFSTOR Pd 9 - Dismantlement Site Modifications and Preparations	02/20/2068	09/08/2069
SAFSTOR Pd 10 - Major Component Removal	09/08/2069	09/08/2071
SAFSTOR Pd 11 - Site Decontamination	09/08/2071	05/23/2073
End 60 year SAFSTOR Allowance	02/21/2074	02/21/2074
Gm Pd 1 - Clean Building Demolition	05/23/2073	07/10/2074
Gm Pd 2 - Site Restoration	07/10/2074	10/23/2074

Table 6-5
Scenario 2 Cost and Schedule Summary
(2008 Dollars in Thousands)

Period No.	Period Description	Start	End	Years	Total Cost
License Termination (50.75(c))					
SAFSTOR Pd 1	SAFSTOR Planning Prior to Shutdown	12/29/2012	2/21/2014	1.14	\$12,571
SAFSTOR Pd 2	SAFSTOR Preparations Following Shutdown	2/21/2014	2/23/2015	1.00	\$50,481
SAFSTOR Pd 3	SAFSTOR Preparation Delay During Spent Fuel Operations	2/23/2015	2/20/2019	3.99	\$7,147
SAFSTOR Pd 4	Completion of SAFSTOR Preparations	2/20/2019	12/18/2019	0.82	\$12,935
SAFSTOR Pd 5	Dormancy With Interim Waste and Dry Spent Fuel Storage	12/18/2019	4/1/2025	5.28	\$20,063
SAFSTOR Pd 6	Dormancy With Dry Storage	4/1/2025	10/21/2054	29.55	\$42,793
SAFSTOR Pd 7	Dormancy Only	10/21/2054	5/31/2066	11.60	\$26,761
SAFSTOR Pd 8	Decommissioning Planning During Dormancy	5/31/2066	2/20/2068	1.72	\$21,141
SAFSTOR Pd 9	Dismantlement Site Modifications and Preparation	2/20/2068	9/9/2069	1.55	\$111,037
SAFSTOR Pd 10	Major Component Removal	9/9/2069	9/8/2071	1.99	\$192,036
SAFSTOR Pd 11	Site Decontamination	9/8/2071	5/23/2073	1.70	\$81,332
Account Total				60.34	\$578,297
Spent Fuel (50.54(bb))					
Dry Pd 1	Fuel Pool Island Design	6/22/2013	2/21/2014	0.66	\$1,257
Dry Pd 2	Spent Fuel Cooling and Transfer to Dry Storage	2/21/2014	2/20/2019	4.99	\$129,677
Dry Pd 3	Dry Storage During Dormancy	2/20/2019	7/26/2053	34.42	\$135,952
Dry Pd 4	ISFSI Decommissioning	7/26/2053	10/21/2054	1.23	\$7,155
Account Total				41.30	\$274,041
Greenfield					
Grn Pd 1	Clean Building Demolition	5/23/2073	7/10/2074	1.13	\$38,155
Grn Pd 2	Site Restoration	7/10/2074	10/23/2074	0.28	\$3,143
Account Total				1.41	\$41,298
Scenario Total					\$893,636

Table 6-6
Scenario 2 DAEC Staff Levels

License Termination – 50.75(c) DAEC Staff

Department	SAFSTOR Pd 1	SAFSTOR Pd 2	SAFSTOR Pd 3	SAFSTOR Pd 4	SAFSTOR Pd 5	SAFSTOR Pd 6	SAFSTOR Pd 7	SAFSTOR Pd 8	SAFSTOR Pd 9	SAFSTOR Pd 10	SAFSTOR Pd 11
Administration	2.5	29	0.25	1.25	0.25	0.25	0.25	2.5	29	21	20
Engineering	7.75	25	0.25	3	0.25	0.25	0.25	7.75	25	21	17
Health Physics	2.25	27	0.75	7	0.75	0.75	0.75	2.25	27	25	34
Management		2							2	2	2
Plant Maintenance	1.5	27	0.25	7	0.25	0.25	0.25	1.5	27	16	5
Plant Operations	3.75	31		4				3.75	31	32	17
Quality Assurance		5							5	3	1
Security Administration	0	2		0.5			0.5	0	2	2	3
Security Guard Force	0	12	1	5	1	1	5	0	12	12	12
	17.75	160	2.5	27.75	2.5	2.5	7	17.75	160	134	111

Table 6-6
Scenario 2 DAEC Staff Levels
(Continued)

Spent Fuel - 50.54(bb) DAEC Staff

Department	Dry Pd 1	Dry Pd 2	Dry Pd 3	Dry Pd 4
Additional Staff for Spent Fuel				
Shipping			2	
Administration				1.2
Engineering	0.75		1	1
Fuel Pool Maintenance and Operation Staff		19		
Health Physics		7	4	1.5
Management				0.25
Plant Maintenance	0.25		2	
Security Admin		5	5	0.5
Security Guard Force		50	5	5
	1	81	19	9.45

Greenfield - DAEC Staff

Department	Grn Pd 1	Grn Pd 2
Administration	9	8
Engineering	7	5
Health Physics	3	1
Management	2	1
Plant Maintenance	3	1
Quality Assurance	2	1
Security Admin	1	1
Security Guard Force	5	5
	32	23

Table 6-7
Scenario 2 DGC Staff Levels

License Termination – 50.75(c) DGC Staff

Department	SAFSTOR Pd 1	SAFSTOR Pd 2	SAFSTOR Pd 3	SAFSTOR Pd 4	SAFSTOR Pd 5	SAFSTOR Pd 6	SAFSTOR Pd 7	SAFSTOR Pd 8	SAFSTOR Pd 9	SAFSTOR Pd 10	SAFSTOR Pd 11
Administration	8	17		8				8	17	17	11
Engineering	5.5	16		7				5.5	16	16	9
Field Operations	2	11		2				2	11	11	8
Health Physics	3	23		5				3	23	35	19
Management	3	3		3				3	3	3	3
Quality Assurance	2	4		3				2	4	5	3
Waste Operations		2		8					2	16	16
	23.5	76	0	36	0	0	0	23.5	76	103	69

Spent Fuel - 50.54(bb) DGC Staff

Department	Dry Pd 4
Administration	0
Engineering	0
Field Operations	1
Health Physics	0
Management	0
Quality Assurance	.5
Waste Operations	.3
	1.8

Greenfield - DGC Staff

Department	Grn Pd 1	Grn Pd 2
Administration	10	9
Engineering	11	6
Field Operations	10	5
Health Physics	1	1
Management	3	3
Quality Assurance	2	2
	37	26

Table 6-8
Scenario 2 Waste Disposal Volumes
(Cost Excludes Contingency - 2008 Dollars)

Facility and Waste Class	Waste Weight (LBs)	Waste Volume (CF)	Burial Volume (CF)	Packaging Cost	Transportation Cost	Surcharge Cost	Base Burial Cost	Total Disposal Cost
Class B and C Facility								
Class B	122,531	1,287	2,104	\$207,315	\$722,333	\$4,226,706	\$1,209,590	\$6,365,943
Class C	168,430	884	2,015	\$903,000	\$745,693	\$8,172,367	\$1,158,424	\$10,979,483
GTCC								
	290,961	2,171	4,119	\$1,110,315	\$1,468,026	\$12,399,073	\$2,368,013	\$17,345,427
EnergySolutions								
Class A – Debris	13,304,744	224,683	226,652	\$569,787	\$2,382,954	\$0	\$12,375,127	\$15,327,868
Class A – Oversized Debris	4,488,865	67,190	67,190	\$47,153	\$447,470	\$0	\$7,054,916	\$7,549,539
Class A – CWF	2,808,407	38,430	38,489	\$496,994	\$3,846,607	\$0	\$8,319,692	\$12,663,294
Class A – Large Component	3,746,792	49,642	66,425	\$1,172,945	\$3,562,890	\$0	\$18,134,004	\$22,869,840
	24,348,808	379,944	398,755	\$2,286,880	\$10,239,921	\$0	\$45,883,740	\$58,410,540
Other								
Local Construction Debris								
Landfill	58,842,438	458,767	458,767	\$0	\$23,001	\$0	\$2,291,218	\$2,314,220
Process for On-Site Fill	230,100,750	3,528,212	3,528,212	\$0	\$0	\$0	\$851,373	\$851,373
Scrap Metal Recycler	161,197,811	1,100,763	1,100,763	\$0	\$354,635	\$0	\$0	\$354,635
Grand Total	474,780,768	5,469,857	5,490,616	\$3,397,195	\$12,085,583	\$12,399,073	\$51,394,344	\$79,276,195

6.3 Scenario 3 – Base Case, Except License Extension

This scenario is identical to Scenario 1 (the Base Case) with the exception of a 20 year license extension, and therefore no on-site interim waste storage facility is required for Class B and C waste. All legacy Class B and C waste generated during operations, and stored until a licensed facility is available to accept these wastes, is assumed to be disposed of during operations.

Spent Fuel Shipping Schedule

The spent fuel shipping schedule for Scenario 3 is provided in Appendix B. It includes the disposition of 2 GTCC waste containers. Spent fuel shipments to the DOE repository from the spent fuel pool will begin in 2027. During operations 1,281 spent fuel assemblies will be transferred to MPCs as required to maintain full-core off-load capacity. All spent fuel and GTCC will be removed from the ISFSI by 2067.

Cost and Schedule

Figure 6-3 is a summary project schedule. A detailed schedule is provided in Appendix C. Table 6-9 summarizes the period durations and total costs, including contingency, for License Termination, Spent Fuel, and Greenfield activities. A detailed cost table is provided in Appendix D, and a table of annual cash flows is provided in Appendix E. Appendix F provides an annual cash flow with the costs broken out by Labor, Equipment & Materials, Waste, Other, and Contingency categories.

Project Staffing

Staffing levels for each period of this case are the same as for Scenario 1. DAEC staffing levels, by organizational department and function, for each period are provided in Table 6-2. The DGC staffing levels, by organizational department and function, for each period are provided in Table 6-3.

Waste Disposal Volumes

Waste disposal is a significant element of the decommissioning project. The estimated cubic feet of waste are summarized as follows:

Class A	377,596
Class B	1,866
Class C	540
GTCC	128

Waste disposal volumes and costs, itemized by packaging, transportation, surcharges and disposal costs by waste class and facility, are provided in Table 6-10. The waste disposal cost provided in Table 6-10 does not include contingency.

Figure 6-3

Task Name	Start	Finish
Spent Fuel Management	06/22/2033	10/23/2067
Spent Fuel Shipping to DOE Repository In Progress	02/21/2034	02/21/2034
Spent Fuel Shipping Complete	02/23/2067	02/23/2067
Dry Pd 1 - Fuel Pool Island Design	06/22/2033	2/21/2034
Dry Pd 2 - Spent Fuel Cooling and Transfer to Dry Storage	2/21/2034	02/21/2039
Dry Pd 3 - Dry Storage During Decommissioning	02/21/2039	08/10/2042
Dry Pd 4 - Dry Storage Only	08/10/2042	07/28/2066
Dry Pd 5 - ISFSI Decommissioning	07/28/2066	10/23/2067
License Termination	12/29/2032	08/10/2042
Unit 1 Shutdown	2/21/2034	2/21/2034
Decon Pd 1 - Decommissioning Planning Prior to Shutdown	12/29/2032	2/21/2034
Decon Pd 2 - Site Modifications and Preparations	2/21/2034	02/23/2036
Decon Pd 3 - Major Component Removal	02/23/2036	05/27/2039
Decon Pd 4 - Balance of Plant Decontamination	05/27/2039	03/31/2041
Grn Pd 1 - Clean Building Demolition	03/31/2041	05/18/2042
Grn Pd 2 - Site Restoration	05/18/2042	08/10/2042

Table 6-9
Scenario 3 Cost and Schedule Summary
(2008 Dollars in Thousands)

Period No.	Period Description	Start	End	Years	Total Cost
License Termination (50.75(c))					
Decon Pd 1	Decommissioning Planning Prior to Shutdown	12/29/2032	2/21/2034	1.14	\$14,484
Decon Pd 2	Site Modifications and Preparations	2/21/2034	2/23/2036	2.00	\$108,410
Decon Pd 3	Major Component Removal	2/23/2036	5/27/2039	3.25	\$261,821
Decon Pd 4	Balance of Plant Decontamination	5/27/2039	3/31/2041	1.84	\$101,683
Account Total				8.23	\$486,398
Spent Fuel (50.54(bb))					
Dry Pd 1	Fuel Pool Island Design	6/22/2033	2/21/2034	0.66	\$1,257
Dry Pd 2	Spent Fuel Cooling and Transfer to Dry Storage	2/21/2034	2/21/2039	4.99	\$114,599
Dry Pd 3	Dry Storage During Dormancy	2/21/2039	8/10/2042	3.46	\$13,545
Dry Pd 4	Dry Storage Only	8/10/2042	7/28/2066	23.96	\$98,353
Dry Pd 5	ISFSI Decommissioning	7/28/2066	10/23/2067	1.23	\$6,714
Account Total				34.30	\$234,468
Greenfield					
Grn Pd 1	Clean Building Demolition	3/31/2041	5/18/2042	1.13	\$38,078
Grn Pd 2	Site Restoration	5/18/2042	8/10/2042	0.22	\$2,653
Account Total				1.35	\$40,731
Scenario Total					\$761,597

Table 6-10
Scenario 3 Waste Disposal Volumes
(Cost Excludes Contingency - 2008 Dollars)

Facility and Waste Class	Waste Weight (LBs)	Waste Volume (CF)	Burial Volume (CF)	Packaging Cost	Transportation Cost	Surcharge Cost	Base Burial Cost	Total Disposal Cost
Class B and C Facility								
Class B	179,852	1,866	3,223	\$145,143	\$1,277,588	\$6,805,322	\$1,852,615	\$10,080,669
Class C	75,600	540	975	\$0	\$851,780	\$3,760,575	\$560,528	\$5,172,882
GTCC	62,590	128	823	\$0	\$113,571	\$14,924,178	\$473,258	\$15,511,006
	318,042	2,534	5,021	\$145,143	\$2,242,939	\$25,490,075	\$2,886,401	\$30,764,557
EnergySolutions								
Class A – Debris	13,091,735	222,451	223,888	\$567,847	\$2,364,227	\$0	\$12,224,196	\$15,156,271
Class A – Oversized Debris	4,488,865	67,190	67,190	\$47,153	\$447,470	\$0	\$7,054,916	\$7,549,539
Class A – CWF	2,808,407	38,430	38,489	\$496,994	\$3,846,607	\$0	\$8,319,692	\$12,663,294
Class A – Large Component	3,715,042	49,526	66,049	\$1,172,945	\$3,429,086	\$0	\$18,031,466	\$22,633,497
	24,104,049	377,596	395,615	\$2,284,940	\$10,087,389	\$0	\$45,630,270	\$58,002,600
Other								
Local Construction Debris								
Landfill	48,206,018	374,200	374,200	\$0	\$23,001	\$0	\$1,853,329	\$1,876,331
Process for On-Site Fill	230,100,750	3,528,212	3,528,212	\$0	\$0	\$0	\$851,373	\$851,373
Scrap Metal Recycler	161,197,811	1,100,763	1,100,763	\$0	\$354,635	\$0	\$0	\$354,635
Grand Total	463,926,670	5,383,305	5,403,811	\$2,430,084	\$12,707,964	\$25,490,075	\$51,221,373	\$91,849,496

6.4 Scenario 4 – Base Case, Except SAFSTOR and License Extension

This scenario is identical to Scenario 2 with the exception of a 20 year license extension, and therefore no on-site interim waste storage facility is required for Class B and C waste. Identical to Scenario 3 all legacy Class B and C waste generated during operations, and stored until a licensed facility is available to accept these wastes, is assumed to be disposed of during operations.

Spent Fuel Shipping Schedule

The spent fuel shipping schedule for Scenario 4 is identical to Scenario 3. Due to the decay of activation products in the reactor internals over the SAFSTOR dormancy no GTCC waste is generated in this scenario.

Cost and Schedule

Figure 6-4 is a summary project schedule. A detailed schedule is provided in Appendix C. Table 6-11 summarizes the period durations and total costs, including contingency, for License Termination, Spent Fuel, and Greenfield activities. A detailed cost table is provided in Appendix D, and a table of annual cash flows is provided in Appendix E. Appendix F provides an annual cash flow with the costs broken out by Labor, Equipment & Materials, Waste, Other, and Contingency categories.

Project Staffing

DAEC staffing levels, by organizational department and function, for each period are provided in Table 6-11. The DGC staffing levels, by organizational department and function, for each period are provided in Table 6-12.

Waste Disposal Volumes

Waste disposal is a significant element of the decommissioning project. The estimated cubic feet of waste are summarized as follows:

Class A	379,855
Class B	1,462
Class C	668

Waste disposal volumes and costs, itemized by packaging, transportation, surcharges and disposal costs by waste class and facility, are provided in Table 6-13. The waste disposal cost provided in Table 6-13 does not include contingency.

Task Name	Start	Finish
Spent Fuel Management	06/22/2033	10/24/2067
Spent Fuel Shipping to DOE Repository in Progress	02/21/2034	02/21/2034
Spent Fuel Shipping Complete	02/24/2067	02/24/2067
Dry Pd 1 - Fuel Pool Island Design	06/22/2033	2/21/2034
Dry Pd 2 - Spent Fuel Cooling and Transfer to Dry Storage	2/21/2034	02/20/2039
Dry Pd 3 - Dry Storage During Dormancy	02/20/2039	07/28/2066
Dry Pd 4 - ISFSI Decommissioning	07/28/2066	10/24/2067
License Termination	12/29/2032	08/28/2094
Unit 1 Shutdown	2/21/2034	2/21/2034
SAFSTOR Pd 1 - SAFSTOR Planning Prior to Shutdown	12/29/2032	2/21/2034
SAFSTOR Pd 2 - SAFSTOR Preparations Following Shutdown	2/21/2034	02/22/2035
SAFSTOR Pd 3 - SAFSTOR Preparations Delay During Spent Fuel Pool Operations	02/22/2035	02/20/2039
SAFSTOR Pd 4 - Completion of SAFSTOR Preparations	02/20/2039	12/18/2039
SAFSTOR Pd 5 - Dormancy During Dry Storage	12/18/2039	10/24/2067
SAFSTOR Pd 6 - Dormancy Only	10/24/2067	05/31/2086
SAFSTOR Pd 7 - Decommissioning Planning During Dormancy	05/31/2086	02/20/2088
SAFSTOR Pd 8 - Dismantlement Site Modifications and Preparations	02/20/2088	07/15/2089
SAFSTOR Pd 9 - Major Component Removal	07/15/2089	07/14/2091
SAFSTOR Pd 10 - Site Decontamination	07/14/2091	03/28/2093
End 60 year SAFSTOR Allowance	02/21/2094	02/21/2094
Grm Pd 1 - Clean Building Demolition	03/28/2093	05/15/2094
Grm Pd 2 - Site Restoration	05/15/2094	08/28/2094

Table 6-11
Scenario 4 DAEC Staff Levels

License Termination – 50.75(c) DAEC Staff

Department	SAFSTOR Pd 1	SAFSTOR Pd 2	SAFSTOR Pd 3	SAFSTOR Pd 4	SAFSTOR Pd 5	SAFSTOR Pd 6	SAFSTOR Pd 7	SAFSTOR Pd 8	SAFSTOR Pd 9	SAFSTOR Pd 10
Administration	2.5	29	0.25	1.25	0.25	0.25	2.5	29	21	20
Engineering	7.75	25	0.25	3	0.25	0.25	7.75	25	21	17
Health Physics	2.25	27	0.75	7	0.75	0.75	2.25	27	25	34
Management		2						2	2	2
Plant Maintenance	1.5	27	0.25	7	0.25	0.25	1.5	27	16	5
Plant Operations	3.75	31		4			3.75	31	32	17
Quality Assurance		5						5	3	1
Security Administration	0	2		0.5		0.5	0	2	2	3
Security Guard Force	0	12	1	5	1	5	0	12	12	12
	17.75	160	2.5	27.75	2.5	7	17.75	160	134	111

Table 6-11
Scenario 4 DAEC Staff Levels
(Continued)

Spent Fuel - 50.54(bb) DAEC Staff

Department	Dry Pd 1	Dry Pd 2	Dry Pd 3	Dry Pd 4
Additional Staff for Spent Fuel				
Shipping			2	
Administration				1.2
Engineering	0.75		1	1
Fuel Pool Maintenance and Operation Staff		19		
Health Physics		7	4	1.5
Management				0.25
Plant Maintenance	0.25		2	
Security Admin		5	5	0.5
Security Guard Force		50	5	5
	1	81	19	9.45

Greenfield - DAEC Staff

Department	Grn Pd 1	Grn Pd 2
Administration	9	8
Engineering	7	5
Health Physics	3	1
Management	2	1
Plant Maintenance	3	1
Quality Assurance	2	1
Security Admin	1	1
Security Guard Force	5	5
	32	23

Table 6-12
Scenario 4 DGC Staff Levels

License Termination – 50.75(c) DGC Staff

Department	SAFSTOR Pd 1	SAFSTOR Pd 2	SAFSTOR Pd 3	SAFSTOR Pd 4	SAFSTOR Pd 5	SAFSTOR Pd 6	SAFSTOR Pd 7	SAFSTOR Pd 8	SAFSTOR Pd 9	SAFSTOR Pd 10
Administration	8	17		8			8	17	17	11
Engineering	5.5	16		7			5.5	16	16	9
Field Operations	2	11		2			2	11	11	8
Health Physics	3	23		5			3	23	35	19
Management	3	3		3			3	3	3	3
Quality Assurance	2	4		3			2	4	5	3
Waste Operations		2		8				2	16	16
	23.5	76	0	36	0	0	23.5	76	103	69

Spent Fuel - 50.54(bb) DGC Staff

Department	Dry Pd 4
Administration	0
Engineering	0
Field Operations	1
Health Physics	0
Management	0
Quality Assurance	.5
Waste Operations	.3
	1.8

Greenfield - DGC Staff

Department	Grn Pd 1	Grn Pd 2
Administration	10	9
Engineering	11	6
Field Operations	10	5
Health Physics	1	1
Management	3	3
Quality Assurance	2	2
	37	26

Table 6-13
Scenario 4 Cost and Schedule Summary
(2008 Dollars in Thousands)

Period No.	Period Description	Start	End	Years	Total Cost
License Termination (50.75(c))					
SAFSTOR Pd 1	SAFSTOR Planning Prior to Shutdown	12/29/2032	2/21/2034	1.14	\$12,571
SAFSTOR Pd 2	SAFSTOR Preparations Following Shutdown	2/21/2034	2/22/2035	1.00	\$52,050
SAFSTOR Pd 3	SAFSTOR Preparation Delay During Spent Fuel Operations	2/22/2035	2/20/2039	3.99	\$7,151
SAFSTOR Pd 4	Completion SAFSTOR Preparations	2/20/2039	12/18/2039	0.82	\$20,234
SAFSTOR Pd 5	Dormancy With Dry Storage	12/18/2039	10/24/2067	27.85	\$44,354
SAFSTOR Pd 6	Dormancy Only	10/24/2067	5/31/2086	18.60	\$42,612
SAFSTOR Pd 7	Decommissioning Planning During Dormancy	5/31/2086	2/20/2088	1.72	\$21,485
SAFSTOR Pd 8	Dismantlement Site Modifications and Preparation	2/20/2088	7/15/2089	1.39	\$105,122
SAFSTOR Pd 9	Major Component Removal	7/15/2089	7/14/2091	1.99	\$191,870
SAFSTOR Pd 10	Site Decontamination	7/14/2091	3/28/2093	1.70	\$80,695
Account Total				60.20	\$578,144
Spent Fuel-(50.54(bb))					
Dry Pd 1	Fuel Pool Island Design	6/22/2033	2/21/2034	0.66	\$1,257
Dry Pd 2	Spent Fuel Cooling and Transfer to Dry Storage	2/21/2034	2/20/2039	4.99	\$114,555
Dry Pd 3	Dry Storage During Dormancy	2/20/2039	7/28/2066	27.43	\$108,328
Dry Pd 4	ISFSI Decommissioning	7/28/2066	10/24/2067	1.24	\$6,527
Account Total				34.32	\$230,667
Greenfield					
Grn Pd 1	Clean Building Demolition	3/28/2093	5/15/2094	1.13	\$38,155
Grn Pd 2	Site Restoration	5/15/2094	8/28/2094	0.28	\$3,143
Account Total				1.41	\$41,298
Scenario Total					\$850,109

Table 6-14
Scenario 4 Waste Disposal Volumes
(Cost Excludes Contingency - 2008 Dollars)

Facility and Waste Class	Waste Weight (LBs)	Waste Volume (CF)	Burial Volume (CF)	Packaging Cost	Transportation Cost	Surcharge Cost	Base Burial Cost	Total Disposal Cost
Class B and C Facility								
Class B	130,230	1,462	2,395	\$116,115	\$863,072	\$4,586,706	\$1,377,116	\$6,943,008
Class C	138,190	668	1,625	\$0	\$1,419,633	\$6,668,137	\$934,213	\$9,021,982
GTCC	268,420	2,130	4,020	\$116,115	\$2,282,704	\$11,254,843	\$2,311,328	\$15,964,990
EnergySolutions								
Class A – Debris	13,304,566	224,594	226,563	\$569,725	\$2,382,352	\$0	\$12,370,273	\$15,322,349
Class A – Oversized Debris	4,488,865	67,190	67,190	\$47,153	\$447,470	\$0	\$7,054,916	\$7,549,539
Class A – CWF	2,808,407	38,430	38,489	\$496,994	\$3,846,607	\$0	\$8,319,692	\$12,663,294
Class A – Large Component	3,746,792	49,642	66,425	\$1,172,945	\$3,562,890	\$0	\$18,134,004	\$22,869,840
	24,348,630	379,855	398,666	\$2,286,818	\$10,239,319	\$0	\$45,878,885	\$58,405,022
Other								
Local Construction Debris								
Landfill	49,809,876	394,249	394,249	\$0	\$23,001	\$0	\$1,929,513	\$1,952,514
Process for On-Site Fill	230,100,750	3,528,212	3,528,212	\$0	\$0	\$0	\$851,373	\$851,373
Scrap Metal Recycler	161,197,811	1,100,763	1,100,763	\$0	\$354,635	\$0	\$0	\$354,635
Grand Total	465,725,487	5,405,209	5,425,910	\$2,402,933	\$12,899,660	\$11,254,843	\$50,971,099	\$77,528,533

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4. Federal Register, Vol. 4, "Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste," NRC 10 CFR Part 961 (DOE), January 1, 1999.
5. U.S. Nuclear Regulatory Commission, "Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station," NUREG/CR-0130, June 1978.
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7. ORNL/NTRC-006, Rev. 0, "Transportation Routing Analysis Geographic Information System (TRAGIS) User's Manual," June 2003.
8. Life-of-Plant Disposal Agreement, between EnergySolutions, LLC and FPL Energy Duane Arnold, LLC, dated January 2007.
9. U.S. Nuclear Regulatory Commission, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)," NUREG-1575, Rev. 1, August 2000.
10. U.S. Department of Energy, "Cost Estimating Guide," DOE G 430.1-1, March 1997.
11. U.S. Department of Energy, "Acceptance Priority Ranking & Annual Capacity Report," DOE/RW-0567, July 2004.
12. RSMeans, "Labor Rates for the Construction Industry," 2008.

Appendix A
List of Systems and Structures

Duane Arnold Energy Center System and Structure List

Unit 1

Type	System Name or Description
ESS	Area Rad Monitoring
ESS	Breathing Air
ESS	CO2 Fire Protection
ESS	Control Bldg HVAC
ESS	Diesel Generator HVAC
ESS	Diesel Oil System
ESS	Domestic Water
ESS	Drywell Sumps
ESS	Fire Protection
ESS	Fuel Pool Cooling & Cleanup
ESS	Instrument Air
ESS	Liquid Radwaste
ESS	LLRPSF Area HVAC
ESS	LLRPSF Area Sumps
ESS	Offgas Exhaust
ESS	Primary Containment
ESS	Primary Containment HVAC
ESS	Radwaste Bldg HVAC
ESS	Radwaste Bldg Sumps
ESS	Reactor Bldg HVAC
ESS	Reactor Bldg Sumps
ESS	RW Evaporator & Solid
ESS	Service Air
ESS	Solid Radwaste
ESS	Stack Gas & Bldg Kaman Rad Monitoring
ESS	Standby Diesel Generator
ESS	Training Center & Equipment
ESS	Turbine Bldg HVAC
ESS	Turbine RB Radwaste Bldg Sampling
ESS	Well Water
NON	Admin Bldg Sumps
NON	Administration Bldg HVAC
NON	Aux Heating Sys Boiler
NON	Chlorination & Acid Feed
NON	Circulating Water
NON	Condensate & Demin Water
NON	Condensate Demineralizer
NON	Condenser Air Removal
NON	Containment Atm Dilution
NON	Containment Atmosphere Control
NON	Cooling Tower
NON	Data Acquisition Center HVAC
NON	Drywell Radiation Monitors
NON	Electrical
NON	Extract Steam Htr-Vents-Drns
NON	Feedwater

Duane Arnold Energy Center System and Structure List

Unit 1

Type	System Name or Description
NON	General Service Water
NON	H2 Water Chemistry
NON	Hydrogen Seal Oil
NON	Intake Structure HVAC
NON	Lube Oil Transfer & Storage
NON	Mach Shop & OG Bldg HVAC
NON	Makeup Demineralizer
NON	Misc HVAC
NON	Nitrogen
NON	Offgas Bldg Sumps
NON	Offgas Recombiner
NON	Post Accident Sampling
NON	Pumphouse HVAC
NON	Reactor Bldg Closed Cooling Water
NON	Reactor Water Cleanup
NON	Residual Heat Removal
NON	RHR Service Water
NON	River Water Supply
NON	Sanitary Drains
NON	Standby Gas Treatment
NON	Stator Cooling
NON	Technical Suppor Center HVAC
NON	Torus Vacuum Breakers
NON	Turbine Bldg Sumps
NSSS	Condensate
NSSS	Condenser
NSSS	CRD Hydraulic
NSSS	Emergency Service Water
NSSS	High Pressure Coolant Injection
NSSS	Low Pressure Core Spray
NSSS	Main Steam
NSSS	Nuclear Boiler
NSSS	Reactor Core Isolation Cooling
NSSS	Reactor Vessel Recirculation
NSSS	Standby Liquid Control
NSSS	Traversing Incore Probe Cal
NSSS	Turbine
NSSS	Turbine Steam Seals & Drains
STRUC	Administration Building
STRUC	Badging Center
STRUC	Breathing Air Enclosure
STRUC	Circulating Water Pipe
STRUC	Circulating Water Tower No 1
STRUC	Circulating Water Tower No 2
STRUC	Civil Shop
STRUC	Compressor Building

Duane Arnold Energy Center System and Structure List

Unit 1

Type	System Name or Description
STRUC	Condensate Storage Tank Foundation
STRUC	Construction Support Center
STRUC	Control Building
STRUC	Cooling Tower Control & Valve House 1
STRUC	Cooling Tower Control & Valve House 2
STRUC	Cooling Tower Training
STRUC	Data Acquisition Center
STRUC	Discharge Structure
STRUC	East Warehouse
STRUC	Electrical Equipment Building - ISFSI
STRUC	Electrical Maintenance
STRUC	Existing Concrete Slabs
STRUC	Existing Waste Water Treatment Plant
STRUC	Guard Facility
STRUC	HPCI and RCIC Building
STRUC	Intake Structure
STRUC	ISFSI - Phase 3
STRUC	LLRPSF Transformer Foundation
STRUC	Low Level Radwaste Storage and Processing
STRUC	Machine Shop
STRUC	Mechanical Maintenance
STRUC	New Site Support Building
STRUC	Off Gas Retention Building
STRUC	Off Gas Stack
STRUC	Oil Drum Storage Building
STRUC	Plant Support Center
STRUC	Pump House
STRUC	Radwaste Building
STRUC	Railroad Air-Lock
STRUC	Reactor Building
STRUC	Site Transformer Foundations
STRUC	Sluice Gate Structure
STRUC	Sulfuric Acid Tank Foundation
STRUC	Support Shop
STRUC	Technical Support Center
STRUC	Trailer Pad
STRUC	Training Center
STRUC	Turbine Building
STRUC	Turbine Pedestal
STRUC	Underground Diesel Oil Tank
STRUC	Underground Fuel Oil Tank
STRUC	Waste Water Treatment Plant
STRUC	Well Water Pump House 1,2,3,4
STRUC	West Warehouse

Appendix B
Spent Fuel Shipping Schedules

Scenarios 1 & 2 - Existing License Termination, Dry Storage, DOE Repository Opens 2025

Year	Fuel Discharged	No Dry Modules	Assemblies Transferred from Pool to Dry Storage	Assemblies in Fuel Pool Storage	Assemblies in Dry Storage	Total Assemblies in On Site Storage	Assemblies Shipped to DOE From Pool	Assemblies Shipped to DOE from Dry Storage	Cumulative Assemblies Shipped to DOE
2008	0	10	0	1758	610	2368	0	0	0
2009	152	0	0	1910	610	2520	0	0	0
2010	152	0	0	2062	610	2672	0	0	0
2011	0	10	610	1452	1220	2672	0	0	0
2012	152	0	0	1604	1220	2824	0	0	0
2013	0	0	0	1604	1220	2824	0	0	0
2014	368	0	0	1972	1220	3192	0	0	0
2015	0	0	0	1972	1220	3192	0	0	0
2016	0	0	0	1972	1220	3192	0	0	0
2017	0	10	610	1362	1830	3192	0	0	0
2018	0	10	610	752	2440	3192	0	0	0
2019	0	13	752	0	3192	3192	0	0	0
2020	0	0	0	0	3192	3192	0	0	0
2021	0	0	0	0	3192	3192	0	0	0
2022	0	0	0	0	3192	3192	0	0	0
2023	0	0	0	0	3192	3192	0	0	0
2024	0	0	0	0	3192	3192	0	0	0
2025	0	0	0	0	3192	3192	0	0	0
2026	0	0	0	0	3192	3192	0	0	0
2027	0	0	0	0	3131	3131	0	61	61
2028	0	0	0	0	2948	2948	0	183	244
2029	0	0	0	0	2765	2765	0	183	427
2030	0	0	0	0	2643	2643	0	122	549
2031	0	0	0	0	2521	2521	0	122	671
2032	0	0	0	0	2399	2399	0	122	793
2033	0	0	0	0	2277	2277	0	122	915
2034	0	0	0	0	2155	2155	0	122	1037
2035	0	0	0	0	2094	2094	0	61	1098
2036	0	0	0	0	1972	1972	0	122	1220
2037	0	0	0	0	1789	1789	0	183	1403
2038	0	0	0	0	1667	1667	0	122	1525
2039	0	0	0	0	1545	1545	0	122	1647
2040	0	0	0	0	1545	1545	0	0	1647
2041	0	0	0	0	1423	1423	0	122	1769
2042	0	0	0	0	1301	1301	0	122	1891
2043	0	0	0	0	1179	1179	0	122	2013
2044	0	0	0	0	1057	1057	0	122	2135
2045	0	0	0	0	996	996	0	61	2196
2046	0	0	0	0	874	874	0	122	2318
2047	0	0	0	0	752	752	0	122	2440
2048	0	0	0	0	630	630	0	122	2562
2049	0	0	0	0	508	508	0	122	2684
2050	0	0	0	0	386	386	0	122	2806
2051	0	0	0	0	325	325	0	61	2867
2052	0	0	0	0	203	203	0	122	2989
2053	0	0	0	0	81	81	0	122	3111
2054	0	0	0	0	0	0	0	81	3192

Summary:

Total Number Dry Storage Modules in ISFSI	53
Number Dry Storage Modules Purchased Following Shutdown	33
Date Fuel Pool Empty	4/20/2019
Date ISFSI Empty	2/20/2054

Scenarios 3 & 4 - License Extension, Dry Storage, DOE Repository Opens 2025

Year	Fuel Discharged	No Dry Modules	Assemblies Transferred from Pool to Dry Storage	Assemblies in Fuel Pool Storage	Assemblies in Dry Storage	Total Assemblies in On Site Storage	Assemblies Shipped to DOE From Pool	Assemblies Shipped to DOE from Dry Storage	Cumulative Assemblies Shipped to DOE
2008	0	10	0	1758	610	2368	0	0	0
2009	152	0	0	1910	610	2520	0	0	0
2010	152	0	0	2062	610	2672	0	0	0
2011	0	10	610	1452	1220	2672	0	0	0
2012	152	0	0	1604	1220	2824	0	0	0
2013	0	0	0	1604	1220	2824	0	0	0
2014	152	0	0	1756	1220	2976	0	0	0
2015	0	0	0	1756	1220	2976	0	0	0
2016	152	0	0	1908	1220	3128	0	0	0
2017	0	0	0	1908	1220	3128	0	0	0
2018	152	0	0	2060	1220	3280	0	0	0
2019	0	11	671	1389	1891	3280	0	0	0
2020	152	0	0	1541	1891	3432	0	0	0
2021	0	0	0	1541	1891	3432	0	0	0
2022	152	0	0	1693	1891	3584	0	0	0
2023	0	0	0	1693	1891	3584	0	0	0
2024	152	0	0	1845	1891	3736	0	0	0
2025	0	0	0	1845	1891	3736	0	0	0
2026	152	0	0	1997	1891	3888	0	0	0
2027	0	0	0	1915	1891	3806	82	0	82
2028	152	0	0	1873	1891	3764	194	0	276
2029	0	0	0	1701	1891	3592	172	0	448
2030	152	0	0	1725	1891	3616	128	0	576
2031	0	0	0	1605	1891	3496	120	0	696
2032	152	0	0	1629	1891	3520	128	0	824
2033	0	0	0	1509	1891	3400	120	0	944
2034	368	0	0	1773	1891	3664	104	0	1048
2035	0	0	0	1669	1891	3560	104	0	1152
2036	0	0	0	1541	1891	3432	128	0	1280
2037	0	0	0	1413	1891	3304	128	0	1408
2038	0	15	915	378	2806	3184	120	0	1528
2039	0	6	366	0	3111	3111	12	61	1601
2040	0	0	0	0	3111	3111	0	0	1601
2041	0	0	0	0	2989	2989	0	122	1723
2042	0	0	0	0	2806	2806	0	183	1906
2043	0	0	0	0	2745	2745	0	61	1967
2044	0	0	0	0	2623	2623	0	122	2089
2045	0	0	0	0	2501	2501	0	122	2211
2046	0	0	0	0	2379	2379	0	122	2333
2047	0	0	0	0	2257	2257	0	122	2455
2048	0	0	0	0	2135	2135	0	122	2577
2049	0	0	0	0	2074	2074	0	61	2638
2050	0	0	0	0	1952	1952	0	122	2760
2051	0	0	0	0	1830	1830	0	122	2882
2052	0	0	0	0	1708	1708	0	122	3004
2053	0	0	0	0	1586	1586	0	122	3126
2054	0	0	0	0	1464	1464	0	122	3248
2055	0	0	0	0	1403	1403	0	61	3309
2056	0	0	0	0	1281	1281	0	122	3431
2057	0	0	0	0	1159	1159	0	122	3553
2058	0	0	0	0	1037	1037	0	122	3675
2059	0	0	0	0	915	915	0	122	3797
2060	0	0	0	0	793	793	0	122	3919
2061	0	0	0	0	732	732	0	61	3980
2062	0	0	0	0	610	610	0	122	4102
2063	0	0	0	0	488	488	0	122	4224
2064	0	0	0	0	366	366	0	122	4346
2065	0	0	0	0	244	244	0	122	4468
2066	0	0	0	0	122	122	0	122	4590
2067	0	0	0	0	0	0	0	122	4712

Summary:

Total Number Dry Storage Modules in ISFSI	52
Number Dry Storage Modules Purchased Following Shutdown	21
Date Fuel Pool Empty	4/20/2039
Date ISFSI Empty	2/20/2067

Appendix C
Detailed Project Schedules

DUANE ARNOLD ENERGY CENTER SCENARIO 1 DETAILED SCHEDULE

Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Storage Class B and C Waste

ID	Task Name	Duration	Start	Finish	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1	Spent Fuel Management	2157.4 wks	06/22/2013	10/22/2054																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

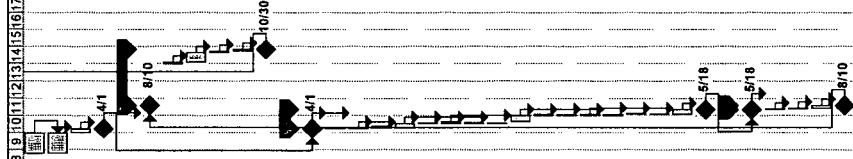
DUANE ARNOLD ENERGY CENTER SCENARIO 1 DETAILED SCHEDULE

Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Storage Class B and C Waste

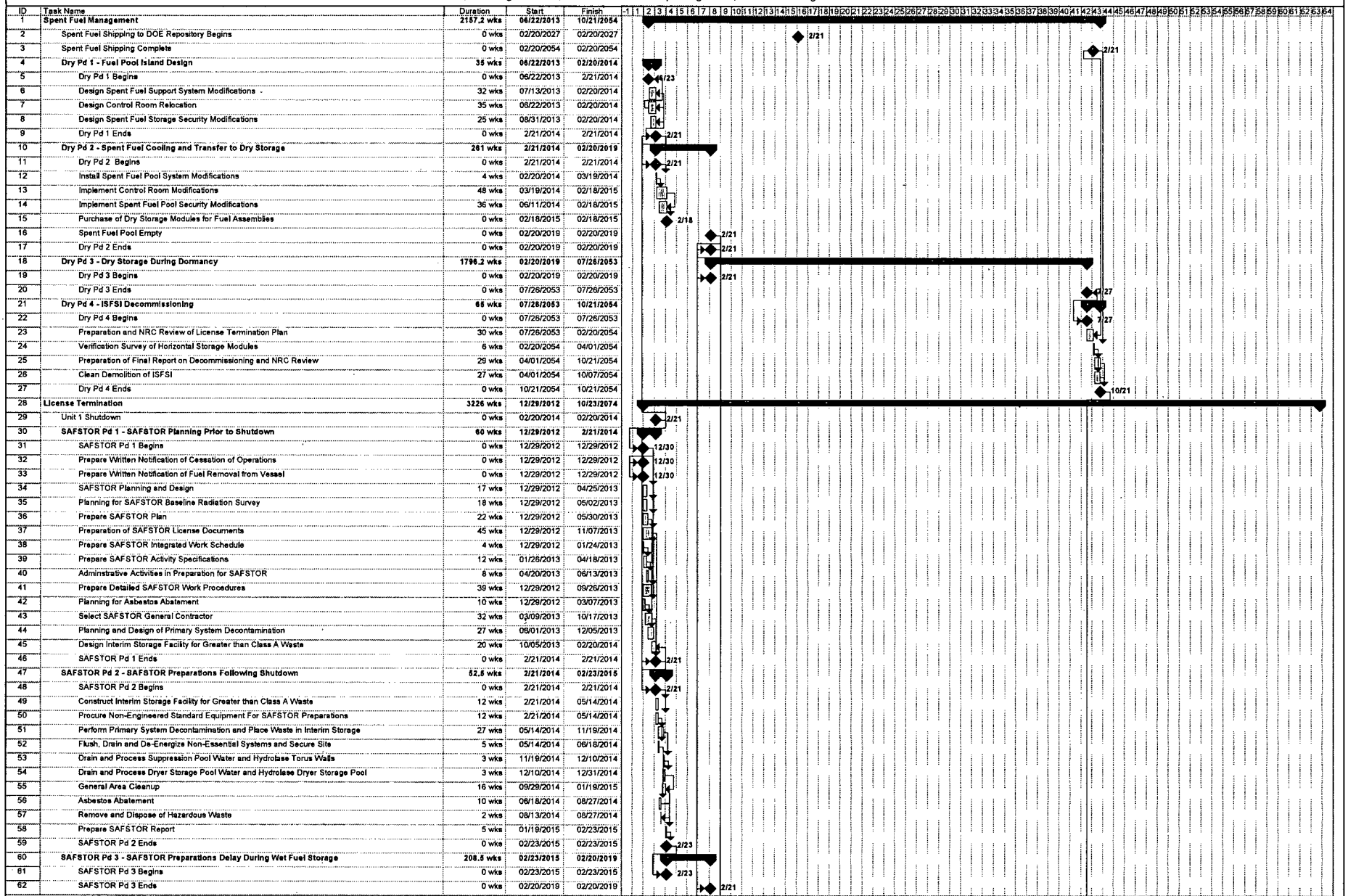
ID	Task Name	Duration	Start	Finish
52	Design Interim Storage Facility for Greater than Class A Waste	20 wks	2/21/2014	07/09/2014
53	Planning and Design of Site Characterization	18 wks	2/21/2014	06/25/2014
54	Perform Baseline Radiation Survey	21 wks	06/25/2014	11/19/2014
55	Perform Primary System Decontamination and Place Waste in Interim Storage	27 wks	10/08/2014	04/15/2015
56	Flush and Drain Non-Essential Systems and Place Waste in Interim Storage	2 wks	04/15/2015	04/29/2015
57	Perform Hot Spot Removal and Place Waste in Interim Storage	5 wks	04/29/2015	06/03/2015
58	Finalize Residual Radiation Inventory	7 wks	06/03/2015	07/22/2015
59	Select Shipping Casks and Obtain Shipping Permits	8 wks	2/21/2014	04/16/2014
60	Design, Specify, and Procure Special Items and Materials	33 wks	2/21/2014	10/08/2014
61	Modify Containment Access	36 wks	04/15/2015	12/23/2015
62	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	18 wks	08/19/2015	12/23/2015
63	Repower Site	9 wks	12/23/2015	02/24/2016
64	Test Special Cutting and Handling Equipment and Train Operators	4 wks	10/08/2014	11/05/2014
65	Procure Non-Engineered Standard Equipment	0 wks	10/08/2014	10/08/2014
66	Asbestos Abatement	10 wks	06/03/2015	08/12/2015
67	Construct Interim Storage Facility for Greater than Class A Waste	12 wks	07/09/2014	10/01/2014
68	Decon Pd 2 Ends	0 wks	02/24/2016	02/24/2016
69	Decon Pd 3 - Major Component Removal	170 wks	02/24/2016	05/28/2019
70	Decon Pd 3 Begins	0 wks	02/24/2016	02/24/2016
71	Remove, Package and Dispose of Non-Essential Systems	62 wks	02/24/2016	09/20/2017
72	Segment, Package and Dispose of Nuclear Steam Supply System	43 wks	09/20/2017	07/18/2018
73	Decon Shield Plugs, Pool Plugs and Stud Tensioners	2 wks	02/24/2016	03/09/2016
74	Volume Reduce Control Rod Blades and Fuel Channels and LPRMS and place in Interim Storage	14 wks	03/09/2016	06/15/2016
75	Segment and Dispose of Drywell Head	8.2 wks	03/09/2016	05/05/2016
76	Purchase Dry Storage Modules for GTCC Waste	0 wks	03/30/2016	03/30/2016
77	Finalize Internals and Vessel Segmenting Details	5 wks	02/24/2016	03/30/2016
78	Segment, Package and Place Reactor Internals in Interim Storage	35 wks	03/30/2016	11/30/2016
79	Drain Dryer Separator Pool and Process Liquid Waste	3 wks	02/06/2019	02/26/2019
80	Reactor Vessel Insulation Removal and Disposal	2 wks	01/23/2019	02/06/2019
81	Package and Ship Reactor Pressure Vessel	29 wks	07/18/2018	02/06/2019
82	Removal and Disposal of Sacrificial Shield Wall	16 wks	02/06/2019	05/28/2019
83	Remove and Dispose of Hazardous Waste	2 wks	05/14/2019	05/28/2019
84	Decon Pd 3 Ends	0 wks	05/28/2019	05/28/2019
85	Decon Pd 4 - Balance of Plant Decontamination	96.3 wks	05/28/2019	03/31/2021
86	Decon Pd 4 Begins	0 wks	05/28/2019	05/28/2019
87	Remove and Dispose of Spent Fuel Storage Racks	4 wks	05/28/2019	06/25/2019
88	Drain Spent Fuel Pool and Process Liquid Waste	8 wks	06/25/2019	08/20/2019
89	Segment, Package and Dispose of Refueling Bridge	2 wks	08/20/2019	09/03/2019
90	Segment, Package and Dispose of Spent Fuel Pool Island Equipment	5 wks	09/03/2019	10/08/2019
91	Remove, Package and Dispose of Remaining Active Plant Systems	15 wks	10/08/2019	01/21/2020
92	Decon Reactor Building	28.5 wks	01/21/2020	08/08/2020
109	Decon Turbine Building	21.5 wks	05/28/2019	10/28/2019
116	Decon Radwaste Building	11.7 wks	05/28/2019	08/18/2019
122	Decon HPCI and RCIC Building	2 wks	08/11/2019	08/25/2019
123	Decon Administration Building	1 wk	08/25/2019	09/01/2019
124	Decon Off-Gas Retention Building	2 wks	09/01/2019	09/15/2019
125	Decon LLRW Storage and Processing Building	4 wks	09/15/2019	10/13/2019
126	Decon Off-Gas Stack	4 wks	09/15/2019	10/13/2019
127	Decon and Remove Yard Structures and Tanks	5 wks	09/15/2019	10/20/2019
128	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	2 wks	10/20/2019	11/03/2019
129	Remove Underground Storm Drains and Manholes	10 wks	10/20/2019	12/29/2019

DUANE ARNOLD ENERGY CENTER SCENARIO 1 DETAILED SCHEDULE
 Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Storage Class B and C Waste

ID	Task Name	Duration	Start	Finish
130	Final Status Survey for Structures	318 days	10/13/2019	12/30/2020
131	Final Status Survey for Land Areas	310 days	10/23/2019	12/30/2020
132	Prepare Final Report of Dismantling Program	13 wks	12/30/2020	03/31/2021
133	Decon Pd 4 Ends	0 wks	03/31/2021	03/31/2021
134	Decon Pd 5 - Interim Waste Storage Facility Operation	168.1 wks	08/10/2022	10/30/2025
135	Decon Pd 5 Begins	0 wks	08/10/2022	08/10/2022
136	Greater Than Class A Waste Facility Opens	4.4 wks	12/31/2024	01/30/2025
137	Transport and Dispose of Greater Than Class A Waste in Interim Storage	29 wks	02/01/2025	08/21/2025
138	Perform Final Status Survey of Interim Waste Storage Facility	5 wks	08/23/2025	09/25/2025
139	Clean Demolition of Interim Waste Storage Facility	5 wks	09/27/2025	10/30/2025
140	Decon Pd 5 Ends	0 wks	10/30/2025	10/30/2025
141	Gm Pd 1 - Clean Building Demolition	59 wks	03/31/2021	05/18/2022
142	Gm Pd 1 Begins	0 wks	03/31/2021	03/31/2021
143	Clean Building Demolition Equipment	2 wks	03/31/2021	04/14/2021
144	Install Temporary Office Buildings	2 wks	03/31/2021	04/14/2021
145	Demolish Low-Level Radwaste Building	6 wks	04/14/2021	05/26/2021
146	Demolish Turbine Building	14 wks	04/14/2021	07/21/2021
147	Demolish Data Acquisition and Technical Support Building	2 wks	07/21/2021	08/04/2021
148	Demolish Control and Administrative Buildings	6 wks	07/21/2021	09/01/2021
149	Demolish Guard Facility	3 wks	07/21/2021	08/11/2021
150	Demolish HPCI and RCIC Building	2 wks	07/21/2021	08/04/2021
151	Demolish Reactor Building	18 wks	09/01/2021	01/05/2022
152	Demolish Cooling Towers and Related Structures	4 wks	01/05/2022	02/02/2022
153	Demolish Training Center	2 wks	01/05/2022	01/19/2022
154	Demolish Plant Support Center	4 wks	01/05/2022	02/02/2022
155	Remove and Dispose of Underground Storage Tanks	3 wks	01/05/2022	01/26/2022
156	Demolish Off-Gas Stack	3 wks	02/02/2022	02/23/2022
157	Demolish Existing Waste Water Treatment	1 wk	02/02/2022	02/09/2022
158	Demolish Remaining Structures	15 wks	02/02/2022	05/18/2022
159	Gm Pd 1 Ends	0 wks	05/18/2022	05/18/2022
160	Gm Pd 2 - Site Restoration	12 wks	05/18/2022	08/10/2022
161	Gm Pd 2 Begins	0 wks	05/18/2022	05/18/2022
162	Site Restoration Equipment	2 wks	05/18/2022	06/01/2022
163	Remove Temporary Structures	2 wks	06/01/2022	06/15/2022
164	Finish Grading and Re-Vegetate Site	8 wks	06/15/2022	08/10/2022
165	Gm Pd 2 Ends	0 wks	08/10/2022	08/10/2022



DUANE ARNOLD ENERGY CENTER SCENARIO 2 DETAILED SCHEDULE
SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Storage Class B and C Waste



DUANE ARNOLD ENERGY CENTER SCENARIO 2 DETAILED SCHEDULE
SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Storage Class B and C Waste

ID	Task Name	Duration	Start	Finish	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
63	SAFSTOR Pd 4 - Completion of SAFSTOR Preparations	43 wks	02/20/2019	12/18/2019																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Storage Class B and C Waste

ID	Task Name	Duration	Start	Finish
126	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	2 wks	05/26/2071	08/09/2071
128	Remove, Package and Dispose of Remaining Active Plant Systems	15 wks	05/26/2071	09/08/2071
127	Remove Underground Storm Drains and Manholes	10 wks	05/29/2071	08/04/2071
128	SAFSTOR Pd 10 Ends	0 wks	09/08/2071	09/08/2071
129	SAFSTOR Pd 11 - Site Decontamination	89 wks	09/08/2071	05/23/2073
130	SAFSTOR Pd 11 Begins	0 wks	09/08/2071	09/08/2071
131	Decon Reactor Building	28.5 wks	09/08/2071	03/27/2072
148	Decon Turbine Building	21.5 wks	09/08/2071	02/07/2072
155	Decon Radwaste Building	11.7 wks	09/08/2071	11/30/2071
161	Decon HPCI and RCIC Building	2 wks	11/23/2071	12/07/2071
162	Decon Administration Building	1 wk	12/07/2071	12/14/2071
163	Decon Off-Gas Retention Building	2 wks	12/14/2071	12/28/2071
164	Decon LLRW Storage and Processing Building	4 wks	12/28/2071	01/25/2072
165	Decon Off-Gas Stack	4 wks	12/28/2071	01/25/2072
166	Decon and Remove Yard Structures and Tanks	5 wks	12/28/2071	02/01/2072
167	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	2 wks	02/01/2072	02/15/2072
168	Perform Final Status Survey of Interim Waste Storage Facility	5 wks	02/15/2072	03/21/2072
169	Final Status Survey for Structures	75 wks	08/15/2071	02/21/2073
170	Final Status Survey for Land Areas	19 wks	10/11/2072	02/21/2073
171	Prepare Final Report of Dismantling Program	13 wks	02/21/2073	05/23/2073
172	SAFSTOR Pd 11 Ends	0 wks	05/23/2073	05/23/2073
173	End 60 year SAFSTOR Allowance	0 wks	02/20/2074	02/20/2074
174	Gm Pd 1 - Clean Building Demolition	89 wks	05/23/2073	07/10/2074
175	Gm Pd 1 Begins	0 wks	05/23/2073	05/23/2073
176	Clean Building Demolition Equipment	2 wks	05/23/2073	06/06/2073
177	Demolish Low-Level Radwaste Building	6 wks	06/06/2073	07/18/2073
178	Demolish Turbine Building	14 wks	06/06/2073	08/12/2073
179	Demolish Data Acquisition and Technical Support Building	2 wks	08/12/2073	09/26/2073
180	Demolish Control and Administrative Buildings	6 wks	08/12/2073	10/24/2073
181	Demolish Guard Facility	3 wks	08/12/2073	10/03/2073
182	Demolish Reactor Building	18 wks	10/24/2073	02/27/2074
183	Demolish Cooling Towers and Related Structures	4 wks	02/27/2074	03/27/2074
184	Demolish Training Center	2 wks	02/27/2074	03/13/2074
185	Demolish Plant Support Center	4 wks	02/27/2074	03/27/2074
186	Remove and Dispose of Underground Storage Tanks	3 wks	02/27/2074	03/20/2074
187	Demolish Off-Gas Stack	3 wks	03/27/2074	04/17/2074
188	Demolish Existing Wastewater Treatment	1 wk	03/27/2074	04/03/2074
189	Demolish Remaining Structures	15 wks	03/27/2074	07/10/2074
190	Gm Pd 1 Ends	0 wks	07/10/2074	07/10/2074
191	Gm Pd 2 - Site Restoration	15 wks	07/10/2074	10/23/2074
192	Gm Pd 2 Begins	0 wks	07/10/2074	07/10/2074
193	Site Restoration Equipment	2 wks	07/10/2074	07/24/2074
194	Remove Temporary Structures	5 wks	07/24/2074	08/29/2074
195	Finish Grading and Re-Vegetate Site	8 wks	08/29/2074	10/23/2074
196	Gm Pd 2 Ends	0 wks	10/23/2074	10/23/2074

Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

ID	Task Name	Duration	Start	Finish
1	Spent Fuel Management	1792.4 wks	06/22/2033	10/23/2067
2	Spent Fuel Shipping to DOE Repository in Progress	0 wks	02/20/2034	02/20/2034
3	Spent Fuel Shipping Complete	0 wks	02/23/2067	02/23/2067
4	Dry Pd 1 - Fuel Pool Island Design	35 wks	06/22/2033	2/21/2034
5	Dry Pd 1 Begins	0 wks	06/22/2033	06/22/2033
6	Design Spent Fuel Support System Modifications	32 wks	07/13/2033	02/20/2034
7	Design Control Room Relocation	35 wks	06/22/2033	02/20/2034
8	Design Spent Fuel Storage Security Modifications	25 wks	08/31/2033	02/20/2034
9	Dry Pd 1 Ends	0 wks	2/21/2034	2/21/2034
10	Dry Pd 2 - Spent Fuel Cooling and Transfer to Dry Storage	261.2 wks	2/21/2034	02/21/2039
11	Dry Pd 2 Begins	0 wks	2/21/2034	2/21/2034
12	Install Spent Fuel Pool System Modifications	4 days	2/21/2034	02/24/2034
13	Implement Control Room Modifications	48 wks	02/25/2034	01/26/2035
14	Implement Spent Fuel Pool Security Modifications	36 wks	05/20/2034	01/26/2035
15	Purchase of Dry Storage Modules for Fuel Assemblies	0 wks	02/20/2034	02/20/2034
16	Spent Fuel Pool Empty	0 wks	02/21/2039	02/21/2039
17	Dry Pd 2 Ends	0 wks	02/21/2039	02/21/2039
18	Dry Pd 3 - Dry Storage During Decommissioning	181.1 wks	02/21/2039	08/10/2042
19	Dry Pd 3 Begins	0 wks	02/21/2039	02/21/2039
20	Dry Pd 3 Ends	0 wks	08/10/2042	08/10/2042
21	Dry Pd 4 - Dry Storage Only	1250.1 wks	08/10/2042	07/28/2066
22	Dry Pd 4 Begins	0 wks	08/10/2042	08/10/2042
23	Dry Pd 4 Ends	0 wks	07/28/2066	07/28/2066
24	Dry Pd 5 - ISFSI Decommissioning	65 wks	07/28/2066	10/23/2067
25	Dry Pd 5 Begins	0 wks	07/28/2066	07/28/2066
26	Preparation and NRC Review of License Termination Plan	30 wks	07/28/2066	02/23/2067
27	Verification Survey of Horizontal Storage Modules	6 wks	02/23/2067	04/03/2067
28	Preparation of Final Report on Decommissioning and NRC Review	29 wks	04/06/2067	10/23/2067
29	Clean Demolition of ISFSI	27 wks	04/06/2067	10/09/2067
30	Dry Pd 5 Ends	0 wks	10/23/2067	10/23/2067
31	License Termination	502.3 wks	12/29/2032	08/10/2042
32	Unit 1 Shutdown	0 wks	2/21/2034	2/21/2034
33	Decon Pd 1 - Decommissioning Planning Prior to Shutdown	60 wks	12/29/2032	2/21/2034
34	Decon Pd 1 Begins	0 wks	12/29/2032	12/29/2032
35	Prepare Written Notification of Cessation of Operations	0 wks	02/01/2034	02/01/2034
36	Prepare Written Notification of Fuel Removal from Vessel	0 wks	02/01/2034	02/01/2034
37	Decommissioning Planning and Design	17 wks	12/29/2032	04/24/2033
38	Prepare Integrated Work Sequence and Schedule for Decommissioning	11 wks	12/29/2032	03/13/2033
39	Prepare Decommissioning Activity Specifications	60 wks	12/29/2032	02/19/2034
40	Prepare License Termination Plan	24 wks	12/29/2032	06/12/2033
41	Prepare Detailed Work Procedures for Decommissioning	60 wks	12/29/2032	02/19/2034
42	Preparation of Decommissioning License Documents	60 wks	12/29/2032	02/19/2034
43	Planning and Design of Site Repowering	35 wks	04/27/2033	12/25/2033
44	Design Containment Access Modifications	13 wks	04/27/2033	07/24/2033
45	Planning and Design of Primary System Decontamination	27 wks	08/17/2033	02/19/2034
46	Select Decommissioning General Contractor	32 wks	07/13/2033	02/20/2034
47	Decon Pd 1 Ends	0 wks	2/21/2034	2/21/2034
48	Decon Pd 2 - Site Modifications and Preparations	105 wks	2/21/2034	02/23/2036

Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

ID	Task Name	Duration	Start	Finish
49	Decon Pd 2 Begins	0 wks	2/21/2034	2/21/2034
50	Administrative Activities	42 wks	2/21/2034	12/09/2034
51	Planning for Asbestos Abatement	10 wks	2/21/2034	04/29/2034
52	Planning and Design of Site Characterization	18 wks	2/21/2034	06/24/2034
53	Perform Baseline Radiation Survey	21 wks	06/25/2034	11/18/2034
54	Perform Primary System Decontamination	27 wks	10/08/2034	04/14/2035
55	Flush and Drain Non-Essential Systems	2.4 wks	04/15/2035	05/02/2035
56	Perform Hot Spot Removal and Place Waste	4.6 wks	05/03/2035	06/02/2035
57	Finalize Residual Radiation Inventory	7 wks	06/03/2035	07/21/2035
58	Select Shipping Casks and Obtain Shipping Permits	8 wks	11/19/2034	01/13/2035
59	Design, Specify, and Procure Special Items and Materials	33 wks	02/20/2034	10/07/2034
60	Modify Containment Access	36 wks	04/15/2035	12/22/2035
61	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	18 wks	08/19/2035	12/22/2035
62	Repower Site	9 wks	12/23/2035	02/23/2036
63	Test Special Cutting and Handling Equipment and Train Operators	4 wks	10/08/2034	11/04/2034
64	Procure Non-Engineered Standard Equipment	0 wks	10/07/2034	10/07/2034
65	Asbestos Abatement	10 wks	06/03/2035	08/11/2035
66	Decon Pd 2 Ends	0 wks	02/23/2036	02/23/2036
67	Decon Pd 3 - Major Component Removal	170 wks	02/23/2036	05/27/2039
68	Decon Pd 3 Begins	0 wks	02/23/2036	02/23/2036
69	Remove, Package and Dispose of Non-Essential Systems	82 wks	02/24/2036	09/19/2037
70	Segment, Package and Dispose of Nuclear Steam Supply System	43 wks	09/20/2037	07/17/2038
71	Decon Shield Plugs, Pool Plugs and Stud Tensioners	2 wks	02/24/2036	03/08/2036
72	Volume Reduce Control Rod Blades and Fuel Channels and LPRMS	14 wks	03/09/2036	06/14/2036
73	Segment and Dispose of Drywell Head	8.2 wks	03/09/2036	05/04/2036
74	Purchase Dry Storage Modules for GTCC Waste	0 wks	05/04/2036	05/04/2036
75	Finalize Internals and Vessel Segmenting Details	5 wks	05/07/2036	06/08/2036
76	Segment, Package and Dispose of Reactor Internals	35 wks	06/11/2036	02/08/2037
77	Drain Dryer Separator Pool and Process Liquid Waste	3 wks	02/11/2037	03/01/2037
78	Package and Ship Reactor Pressure Vessel	29 wks	07/18/2038	02/05/2039
79	Reactor Vessel Insulation Removal and Disposal	2 wks	01/23/2039	02/05/2039
80	Removal and Disposal of Sacrificial Shield Wall	16 wks	02/06/2039	05/27/2039
81	Remove and Dispose of Hazardous Waste	2 wks	05/14/2039	05/27/2039
82	Decon Pd 3 Ends	0 wks	05/27/2039	05/27/2039
83	Decon Pd 4 - Balance of Plant Decontamination	96.3 wks	05/27/2039	03/31/2041
84	Decon Pd 4 Begins	0 wks	05/27/2039	05/27/2039
85	Remove and Dispose of Spent Fuel Storage Racks	4 wks	05/28/2039	06/24/2039
86	Drain Spent Fuel Pool and Process Liquid Waste	8 wks	06/25/2039	08/19/2039
87	Segment, Package and Dispose of Refueling Bridge	2 wks	08/20/2039	09/02/2039
88	Segment, Package and Dispose of Spent Fuel Pool Island Equipment	5 wks	09/03/2039	10/07/2039
89	Remove, Package and Dispose of Remaining Active Plant Systems	15 wks	10/08/2039	01/20/2040
90	Decon Reactor Building	28.5 wks	01/21/2040	08/08/2040
107	Decon Turbine Building	21.5 wks	05/28/2039	10/26/2039
114	Decon Radwaste Building	11.7 wks	05/28/2039	08/18/2039
120	Decon HPCI and RCIC Building	2 wks	08/11/2039	08/25/2039
121	Decon Administration Building	1 wk	08/25/2039	09/01/2039
122	Decon Off-Gas Retention Building	2 wks	09/01/2039	09/15/2039
123	Decon LLRW Storage and Processing Building	4 wks	09/15/2039	10/13/2039

Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

[illegible]

SAFSTOR, License Extension, Yucca Mountain Opening 2025

ID	Task Name	Duration	Start	Finish
1	Spent Fuel Management	1782.2 wks	06/22/2033	10/24/2067
2	Spent Fuel Shipping to DOE Repository in Progress	0 wks	02/20/2034	02/20/2034
3	Spent Fuel Shipping Complete	0 wks	02/23/2067	02/23/2067
4	Dry Pd 1 - Fuel Pool Island Design	35 wks	06/22/2033	2/1/2034
5	Dry Pd 1 Begins	0 wks	06/22/2033	06/22/2033
6	Design Spent Fuel Support System Modifications	32 wks	07/13/2033	02/20/2034
7	Design Control Room Relocation	35 wks	06/22/2033	02/20/2034
8	Design Spent Fuel Storage Security Modifications	25 wks	08/31/2033	02/20/2034
9	Dry Pd 1 Ends	0 wks	2/21/2034	2/21/2034
10	Dry Pd 2 - Spent Fuel Cooling and Transfer to Dry Storage	261 wks	2/21/2034	02/20/2039
11	Dry Pd 2 Begins	0 wks	2/21/2034	2/21/2034
12	Install Spent Fuel Pool System Modifications	4 wks	2/21/2034	03/19/2034
13	Implement Control Room Modifications	48 wks	03/19/2034	02/18/2035
14	Implement Spent Fuel Pool Security Modifications	36 wks	06/11/2034	02/18/2035
15	Purchase of Dry Storage Modules for Fuel Assemblies	0 wks	02/18/2035	02/18/2035
16	Spent Fuel Pool Empty	0 wks	02/20/2039	02/20/2039
17	Dry Pd 2 Ends	0 wks	02/20/2039	02/20/2039
18	Dry Pd 3 - Dry Storage During Dormancy	1431.2 wks	02/20/2039	07/28/2066
19	Dry Pd 3 Begins	0 wks	02/20/2039	02/20/2039
20	Dry Pd 3 Ends	0 wks	07/28/2066	07/28/2066
21	Dry Pd 4 - ISFSI Decommissioning	65 wks	07/28/2066	10/24/2067
22	Dry Pd 4 Begins	0 wks	07/28/2066	07/28/2066
23	Preparation and NRC Review of License Termination Plan	30 wks	07/28/2066	02/23/2067
24	Verification Survey of Horizontal Storage Modules	8 wks	02/23/2067	04/04/2067
25	Preparation of Final Report on Decommissioning and NRC Review	29 wks	04/06/2067	10/24/2067
26	Clean Demolition of ISFSI	27 wks	04/06/2067	10/10/2067
27	Dry Pd 4 Ends	0 wks	10/24/2067	10/24/2067
28	License Termination	3217.8 wks	12/29/2032	08/18/2094
29	Unit 1 Shutdown	0 wks	2/21/2034	2/21/2034
30	SAFSTOR Pd 1 - SAFSTOR Planning Prior to Shutdown	60 wks	12/29/2032	2/21/2034
31	SAFSTOR Pd 1 Begins	0 wks	12/29/2032	12/29/2032
32	Prepare Written Notification of Cessation of Operations	0 wks	12/29/2032	12/29/2032
33	Prepare Written Notification of Fuel Removal from Vessel	0 wks	12/29/2032	12/29/2032
34	SAFSTOR Planning and Design	17 wks	12/29/2032	04/25/2033
35	Planning for SAFSTOR Baseline Radiation Survey	18 wks	12/29/2032	05/02/2033
36	Prepare SAFSTOR Plan	22 wks	12/29/2032	05/30/2033
37	Preparation of SAFSTOR License Documents	45 wks	12/29/2032	11/07/2033
38	Prepare SAFSTOR Integrated Work Schedule	4 wks	12/29/2032	01/24/2033
39	Prepare SAFSTOR Activity Specifications	12 wks	01/26/2033	04/18/2033
40	Administrative Activities in Preparation for SAFSTOR	8 wks	04/20/2033	06/13/2033
41	Prepare Detailed SAFSTOR Work Procedures	39 wks	12/29/2032	09/26/2033
42	Planning for Asbestos Abatement	10 wks	12/29/2032	03/07/2033
43	Select SAFSTOR General Contractor	32 wks	03/09/2033	10/17/2033
44	Planning and Design of Primary System Decontamination	27 wks	06/01/2033	12/05/2033
45	SAFSTOR Pd 1 Ends	0 wks	2/21/2034	2/21/2034
46	SAFSTOR Pd 2 - SAFSTOR Preparations Following Shutdown	52.5 wks	2/21/2034	02/22/2035
47	SAFSTOR Pd 2 Begins	0 wks	2/21/2034	2/21/2034
48	Procure Non-Engineered Standard Equipment For SAFSTOR Preparations	12 wks	02/20/2034	05/14/2034
49	Perform Primary System Decontamination and Place Waste in Interim Storage	27 wks	05/14/2034	11/19/2034
50	Flush, Drain and De-Energize Non-Essential Systems and Secure Site	5 wks	05/14/2034	06/18/2034
51	Drain and Process Suppression Pool Water and Hydrolase Torus Walls	3 wks	11/19/2034	12/10/2034
52	Drain and Process Dryer Storage Pool Water and Hydrolase Dryer Storage Pool	3 wks	12/10/2034	12/31/2034
53	General Area Cleanup	16 wks	09/28/2034	01/18/2035
54	Asbestos Abatement	10 wks	06/19/2034	08/27/2034
55	Remove and Dispose of Hazardous Waste	2 wks	08/13/2034	08/27/2034
56	Prepare SAFSTOR Report	5 wks	01/18/2035	02/22/2035
57	SAFSTOR Pd 2 Ends	0 wks	02/22/2035	02/22/2035
58	SAFSTOR Pd 3 - SAFSTOR Preparations Delay During Spent Fuel Pool Operations	208.5 wks	02/22/2035	02/20/2039
59	SAFSTOR Pd 3 Begins	0 wks	02/22/2035	02/22/2035
60	SAFSTOR Pd 3 Ends	0 wks	02/20/2039	02/20/2039
61	SAFSTOR Pd 4 - Completion of SAFSTOR Preparations	43 wks	02/20/2039	12/18/2039
62	SAFSTOR Pd 4 Begins	0 wks	02/20/2039	02/20/2039

SAFSTOR, License Extension, Yucca Mountain Opening 2025

ID	Task Name	Duration	Start	Finish
83	Volume Reduce Control Rods, Fuel Channels, & LPRMs	14 wks	02/20/2039	05/29/2039
84	Drain Spent Fuel Pool and Process Liquid Waste	8 wks	05/29/2039	07/24/2039
85	Drain and De-Energize Remaining Systems and Secure Site	2 wks	07/24/2039	08/07/2039
86	Removal and Interim Storage of Spent Resins, Filter Media and Tank Sludge	2 wks	08/07/2039	08/21/2039
87	Segment, Package and Dispose of Spent Fuel Pool Island Equipment	5 wks	08/21/2039	09/25/2039
88	Secure Site for Dormancy	12 wks	09/25/2039	12/18/2039
89	SAFSTOR Pd 4 Ends	0 wks	12/18/2039	12/18/2039
70	SAFSTOR Pd 5 - Dormancy During Dry Storage	1453.2 wks	12/18/2039	10/24/2067
71	SAFSTOR Pd 5 Begins	0 wks	12/18/2039	12/18/2039
72	Bituminous Roof Replacement	10 wks	05/03/2054	07/12/2054
73	SAFSTOR Pd 5 Ends	0 wks	10/24/2067	10/24/2067
74	SAFSTOR Pd 6 - Dormancy Only	870.4 wks	10/24/2067	05/31/2088
75	SAFSTOR Pd 6 Begins	0 wks	10/24/2067	10/24/2067
76	Bituminous Roof Replacement	10 wks	11/25/2088	02/03/2069
77	SAFSTOR Pd 6 Ends	0 wks	05/31/2088	05/31/2088
78	SAFSTOR Pd 7 - Decommissioning Planning During Dormancy	90 wks	05/31/2088	02/20/2088
79	SAFSTOR Pd 7 Begins	0 wks	05/31/2088	05/31/2088
80	Decommissioning Planning and Design	17 wks	05/31/2088	09/27/2088
81	Planning and Design of Site Characterization	18 wks	05/31/2088	10/04/2088
82	Prepare Integrated Work Sequence and Schedule for Decommissioning	11 wks	10/04/2088	12/20/2088
83	Prepare Decommissioning Activity Specifications	61 wks	12/20/2088	02/20/2088
84	Prepare License Termination Plan	24 wks	09/27/2088	03/14/2087
85	Prepare Detailed Work Procedures for Decommissioning	75 wks	09/13/2088	02/20/2088
86	Preparation of Decommissioning License Documents	80 wks	05/31/2088	02/20/2088
87	Planning and Design of Site Repowering	35 wks	06/20/2087	02/20/2088
88	Administrative Activities	42 wks	05/02/2087	02/20/2088
89	Design Containment Access Modifications	13 wks	11/21/2087	02/20/2088
90	Select Decommissioning General Contractor	32 wks	07/11/2087	02/20/2088
91	SAFSTOR Pd 7 Ends	0 wks	02/20/2088	02/20/2088
82	SAFSTOR Pd 8 - Dismantlement Site Modifications and Preparations	73 wks	02/20/2088	07/15/2089
93	SAFSTOR Pd 8 Begins	0 wks	02/20/2088	02/20/2088
94	Revitalize Infrastructure and Repower Site	36 wks	02/20/2088	10/29/2088
95	Perform Post-SAFSTOR Baseline Radiation Survey	30 wks	10/29/2088	05/27/2089
96	Finalize Residual Radiation Inventory	7 wks	05/27/2089	07/15/2089
97	Select Shipping Casks and Obtain Shipping Permits	8 wks	10/29/2088	12/24/2088
98	Design, Specify, and Procure Special Items and Materials	33 wks	10/29/2088	06/17/2089
99	Modify Containment Access	36 wks	02/20/2088	10/29/2088
100	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	18 wks	06/25/2088	10/29/2088
101	Test Special Cutting and Handling Equipment and Train Operators	4 wks	10/29/2088	11/26/2088
102	Procure Non-Engineered Standard Equipment	0 wks	07/15/2089	07/15/2089
103	SAFSTOR Pd 8 Ends	0 wks	07/15/2089	07/15/2089
104	SAFSTOR Pd 9 - Major Component Removal	104.2 wks	07/15/2089	07/14/2091
105	SAFSTOR Pd 9 Begins	0 wks	07/15/2089	07/15/2089
106	Remove, Package and Dispose of Non-Essential Systems	82 wks	07/15/2089	02/09/2091
107	Segment, Package and Dispose of Nuclear Steam Supply System	43 wks	09/24/2089	07/22/2090
108	Decon Shield Plugs, Pool Plugs and Stud Tensioners	2 wks	07/15/2089	07/29/2089
109	Remove, Decon, Package and Ship Control Rod Drives	3.4 wks	07/29/2089	08/21/2089
110	Segment and Dispose of Drywell Head	8.2 wks	07/29/2089	09/24/2089
111	Purchase Dry Storage Modules for GTCC Waste	0 wks	07/15/2089	07/15/2089
112	Remove and Dispose of Spent Fuel Storage Racks	4 wks	08/21/2089	09/18/2089
113	Finalize Internals and Vessel Segmenting Details	5 wks	07/15/2089	08/19/2089
114	Reactor Vessel Insulation Removal and Disposal	2 wks	11/04/2090	11/18/2090
115	Segment, Package and Ship Reactor Internals	31 wks	09/24/2089	04/29/2090
116	Package and Ship Reactor Pressure Vessel	28 wks	04/29/2090	11/18/2090
117	Drain Dryer Separator Pool and Process Liquid Waste	3 wks	11/18/2090	12/09/2090
118	Removal and Disposal of Shielded Shield Well	16 wks	11/18/2090	03/10/2091
119	Segment, Package and Dispose of Refueling Bridge	3 wks	03/10/2091	03/31/2091
120	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	2 wks	03/31/2091	04/14/2091
121	Remove, Package and Dispose of Remaining Active Plant Systems	15 wks	03/31/2091	07/14/2091
122	Remove Underground Storm Drains and Manholes	10 wks	03/31/2091	06/09/2091
123	SAFSTOR Pd 9 Ends	0 wks	07/14/2091	07/14/2091
124	SAFSTOR Pd 10 - Site Decontamination	88 wks	07/14/2091	03/28/209

DUANE ARNOLD ENERGY CENTER SCENARIO 4 DETAILED SCHEDULE
SAFSTOR, License Extension, Yucca Mountain Opening 2025

ID	Task Name	Duration	Start	Finish
125	SAFSTOR Pd 10 Begins	0 wks	07/14/2091	07/14/2091
126	Decon Reactor Building	28.5 wks	07/14/2091	01/30/2092
143	Decon Turbine Building	21.5 wks	07/14/2091	12/12/2091
150	Decon Radwaste Building	11.7 wks	08/15/2091	11/03/2091
156	Decon HPCI and RCIC Building	2 wks	10/27/2091	11/10/2091
157	Decon Administration Building	1 wk	11/10/2091	11/17/2091
158	Decon Off-Gas Retention Building	2 wks	11/17/2091	12/01/2091
159	Decon LLRW Storage and Processing Building	4 wks	12/01/2091	12/29/2091
160	Decon Off-Gas Stack	4 wks	12/01/2091	12/29/2091
161	Decon and Remove Yard Structures and Tanks	5 wks	12/01/2091	01/05/2092
162	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	2 wks	01/05/2092	01/19/2092
163	Perform Final Status Survey of Interim Waste Storage Facility	5 wks	01/19/2092	02/23/2092
164	Final Status Survey for Structures	75 wks	07/21/2091	12/27/2092
165	Final Status Survey for Land Areas	19 wks	08/16/2092	12/27/2092
166	Prepare Final Report of Dismantling Program	13 wks	12/27/2092	03/28/2093
167	SAFSTOR Pd 10 Ends	0 wks	03/28/2093	03/28/2093
168	End 60 year SAFSTOR Allowance	0 wks	02/20/2094	02/20/2094
169	Gm Pd 1 - Clean Building Demolition	59 wks	03/28/2093	05/15/2094
170	Gm Pd 1 Begins	0 wks	03/28/2093	03/28/2093
171	Clean Building Demolition Equipment	2 wks	03/28/2093	04/11/2093
172	Demolish Low-Level Radwaste Building	6 wks	04/11/2093	05/23/2093
173	Demolish Turbine Building	14 wks	04/11/2093	07/18/2093
174	Demolish Data Acquisition and Technical Support Building	2 wks	07/18/2093	08/01/2093
175	Demolish Control and Administrative Buildings	6 wks	07/18/2093	08/29/2093
176	Demolish Guard Facility	3 wks	07/18/2093	08/08/2093
177	Demolish Reactor Building	18 wks	08/29/2093	01/02/2094
178	Demolish Cooling Towers and Related Structures	4 wks	01/02/2094	01/30/2094
179	Demolish Training Center	2 wks	01/02/2094	01/16/2094
180	Demolish Plant Support Center	4 wks	01/02/2094	01/30/2094
181	Remove and Dispose of Underground Storage Tanks	3 wks	01/02/2094	01/23/2094
182	Demolish Off-Gas Stack	3 wks	01/30/2094	02/20/2094
183	Demolish Existing Waste Water Treatment	1 wk	01/30/2094	02/06/2094
184	Demolish Remaining Structures	15 wks	01/30/2094	05/15/2094
185	Gm Pd 1 Ends	0 wks	05/15/2094	05/15/2094
186	Gm Pd 2 - Site Restoration	15 wks	05/15/2094	08/28/2094
187	Gm Pd 2 Begins	0 wks	05/15/2094	05/15/2094
188	Site Restoration Equipment	2 wks	05/15/2094	05/29/2094
189	Remove Temporary Structures	5 wks	05/29/2094	07/03/2094
190	Finish Grading and Re-Vegetate Site	8 wks	07/03/2094	08/28/2094
191	Gm Pd 2 Ends	0 wks	08/28/2094	08/28/2094

Appendix D
Detailed Cost Tables

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
A. License Termination							
Decon Pd 1 Decommissioning Planning Prior to Shutdown							
Distributed							
1.01	Prepare Written Notification of Cessation of Operations	\$0	\$0	\$0	\$0	\$0	\$0
1.02	Prepare Written Notification of Fuel Removal from Vessel	\$0	\$0	\$0	\$0	\$0	\$0
1.03	Decommissioning Planning and Design	\$236	\$0	\$0	\$0	\$31	\$267
1.04	Prepare Integrated Work Sequence and Schedule for Decommissioning	\$137	\$0	\$0	\$0	\$18	\$155
1.05	Prepare Decommissioning Activity Specifications	\$2,486	\$20	\$0	\$0	\$326	\$2,832
1.06	Prepare License Termination Plan	\$317	\$10	\$0	\$0	\$42	\$369
1.07	Prepare Detailed Work Procedures for Decommissioning	\$2,259	\$8	\$0	\$0	\$295	\$2,561
1.08	Preparation of Decommissioning License Documents	\$1,661	\$7	\$0	\$0	\$217	\$1,885
1.09	Planning and Design of Site Repowering	\$579	\$7	\$0	\$0	\$76	\$662
1.10	Design Containment Access Modifications	\$221	\$3	\$0	\$0	\$29	\$253
1.11	Planning and Design of Primary System Decontamination	\$202	\$2	\$0	\$0	\$26	\$230
1.12	Select Decommissioning General Contractor	\$251	\$4	\$0	\$0	\$33	\$289
Distributed	Subtotal	\$8,349	\$61	\$0	\$0	\$1,093	\$9,503
Undistributed							
1.01	Utility Staff	\$2,480	\$0	\$0	\$0	\$322	\$2,802
1.10	Decommissioning General Contractor Staff	\$1,929	\$0	\$0	\$0	\$251	\$2,179
Undistributed	Subtotal	\$4,409	\$0	\$0	\$0	\$573	\$4,981
Decon Pd 1	Subtotal	\$12,758	\$61	\$0	\$0	\$1,666	\$14,484

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Decon Pd 2 Site Modifications and Preparations							
Distributed							
2.01	Administrative Activities	\$757	\$4	\$0	\$0	\$99	\$860
2.02	Planning for Asbestos Abatement	\$132	\$2	\$0	\$0	\$17	\$152
2.03	Design Interim Storage Facility for Greater than Class A Waste	\$487	\$9	\$0	\$476	\$126	\$1,099
2.04	Planning and Design of Site Characterization	\$311	\$3	\$0	\$0	\$41	\$356
2.05	Perform Baseline Radiation Survey	\$233	\$88	\$0	\$0	\$42	\$363
2.06	Perform Primary System Decontamination and Place Waste in Interim Storage	\$848	\$805	\$77	\$0	\$398	\$2,129
2.07	Flush and Drain Non-Essential Systems and Place Waste in Interim Storage	\$35	\$6	\$29	\$0	\$16	\$86
2.08	Perform Hot Spot Removal and Place Waste in Interim Storage	\$545	\$176	\$43	\$0	\$176	\$941
2.09	Finalize Residual Radiation Inventory	\$37	\$41	\$0	\$0	\$10	\$88
2.10	Select Shipping Casks and Obtain Shipping Permits	\$29	\$0	\$0	\$0	\$4	\$33
2.11	Design, Specify, and Procure Special Items and Materials	\$782	\$5,300	\$0	\$0	\$791	\$6,873
2.12	Modify Containment Access	\$300	\$554	\$0	\$0	\$111	\$965
2.13	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	\$0	\$869	\$0	\$0	\$113	\$982
2.14	Repower Site	\$524	\$1,578	\$0	\$0	\$273	\$2,376
2.15	Test Special Cutting and Handling Equipment and Train Operators	\$882	\$145	\$0	\$0	\$134	\$1,161
2.16	Procure Non-Engineered Standard Equipment	\$0	\$4,444	\$0	\$0	\$578	\$5,022
2.17	Asbestos Abatement	\$145	\$57	\$196	\$0	\$92	\$490
2.18	Construct Interim Storage Facility for Greater than Class A Waste	\$27	\$1,527	\$0	\$0	\$202	\$1,756
Distributed Subtotal		\$6,074	\$15,608	\$345	\$476	\$3,223	\$25,732
Undistributed							
1.01	Utility Staff	\$33,730	\$0	\$0	\$0	\$4,385	\$38,115
1.02	Utility Staff HP Supplies	\$0	\$1,163	\$0	\$0	\$174	\$1,337
1.03	Security Guard Force	\$2,580	\$0	\$0	\$0	\$387	\$2,967
1.04	Insurance	\$0	\$0	\$0	\$1,236	\$185	\$1,422

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
1.05	Property Taxes	\$0	\$0	\$0	\$20	\$3	\$23
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$768	\$115	\$883
1.07	Materials and Services	\$0	\$10,412	\$0	\$0	\$1,562	\$11,974
1.08	DAW Disposal	\$0	\$0	\$45	\$0	\$7	\$52
1.09	Energy	\$0	\$0	\$0	\$1,001	\$150	\$1,151
1.10	Decommissioning General Contractor Staff	\$21,089	\$0	\$0	\$0	\$2,742	\$23,831
1.11	DGC HP Supplies	\$0	\$994	\$0	\$0	\$149	\$1,143
Undistributed	Subtotal	\$57,399	\$12,569	\$45	\$3,025	\$9,859	\$82,898
Decon Pd 2	Subtotal	\$63,473	\$28,177	\$390	\$3,501	\$13,082	\$108,630

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Decon Pd 3 Major Component Removal							
Distributed							
3.01	Remove, Package and Dispose of Non-Essential Systems	\$10,049	\$2,322	\$7,230	\$0	\$4,508	\$24,109
3.02	Segment, Package and Dispose of Nuclear Steam Supply System	\$2,343	\$923	\$29,805	\$0	\$7,606	\$40,677
3.03	Decon Shield Plugs, Pool Plugs and Stud Tensioners	\$37	\$7	\$142	\$0	\$43	\$229
3.04	Volume Reduce Control Rods Blades and LPRMS and Place Waste in Interim Storage	\$533	\$330	\$903	\$0	\$406	\$2,173
3.05	Purchase Dry Storage Modules for GTCC Waste	\$0	\$1,096	\$0	\$0	\$252	\$1,348
3.06	Finalize Internals and Vessel Segmenting Details	\$18	\$0	\$0	\$0	\$4	\$22
3.07	Reactor Vessel Insulation Removal and Disposal	\$104	\$15	\$214	\$0	\$109	\$441
3.08	Segment, Package and Place Reactor Internals in Interm Storage	\$3,080	\$1,018	\$1,717	\$0	\$2,203	\$8,018
3.09	Package and Dispose of Reactor Pressure Vessel	\$2,922	\$1,073	\$6,513	\$0	\$3,336	\$13,843
3.10	Drain Dryer Separator Pool and Process Liquid Waste	\$0	\$0	\$0	\$0	\$0	\$0
3.11	Removal and Disposal of Sacrificial Shield Wall and Reactor Pedestal	\$219	\$447	\$830	\$0	\$344	\$1,840
3.12	Remove and Dispose of Hazardous Waste	\$0	\$0	\$0	\$131	\$20	\$151
Distributed	Subtotal	\$19,305	\$7,231	\$47,354	\$131	\$18,831	\$92,851
Undistributed							
1.01	Utility Staff	\$47,010	\$0	\$0	\$0	\$6,111	\$53,121
1.02	Utility Staff HP Supplies	\$0	\$1,784	\$0	\$0	\$268	\$2,052
1.03	Security Guard Force	\$4,186	\$0	\$0	\$0	\$628	\$4,813
1.04	Insurance	\$0	\$0	\$0	\$2,006	\$301	\$2,306
1.05	Property Taxes	\$0	\$0	\$0	\$33	\$5	\$37
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$2,051	\$308	\$2,359
1.07	Materials and Services	\$0	\$14,145	\$0	\$0	\$2,122	\$16,267
1.08	DAW Disposal	\$0	\$0	\$213	\$0	\$32	\$244
1.09	Energy	\$0	\$0	\$0	\$1,953	\$293	\$2,246
1.10	Decommissioning General Contractor Staff	\$46,118	\$0	\$0	\$0	\$5,995	\$52,113

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
1.11	DGC HP Supplies	\$0	\$2,470	\$0	\$0	\$370	\$2,840
Undistributed	Subtotal	\$97,314	\$18,399	\$213	\$6,043	\$16,433	\$138,398
Decon Pd 3	Subtotal	\$116,619	\$25,630	\$47,567	\$6,174	\$35,264	\$231,249

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Decon Pd 4 Balance of Plant Decontamination							
Distributed							
4.01	Remove and Dispose of Spent Fuel Storage Racks	\$51	\$234	\$1,451	\$0	\$399	\$2,136
4.02	Drain Spent Fuel Pool and Process Liquid Waste	\$0	\$0	\$0	\$0	\$0	\$0
4.03	Flush and Drain Essential Systems Following Fuel Pool Closure and Place Waste in In	\$24	\$10	\$29	\$0	\$15	\$78
4.04	Removal and Interim Storage of Spent Resins, Filter Media and Tank Sludge	\$25	\$25	\$72	\$0	\$28	\$151
4.05	Removal and Disposal of Off Gas System Adsorber	\$25	\$25	\$2,429	\$0	\$570	\$3,049
4.06	Segment, Package and Dispose of Refueling Bridge	\$50	\$9	\$262	\$0	\$74	\$395
4.07	Segment, Package and Dispose of Spent Fuel Pool Island Equipment	\$7	\$1	\$135	\$0	\$33	\$176
4.08	Remove, Package and Dispose of Remaining Active Plant Systems	\$3,210	\$1,032	\$1,407	\$0	\$1,299	\$6,948
4.09	Decon Reactor Building	\$2,761	\$2,213	\$4,493	\$0	\$2,177	\$11,644
4.10	Decon Turbine Building	\$541	\$768	\$530	\$0	\$423	\$2,262
4.11	Decon Radwaste Building	\$116	\$144	\$169	\$0	\$99	\$528
4.12	Decon HPCI and RCIC Building	\$26	\$39	\$25	\$0	\$21	\$110
4.13	Decon Administration Building	\$9	\$5	\$10	\$0	\$6	\$30
4.14	Decon Off-Gas Retention Building	\$44	\$17	\$21	\$0	\$19	\$100
4.15	Decon Low Level Radwaste Storage and Processing	\$208	\$312	\$255	\$0	\$178	\$954
4.16	Decon Off-Gas Stack	\$52	\$48	\$142	\$0	\$56	\$298
4.17	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	\$22	\$4	\$131	\$0	\$36	\$194
4.18	Remove Underground Storm Drains and Manholes	\$33	\$25	\$34	\$0	\$21	\$114
4.19	Final Status Survey for Structures	\$5,188	\$928	\$0	\$921	\$1,545	\$8,583
4.20	Final Status Survey for Land Areas	\$915	\$54	\$0	\$0	\$223	\$1,191
4.21	Prepare Final Report of Dismantling Program	\$65	\$3	\$0	\$0	\$16	\$83
Distributed	Subtotal	\$13,372	\$5,896	\$11,595	\$921	\$7,238	\$39,024
Undistributed							
1.01	Utility Staff	\$20,540	\$0	\$0	\$0	\$2,670	\$23,210

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
1.02	Utility Staff HP Supplies	\$0	\$1,359	\$0	\$0	\$204	\$1,563
1.03	Security Guard Force	\$2,369	\$0	\$0	\$0	\$355	\$2,725
1.04	Insurance	\$0	\$0	\$0	\$1,135	\$170	\$1,305
1.05	Property Taxes	\$0	\$0	\$0	\$18	\$3	\$21
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,161	\$174	\$1,335
1.07	Materials and Services	\$0	\$6,632	\$0	\$0	\$995	\$7,627
1.08	DAW Disposal	\$0	\$0	\$160	\$0	\$24	\$184
1.09	Energy	\$0	\$0	\$0	\$965	\$145	\$1,110
1.10	Decommissioning General Contractor Staff	\$18,301	\$0	\$0	\$0	\$2,379	\$20,680
1.11	DGC HP Supplies	\$0	\$777	\$0	\$0	\$117	\$894
Undistributed	Subtotal	\$41,210	\$8,768	\$160	\$3,279	\$7,236	\$60,654
Decon Pd 4	Subtotal	\$54,582	\$14,664	\$11,755	\$4,200	\$14,474	\$99,678

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Decon Pd 5 Interim Waste Storage Facility Operation							
Distributed							
5.01	Transport and Dispose of Greater Than Class A Waste in Interim Storage	\$153	\$664	\$30,849	\$0	\$7,283	\$38,948
5.02	License Termination for Interim Waste Storage Facility	\$141	\$18	\$0	\$250	\$53	\$462
5.03	Clean Demolition of Interim Waste Storage Facility	\$79	\$41	\$171	\$0	\$42	\$333
Distributed	Subtotal	\$373	\$723	\$31,020	\$250	\$7,378	\$39,743
Undistributed							
1.01	Utility Staff	\$563	\$0	\$0	\$0	\$73	\$636
1.02	Utility Staff HP Supplies	\$0	\$86	\$0	\$0	\$13	\$99
1.03	Security Guard Force	\$345	\$0	\$0	\$0	\$52	\$397
1.04	Insurance	\$0	\$0	\$0	\$1,985	\$298	\$2,283
1.05	Property Taxes	\$0	\$0	\$0	\$32	\$5	\$37
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,233	\$185	\$1,418
1.07	Materials and Services	\$0	\$261	\$0	\$0	\$39	\$300
1.08	DAW Disposal	\$0	\$0	\$3	\$0	\$0	\$4
1.09	Energy	\$0	\$0	\$0	\$38	\$6	\$44
Undistributed	Subtotal	\$908	\$347	\$3	\$3,288	\$671	\$5,218
Decon Pd 5	Subtotal	\$1,281	\$1,070	\$31,023	\$3,538	\$8,049	\$44,961

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
A. License Termination Subtotal		\$248,713	\$69,602	\$90,735	\$17,413	\$72,535	\$499,002
B. Spent Fuel							
Dry Pd 1 Fuel Pool Island Design							
Distributed							
6.01	Design Spent Fuel Support System Modifications	\$370	\$6	\$0	\$0	\$49	\$425
6.02	Design Control Room Relocation	\$358	\$5	\$0	\$0	\$47	\$411
6.03	Design Spent Fuel Storage Security Modifications	\$275	\$4	\$0	\$0	\$36	\$315
Distributed	Subtotal	\$1,003	\$15	\$0	\$0	\$132	\$1,151
Undistributed							
2.01	Utility Spent Fuel Staff	\$93	\$0	\$0	\$0	\$12	\$106
Undistributed	Subtotal	\$93	\$0	\$0	\$0	\$12	\$106
Dry Pd 1	Subtotal	\$1,096	\$15	\$0	\$0	\$144	\$1,257

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 2 Spent Fuel Cooling and Transfer to Dry Storage							
Distributed							
7.01	Install Spent Fuel Pool System Modifications	\$119	\$1,658	\$0	\$0	\$231	\$2,008
7.02	Implement Control Room Modifications	\$956	\$1,434	\$0	\$0	\$311	\$2,701
7.03	Implement Spent Fuel Pool Security Modifications	\$500	\$750	\$0	\$0	\$163	\$1,413
7.04	Purchase of Dry Storage Modules for Fuel Assemblies	\$0	\$36,162	\$0	\$0	\$5,424	\$41,586
Distributed	Subtotal	\$1,575	\$40,004	\$0	\$0	\$6,129	\$47,708
Undistributed							
2.01	Utility Spent Fuel Staff	\$2,050	\$0	\$0	\$0	\$267	\$2,317
2.02	Utility Staff HP Supplies	\$0	\$791	\$0	\$0	\$119	\$910
2.03	Fuel Pool Maintenance and Operation Staff	\$15,545	\$0	\$0	\$0	\$2,332	\$17,877
2.05	Security Guard Force	\$26,784	\$0	\$0	\$0	\$4,018	\$30,801
2.06	Insurance	\$0	\$0	\$0	\$4,241	\$636	\$4,877
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$6,376	\$956	\$7,332
2.08	Energy	\$0	\$0	\$0	\$1,433	\$215	\$1,648
2.09	Materials and Services	\$0	\$13,131	\$0	\$0	\$1,970	\$15,101
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$1,000	\$150	\$1,150
Undistributed	Subtotal	\$44,379	\$13,922	\$0	\$13,050	\$10,663	\$82,013
Dry Pd 2	Subtotal	\$45,954	\$53,926	\$0	\$13,050	\$16,792	\$129,721

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 3 Dry Storage During Decommissioning							
Undistributed							
2.01	Utility Spent Fuel Staff	\$8,148	\$0	\$0	\$0	\$1,059	\$9,208
2.02	Utility Staff HP Supplies	\$0	\$636	\$0	\$0	\$95	\$732
2.04	Additional Staff for Spent Fuel Shipping	\$1,573	\$0	\$0	\$0	\$236	\$1,809
2.05	Security Guard Force	\$3,583	\$0	\$0	\$0	\$538	\$4,121
2.06	Insurance	\$0	\$0	\$0	\$1,277	\$192	\$1,469
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$3,005	\$451	\$3,456
2.08	Energy	\$0	\$0	\$0	\$22	\$3	\$25
2.09	Materials and Services	\$0	\$4,121	\$0	\$0	\$618	\$4,739
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$502	\$75	\$577
Undistributed	Subtotal	\$13,304	\$4,757	\$0	\$4,806	\$3,267	\$26,136
Dry Pd 3	Subtotal	\$13,304	\$4,757	\$0	\$4,806	\$3,267	\$26,136

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 4 Dry Storage Only							
Undistributed							
2.01	Utility Spent Fuel Staff	\$33,791	\$0	\$0	\$0	\$4,393	\$38,183
2.02	Utility Staff HP Supplies	\$0	\$2,639	\$0	\$0	\$396	\$3,035
2.04	Additional Staff for Spent Fuel Shipping	\$6,524	\$0	\$0	\$0	\$979	\$7,503
2.05	Security Guard Force	\$14,860	\$0	\$0	\$0	\$2,229	\$17,089
2.06	Insurance	\$0	\$0	\$0	\$8,764	\$1,315	\$10,079
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$12,461	\$1,869	\$14,330
2.08	Energy	\$0	\$0	\$0	\$1,088	\$163	\$1,251
2.09	Materials and Services	\$0	\$17,089	\$0	\$0	\$2,563	\$19,653
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$2,080	\$312	\$2,392
2.11	Property Taxes	\$0	\$0	\$0	\$277	\$42	\$319
Undistributed	Subtotal	\$55,175	\$19,728	\$0	\$24,670	\$14,261	\$113,834
Dry Pd 4	Subtotal	\$55,175	\$19,728	\$0	\$24,670	\$14,261	\$113,834

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1	License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified	
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025	

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 5 ISFSI Decommissioning							
Distributed							
10.01	Preparation and NRC Review of License Termination Plan	\$63	\$0	\$0	\$101	\$21	\$186
10.02	Verification Survey of Horizontal Storage Modules	\$74	\$27	\$0	\$0	\$13	\$115
10.03	Preparation of Final Report on Decommissioning and NRC Review	\$31	\$0	\$0	\$60	\$12	\$102
10.04	Clean Demolition of ISFSI	\$1,215	\$662	\$1,875	\$0	\$554	\$4,305
Distributed	Subtotal	\$1,383	\$689	\$1,875	\$161	\$600	\$4,708
Undistributed							
2.01	Utility Spent Fuel Staff	\$687	\$0	\$0	\$0	\$89	\$776
2.05	Security Guard Force	\$664	\$0	\$0	\$0	\$100	\$764
2.06	Insurance	\$0	\$0	\$0	\$155	\$23	\$178
2.08	Energy	\$0	\$0	\$0	\$5	\$1	\$5
2.09	Materials and Services	\$0	\$380	\$0	\$0	\$57	\$437
2.11	Property Taxes	\$0	\$0	\$0	\$12	\$2	\$14
2.12	Decommissioning General Contractor Staff	\$409	\$0	\$0	\$0	\$61	\$470
Undistributed	Subtotal	\$1,760	\$380	\$0	\$172	\$333	\$2,644
Dry Pd 5	Subtotal	\$3,143	\$1,069	\$1,875	\$333	\$933	\$7,352

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
B. Spent Fuel	Subtotal	\$118,672	\$79,495	\$1,875	\$42,859	\$35,397	\$278,300
C. Greenfield							
Grn Pd 1	Clean Building Demolition						
Distributed							
11.01	Clean Building Demolition Equipment	\$0	\$738	\$0	\$0	\$170	\$907
11.02	Install Temporary Office Buildings	\$14	\$63	\$0	\$0	\$16	\$93
11.03	Demolish Low-Level Radwaste Building	\$2,288	\$1,129	\$204	\$0	\$584	\$4,204
11.04	Demolish Turbine Building	\$2,607	\$1,258	\$151	\$0	\$648	\$4,664
11.05	Demolish Data Acquisition and Technical Support Building	\$214	\$142	\$50	\$0	\$67	\$472
11.06	Demolish Control and Administrative Buildings	\$571	\$260	\$58	\$0	\$142	\$1,031
11.07	Demolish Guard Facility	\$91	\$42	\$8	\$0	\$22	\$163
11.08	Demolish HPCI and RCIC Building	\$120	\$135	\$6	\$0	\$48	\$309
11.09	Demolish Reactor Building	\$3,298	\$1,836	\$295	\$0	\$890	\$6,319
11.10	Demolish Cooling Towers and Related Structures	\$533	\$696	\$185	\$0	\$253	\$1,667
11.11	Demolish Training Center	\$97	\$42	\$10	\$0	\$23	\$172
11.12	Demolish Plant Support Center	\$222	\$159	\$59	\$0	\$73	\$514
11.13	Remove and Dispose of Underground Storage Tanks	\$18	\$22	\$0	\$0	\$7	\$48
11.14	Demolish Off-Gas Stack	\$85	\$45	\$18	\$0	\$24	\$172
11.15	Demolish Existing Waste Water Treatment Plant	\$13	\$1	\$3	\$0	\$2	\$20
11.16	Demolish Remaining Structures	\$1,524	\$2,042	\$496	\$0	\$732	\$4,794
Distributed	Subtotal	\$11,695	\$8,610	\$1,543	\$0	\$3,701	\$25,549
Undistributed							
3.01	Utility Staff	\$3,765	\$0	\$0	\$0	\$489	\$4,255
3.02	Security Guard Force	\$606	\$0	\$0	\$0	\$91	\$697
3.03	Decommissioning General Contractor Staff	\$6,313	\$0	\$0	\$0	\$821	\$7,133
3.04	Energy	\$0	\$0	\$0	\$244	\$37	\$281

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
3.05	Insurance	\$0	\$0	\$0	\$141	\$21	\$163
Undistributed	Subtotal	\$10,684	\$0	\$0	\$385	\$1,459	\$12,529
Grn Pd 1	Subtotal	\$22,379	\$8,610	\$1,543	\$385	\$5,160	\$38,078

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Grn Pd 2 Site Restoration							
Distributed							
12.01	Site Restoration Equipment	\$0	\$103	\$0	\$0	\$24	\$127
12.02	Remove Temporary Structures	\$11	\$9	\$0	\$0	\$3	\$23
12.03	Finish Grading and Re-Vegetate Site	\$376	\$272	\$0	\$0	\$111	\$760
Distributed	Subtotal	\$387	\$384	\$0	\$0	\$138	\$910
Undistributed							
3.01	Utility Staff	\$496	\$0	\$0	\$0	\$64	\$560
3.02	Security Guard Force	\$123	\$0	\$0	\$0	\$18	\$142
3.03	Decommissioning General Contractor Staff	\$890	\$0	\$0	\$0	\$116	\$1,006
3.04	Energy	\$0	\$0	\$0	\$2	\$0	\$2
3.05	Insurance	\$0	\$0	\$0	\$29	\$4	\$33
Undistributed	Subtotal	\$1,509	\$0	\$0	\$31	\$202	\$1,743
Grn Pd 2	Subtotal	\$1,896	\$384	\$0	\$31	\$340	\$2,653

Table 1
Duane Arnold Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 1		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
C. Greenfield	Subtotal	\$24,275	\$8,994	\$1,543	\$416	\$5,500	\$40,731
Scenario No. 1	Total	\$391,660	\$158,091	\$94,153	\$60,688	\$113,432	\$818,033

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
A. License Termination							
SAFSTOR Pd 1 SAFSTOR Planning Prior to Shutdown							
Distributed							
1.01	Prepare Written Notification of Cessation of Operations	\$0	\$0	\$0	\$0	\$0	\$0
1.02	Prepare Written Notification of Fuel Removal from Vessel	\$0	\$0	\$0	\$0	\$0	\$0
1.03	SAFSTOR Planning and Design	\$236	\$0	\$0	\$0	\$31	\$267
1.04	Planning for SAFSTOR Baseline Radiation Survey	\$311	\$3	\$0	\$0	\$41	\$356
1.05	Prepare SAFSTOR Plan	\$1,881	\$32	\$0	\$0	\$249	\$2,162
1.06	Preparation of SAFSTOR License Documents	\$1,661	\$7	\$0	\$0	\$217	\$1,885
1.07	Prepare SAFSTOR Integrated Work Schedule	\$79	\$4	\$0	\$0	\$11	\$93
1.08	Prepare SAFSTOR Activity Specifications	\$588	\$5	\$0	\$0	\$77	\$670
1.09	Administrative Activities in Preparation for SAFSTOR	\$149	\$0	\$0	\$0	\$19	\$169
1.10	Prepare Detailed SAFSTOR Work Procedures	\$1,158	\$8	\$0	\$0	\$152	\$1,317
1.11	Planning for Asbestos Abatement	\$132	\$2	\$0	\$0	\$17	\$152
1.12	Select SAFSTOR General Contractor	\$251	\$4	\$0	\$0	\$33	\$289
1.13	Planning and Design of Primary System Decontamination	\$202	\$2	\$0	\$0	\$26	\$230
Distributed	Subtotal	\$6,648	\$67	\$0	\$0	\$873	\$7,590
Undistributed							
1.01	Utility Staff	\$2,480	\$0	\$0	\$0	\$322	\$2,802
1.10	Decommissioning General Contractor Staff	\$1,929	\$0	\$0	\$0	\$251	\$2,179
Undistributed	Subtotal	\$4,409	\$0	\$0	\$0	\$573	\$4,981
SAFSTOR Pd 1	Subtotal	\$11,057	\$67	\$0	\$0	\$1,446	\$12,571

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Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 2 SAFSTOR Preparations Following Shutdown							
Distributed							
2.01	Procure Non-Engineered Standard Equipment For SAFSTOR Preparations	\$0	\$3,417	\$0	\$0	\$444	\$3,862
2.02	Perform Primary System Decontamination and Place Waste in Interim Storage	\$848	\$805	\$77	\$0	\$398	\$2,129
2.03	Flush, Drain and De-Energize Non-Essential Systems	\$35	\$6	\$29	\$0	\$16	\$86
2.04	Drain and Process Suppression Pool Water and Hydrolase Torus Walls	\$0	\$0	\$0	\$0	\$0	\$0
2.05	Drain and Process Dryer Storage Pool Water and Hydrolase Dryer Storage Pool	\$0	\$0	\$0	\$0	\$0	\$0
2.06	General Area Cleanup	\$1,146	\$478	\$165	\$0	\$411	\$2,200
2.07	Asbestos Abatement	\$145	\$57	\$196	\$0	\$92	\$490
2.08	Remove and Dispose of Hazardous Waste	\$0	\$0	\$0	\$131	\$20	\$151
2.09	Prepare SAFSTOR Report	\$46	\$0	\$0	\$0	\$6	\$52
Distributed	Subtotal	\$2,220	\$4,763	\$467	\$131	\$1,387	\$8,970
Undistributed							
1.01	Utility Staff	\$16,888	\$0	\$0	\$0	\$2,195	\$19,083
1.02	Utility Staff HP Supplies	\$0	\$582	\$0	\$0	\$87	\$669
1.03	Security Guard Force	\$1,292	\$0	\$0	\$0	\$194	\$1,486
1.04	Insurance	\$0	\$0	\$0	\$619	\$93	\$712
1.05	Property Taxes	\$0	\$0	\$0	\$10	\$2	\$12
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$384	\$58	\$442
1.07	Materials and Services	\$0	\$5,213	\$0	\$0	\$782	\$5,995
1.08	DAW Disposal	\$0	\$0	\$28	\$0	\$4	\$32
1.09	Energy	\$0	\$0	\$0	\$501	\$75	\$576
1.10	Decommissioning General Contractor Staff	\$10,559	\$0	\$0	\$0	\$1,373	\$11,932
1.11	DGC HP Supplies	\$0	\$497	\$0	\$0	\$75	\$572
Undistributed	Subtotal	\$28,739	\$6,292	\$28	\$1,514	\$4,938	\$41,511

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Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 2	Subtotal	\$30,959	\$11,055	\$495	\$1,645	\$6,325	\$50,481

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Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 3 SAFSTOR Preparation Delay During Spent Fuel Pool Operations							
Undistributed							
1.01	Utility Staff	\$697	\$0	\$0	\$0	\$91	\$787
1.02	Utility Staff HP Supplies	\$0	\$107	\$0	\$0	\$16	\$123
1.03	Security Guard Force	\$428	\$0	\$0	\$0	\$64	\$492
1.04	Insurance	\$0	\$0	\$0	\$2,459	\$369	\$2,828
1.05	Property Taxes	\$0	\$0	\$0	\$40	\$6	\$46
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$835	\$125	\$961
1.07	Materials and Services	\$0	\$324	\$0	\$0	\$49	\$372
1.09	Energy	\$0	\$0	\$0	\$888	\$133	\$1,022
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$449	\$67	\$516
Undistributed	Subtotal	\$1,125	\$431	\$0	\$4,671	\$920	\$7,147
SAFSTOR Pd 3	Subtotal	\$1,125	\$431	\$0	\$4,671	\$920	\$7,147

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Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 4 Completion of SAFSTOR Preparations							
Distributed							
4.01	Volume Reduce Control Rods Blades and LPRMS and Place Waste in Interim Storage	\$533	\$330	\$903	\$0	\$406	\$2,173
4.02	Drain Spent Fuel Pool and Process Liquid Waste	\$0	\$0	\$0	\$0	\$0	\$0
4.03	Flush and Drain Essential Systems Following Fuel Pool Closure	\$24	\$10	\$29	\$0	\$15	\$78
4.04	Removal and Interim Storage of Spent Resins, Filter Media and Tank Sludge	\$25	\$25	\$72	\$0	\$28	\$151
4.05	Removal and Disposal of Off Gas System Adsorber	\$25	\$25	\$2,429	\$0	\$570	\$3,049
4.06	Segment, Package and Dispose of Spent Fuel Pool Island Equipment	\$7	\$1	\$135	\$0	\$33	\$176
4.07	Secure Site for Dormancy Period	\$0	\$0	\$0	\$1,500	\$195	\$1,695
Distributed	Subtotal	\$614	\$391	\$3,568	\$1,500	\$1,247	\$7,322
Undistributed							
1.01	Utility Staff	\$2,261	\$0	\$0	\$0	\$294	\$2,555
1.02	Utility Staff HP Supplies	\$0	\$130	\$0	\$0	\$20	\$150
1.03	Security Guard Force	\$442	\$0	\$0	\$0	\$66	\$508
1.04	Insurance	\$0	\$0	\$0	\$508	\$76	\$584
1.05	Property Taxes	\$0	\$0	\$0	\$8	\$1	\$9
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$315	\$47	\$363
1.07	Materials and Services	\$0	\$742	\$0	\$0	\$111	\$853
1.08	DAW Disposal	\$0	\$0	\$9	\$0	\$1	\$10
1.09	Energy	\$0	\$0	\$0	\$317	\$48	\$364
1.11	DGC HP Supplies	\$0	\$96	\$0	\$0	\$14	\$110
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$93	\$14	\$107
Undistributed	Subtotal	\$2,703	\$968	\$9	\$1,241	\$692	\$5,613
SAFSTOR Pd 4	Subtotal	\$3,317	\$1,359	\$3,577	\$2,741	\$1,939	\$12,935

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Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 5 Dormancy With Interim Waste and Dry Spent Fuel Storage							
Distributed							
5.01	Transport and Dispose of Greater Than Class A Waste in Interim Storage	\$85	\$371	\$9,019	\$0	\$2,179	\$11,655
Distributed	Subtotal	\$85	\$371	\$9,019	\$0	\$2,179	\$11,655
Undistributed							
1.01	Utility Staff	\$923	\$0	\$0	\$0	\$120	\$1,043
1.02	Utility Staff HP Supplies	\$0	\$141	\$0	\$0	\$21	\$162
1.03	Security Guard Force	\$566	\$0	\$0	\$0	\$85	\$651
1.04	Insurance	\$0	\$0	\$0	\$3,257	\$489	\$3,746
1.05	Property Taxes	\$0	\$0	\$0	\$53	\$8	\$61
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,106	\$166	\$1,272
1.07	Materials and Services	\$0	\$429	\$0	\$0	\$64	\$493
1.08	DAW Disposal	\$0	\$0	\$1	\$0	\$0	\$1
1.09	Energy	\$0	\$0	\$0	\$257	\$39	\$295
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$595	\$89	\$684
Undistributed	Subtotal	\$1,489	\$570	\$1	\$5,268	\$1,081	\$8,408
SAFSTOR Pd 5	Subtotal	\$1,574	\$941	\$9,020	\$5,268	\$3,260	\$20,063

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Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 6 Dormancy With Dry Storage							
Distributed							
6.01	Bituminous Roof Replacement	\$259	\$89	\$38	\$0	\$58	\$444
Distributed	Subtotal	\$259	\$89	\$38	\$0	\$58	\$444
Undistributed							
1.01	Utility Staff	\$5,160	\$0	\$0	\$0	\$671	\$5,830
1.02	Utility Staff HP Supplies	\$0	\$790	\$0	\$0	\$118	\$908
1.03	Security Guard Force	\$3,167	\$0	\$0	\$0	\$475	\$3,642
1.04	Insurance	\$0	\$0	\$0	\$14,514	\$2,177	\$16,691
1.05	Property Taxes	\$0	\$0	\$0	\$296	\$44	\$340
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$6,185	\$928	\$7,112
1.07	Materials and Services	\$0	\$2,396	\$0	\$0	\$359	\$2,755
1.09	Energy	\$0	\$0	\$0	\$1,084	\$163	\$1,247
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$3,325	\$499	\$3,824
Undistributed	Subtotal	\$8,327	\$3,186	\$0	\$25,404	\$5,434	\$42,349
SAFSTOR Pd 6	Subtotal	\$8,586	\$3,275	\$38	\$25,404	\$5,492	\$42,793

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Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 7 Dormancy Only							
Distributed							
7.01	Bituminous Roof Replacement	\$259	\$89	\$38	\$0	\$58	\$444
Distributed	Subtotal	\$259	\$89	\$38	\$0	\$58	\$444
Undistributed							
1.01	Utility Staff	\$2,478	\$0	\$0	\$0	\$322	\$2,800
1.02	Utility Staff HP Supplies	\$0	\$310	\$0	\$0	\$47	\$357
1.03	Security Guard Force	\$6,219	\$0	\$0	\$0	\$933	\$7,152
1.04	Insurance	\$0	\$0	\$0	\$5,701	\$855	\$6,556
1.05	Property Taxes	\$0	\$0	\$0	\$116	\$17	\$134
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$2,429	\$364	\$2,794
1.07	Materials and Services	\$0	\$2,635	\$0	\$0	\$395	\$3,030
1.09	Energy	\$0	\$0	\$0	\$426	\$64	\$490
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$2,612	\$392	\$3,004
Undistributed	Subtotal	\$8,697	\$2,945	\$0	\$11,284	\$3,389	\$26,317
SAFSTOR Pd 7	Subtotal	\$8,956	\$3,034	\$38	\$11,284	\$3,447	\$26,761

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Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 8 Decommissioning Planning During Dormancy							
Distributed							
8.01	Decommissioning Planning and Design	\$236	\$0	\$0	\$0	\$31	\$267
8.02	Planning and Design of Site Characterization	\$311	\$3	\$0	\$0	\$41	\$356
8.03	Prepare Integrated Work Sequence and Schedule for Decommissioning	\$137	\$0	\$0	\$0	\$18	\$155
8.04	Prepare Decommissioning Activity Specifications	\$2,486	\$20	\$0	\$0	\$326	\$2,832
8.05	Prepare License Termination Plan	\$317	\$10	\$0	\$0	\$42	\$369
8.06	Prepare Detailed Work Procedures for Decommissioning	\$2,259	\$8	\$0	\$0	\$295	\$2,561
8.07	Preparation of Decommissioning License Documents	\$1,661	\$7	\$0	\$0	\$217	\$1,885
8.08	Planning and Design of Site Revitalization	\$915	\$14	\$0	\$0	\$121	\$1,051
8.09	Administrative Activities	\$757	\$4	\$0	\$0	\$99	\$860
8.10	Design Containment Access Modifications	\$221	\$3	\$0	\$0	\$29	\$253
8.11	Select Decommissioning General Contractor	\$251	\$4	\$0	\$0	\$33	\$289
Distributed	Subtotal	\$9,551	\$73	\$0	\$0	\$1,252	\$10,878
Undistributed							
1.01	Utility Staff	\$3,729	\$0	\$0	\$0	\$485	\$4,214
1.02	Utility Staff HP Supplies	\$0	\$101	\$0	\$0	\$15	\$116
1.04	Insurance	\$0	\$0	\$0	\$1,063	\$159	\$1,222
1.05	Property Taxes	\$0	\$0	\$0	\$17	\$3	\$20
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$361	\$54	\$415
1.07	Materials and Services	\$0	\$1,244	\$0	\$0	\$187	\$1,431
1.09	Energy	\$0	\$0	\$0	\$63	\$9	\$73
1.10	Decommissioning General Contractor Staff	\$1,929	\$0	\$0	\$0	\$251	\$2,179
1.11	DGC HP Supplies	\$0	\$128	\$0	\$0	\$19	\$147
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$388	\$58	\$446

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Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Undistributed	Subtotal	\$5,658	\$1,473	\$0	\$1,892	\$1,240	\$10,263
SAFSTOR Pd 8	Subtotal	\$15,209	\$1,546	\$0	\$1,892	\$2,492	\$21,141

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Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 9 Dismantlement Site Modifications and Preparations							
Distributed							
9.01	Revitalize Infrastructure and Repower Site	\$0	\$0	\$0	\$27,957	\$3,634	\$31,591
9.02	Perform Post-SAFSTOR Baseline Radiation Survey	\$233	\$88	\$0	\$0	\$42	\$363
9.03	Finalize Residual Radiation Inventory	\$37	\$41	\$0	\$0	\$10	\$88
9.04	Select Shipping Casks and Obtain Shipping Permits	\$29	\$0	\$0	\$0	\$4	\$33
9.05	Design, Specify, and Procure Special Items and Materials	\$782	\$5,300	\$0	\$0	\$791	\$6,873
9.06	Modify Containment Access	\$300	\$554	\$0	\$0	\$111	\$965
9.07	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	\$0	\$869	\$0	\$0	\$113	\$982
9.08	Test Special Cutting and Handling Equipment and Train Operators	\$882	\$145	\$0	\$0	\$134	\$1,161
9.09	Procure Non-Engineered Standard Equipment	\$0	\$4,444	\$0	\$0	\$578	\$5,022
Distributed	Subtotal	\$2,263	\$11,441	\$0	\$27,957	\$5,417	\$47,078
Undistributed							
1.01	Utility Staff	\$26,091	\$0	\$0	\$0	\$3,392	\$29,483
1.02	Utility Staff HP Supplies	\$0	\$899	\$0	\$0	\$135	\$1,034
1.03	Security Guard Force	\$1,996	\$0	\$0	\$0	\$299	\$2,295
1.04	Insurance	\$0	\$0	\$0	\$956	\$143	\$1,100
1.05	Property Taxes	\$0	\$0	\$0	\$16	\$2	\$18
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$594	\$89	\$683
1.07	Materials and Services	\$0	\$8,054	\$0	\$0	\$1,208	\$9,262
1.08	DAW Disposal	\$0	\$0	\$21	\$0	\$3	\$24
1.09	Energy	\$0	\$0	\$0	\$645	\$97	\$742
1.10	Decommissioning General Contractor Staff	\$16,313	\$0	\$0	\$0	\$2,121	\$18,434
1.11	DGC HP Supplies	\$0	\$769	\$0	\$0	\$115	\$884
Undistributed	Subtotal	\$44,400	\$9,722	\$21	\$2,211	\$7,604	\$63,959

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Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 9	Subtotal	\$46,663	\$21,163	\$21	\$30,168	\$13,021	\$111,037

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2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 10 Major Component Removal							
Distributed							
10.01	Remove, Package and Dispose of Non-Essential Systems	\$10,049	\$2,322	\$7,230	\$0	\$4,508	\$24,109
10.02	Segment, Package and Dispose of Nuclear Steam Supply System	\$2,343	\$923	\$29,805	\$0	\$7,606	\$40,677
10.03	Decon Shield Plugs, Pool Plugs and Stud Tensioners	\$37	\$7	\$142	\$0	\$43	\$229
10.04	Remove and Dispose of Spent Fuel Storage Racks	\$51	\$234	\$1,451	\$0	\$399	\$2,136
10.05	Finalize Internals and Vessel Segmenting Details	\$18	\$0	\$0	\$0	\$4	\$22
10.06	Reactor Vessel Insulation Removal and Disposal	\$104	\$15	\$214	\$0	\$109	\$441
10.07	Segment, Package and Ship Reactor Internals	\$2,790	\$950	\$8,641	\$0	\$3,773	\$16,153
10.08	Package and Ship Reactor Pressure Vessel	\$2,922	\$1,073	\$6,513	\$0	\$3,336	\$13,843
10.09	Drain Dryer Separator Pool and Process Liquid Waste	\$0	\$0	\$0	\$0	\$0	\$0
10.10	Removal and Disposal of Sacrificial Shield Wall and Reactor Pedestal	\$219	\$447	\$830	\$0	\$344	\$1,840
10.11	Segment, Package and Dispose of Refueling Bridge	\$50	\$9	\$262	\$0	\$74	\$395
10.12	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	\$22	\$4	\$131	\$0	\$36	\$194
10.13	Remove, Package and Dispose of Remaining Active Plant Systems	\$3,210	\$1,032	\$1,407	\$0	\$1,299	\$6,948
Distributed	Subtotal	\$21,815	\$7,016	\$56,626	\$0	\$21,531	\$106,987
Undistributed							
1.01	Utility Staff	\$28,823	\$0	\$0	\$0	\$3,747	\$32,570
1.02	Utility Staff HP Supplies	\$0	\$1,094	\$0	\$0	\$164	\$1,258
1.03	Security Guard Force	\$2,566	\$0	\$0	\$0	\$385	\$2,951
1.04	Insurance	\$0	\$0	\$0	\$1,230	\$184	\$1,414
1.05	Property Taxes	\$0	\$0	\$0	\$20	\$3	\$23
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,258	\$189	\$1,446
1.07	Materials and Services	\$0	\$8,673	\$0	\$0	\$1,301	\$9,974
1.08	DAW Disposal	\$0	\$0	\$246	\$0	\$37	\$282
1.09	Energy	\$0	\$0	\$0	\$1,250	\$188	\$1,438

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Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
1.10	Decommissioning General Contractor Staff	\$28,276	\$0	\$0	\$0	\$3,676	\$31,952
1.11	DGC HP Supplies	\$0	\$1,514	\$0	\$0	\$227	\$1,741
Undistributed	Subtotal	\$59,665	\$11,281	\$246	\$3,758	\$10,101	\$85,049
SAFSTOR Pd 1	Subtotal	\$81,480	\$18,297	\$56,872	\$3,758	\$31,632	\$192,036

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 11 Site Decontamination							
Distributed							
11.01	Decon Reactor Building	\$2,761	\$2,213	\$4,493	\$0	\$2,177	\$11,644
11.02	Decon Turbine Building	\$541	\$768	\$530	\$0	\$423	\$2,262
11.03	Decon Radwaste Building	\$116	\$144	\$169	\$0	\$99	\$528
11.04	Decon HPCI and RCIC Building	\$26	\$39	\$25	\$0	\$21	\$110
11.05	Decon Administration Building	\$9	\$5	\$10	\$0	\$6	\$30
11.06	Decon Off-Gas Retention Building	\$44	\$17	\$21	\$0	\$19	\$100
11.07	Decon Low Level Radwaste Storage and Processing	\$208	\$312	\$255	\$0	\$178	\$954
11.08	Decon Off-Gas Stack	\$52	\$48	\$142	\$0	\$56	\$298
11.10	Remove Underground Storm Drains and Manholes	\$33	\$25	\$34	\$0	\$21	\$114
11.11	Final Status Survey for Structures	\$5,188	\$928	\$0	\$921	\$915	\$7,952
11.12	Final Status Survey for Land Areas	\$915	\$54	\$0	\$0	\$126	\$1,094
11.13	Prepare Final Report of Dismantling Program	\$65	\$3	\$0	\$0	\$9	\$76
Distributed Subtotal		\$9,958	\$4,556	\$5,679	\$921	\$4,050	\$25,162
Undistributed							
1.01	Utility Staff	\$19,014	\$0	\$0	\$0	\$2,472	\$21,486
1.02	Utility Staff HP Supplies	\$0	\$1,258	\$0	\$0	\$189	\$1,447
1.03	Security Guard Force	\$2,193	\$0	\$0	\$0	\$329	\$2,522
1.04	Insurance	\$0	\$0	\$0	\$1,051	\$158	\$1,208
1.05	Property Taxes	\$0	\$0	\$0	\$17	\$3	\$20
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,075	\$161	\$1,236
1.07	Materials and Services	\$0	\$6,139	\$0	\$0	\$921	\$7,060
1.08	DAW Disposal	\$0	\$0	\$115	\$0	\$17	\$132
1.09	Energy	\$0	\$0	\$0	\$946	\$142	\$1,088
1.10	Decommissioning General Contractor Staff	\$16,941	\$0	\$0	\$0	\$2,202	\$19,144

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
1.11	DGC HP Supplies	\$0	\$720	\$0	\$0	\$108	\$827
Undistributed	Subtotal	\$38,148	\$8,117	\$115	\$3,089	\$6,702	\$56,170
SAFSTOR Pd 1	Subtotal	\$48,106	\$12,673	\$5,794	\$4,010	\$10,752	\$81,332

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
A. License Termination Subtotal		\$257,032	\$73,841	\$75,855	\$90,841	\$80,726	\$578,297
B. Spent Fuel							
Dry Pd 1 Fuel Pool Island Design							
Distributed							
12.01	Design Spent Fuel Support System Modifications	\$370	\$6	\$0	\$0	\$49	\$425
12.02	Design Control Room Relocation	\$358	\$5	\$0	\$0	\$47	\$411
12.03	Design Spent Fuel Storage Security Modifications	\$275	\$4	\$0	\$0	\$36	\$315
Distributed	Subtotal	\$1,003	\$15	\$0	\$0	\$132	\$1,151
Undistributed							
2.01	Utility Spent Fuel Staff	\$93	\$0	\$0	\$0	\$12	\$106
Undistributed	Subtotal	\$93	\$0	\$0	\$0	\$12	\$106
Dry Pd 1	Subtotal	\$1,096	\$15	\$0	\$0	\$144	\$1,257

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 2 Spent Fuel Cooling and Transfer to Dry Storage							
Distributed							
13.01	Install Spent Fuel Pool System Modifications	\$119	\$1,658	\$0	\$0	\$231	\$2,008
13.02	Implement Control Room Modifications	\$956	\$1,434	\$0	\$0	\$311	\$2,701
13.03	Implement Spent Fuel Pool Security Modifications	\$500	\$750	\$0	\$0	\$163	\$1,413
13.04	Purchase of Dry Storage Modules for Fuel Assemblies	\$0	\$36,162	\$0	\$0	\$5,424	\$41,586
Distributed	Subtotal	\$1,575	\$40,004	\$0	\$0	\$6,129	\$47,708
Undistributed							
2.01	Utility Spent Fuel Staff	\$2,049	\$0	\$0	\$0	\$266	\$2,316
2.02	Utility Staff HP Supplies	\$0	\$791	\$0	\$0	\$119	\$910
2.03	Fuel Pool Maintenance and Operation Staff	\$15,537	\$0	\$0	\$0	\$2,330	\$17,867
2.05	Security Guard Force	\$26,769	\$0	\$0	\$0	\$4,015	\$30,784
2.06	Insurance	\$0	\$0	\$0	\$4,239	\$636	\$4,875
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$6,372	\$956	\$7,328
2.08	Energy	\$0	\$0	\$0	\$1,432	\$215	\$1,647
2.09	Materials and Services	\$0	\$13,124	\$0	\$0	\$1,969	\$15,093
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$999	\$150	\$1,149
Undistributed	Subtotal	\$44,355	\$13,915	\$0	\$13,042	\$10,656	\$81,969
Dry Pd 2	Subtotal	\$45,930	\$53,919	\$0	\$13,042	\$16,785	\$129,677

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 3 Dry Storage During Dormancy							
Undistributed							
2.01	Utility Spent Fuel Staff	\$41,942	\$0	\$0	\$0	\$5,452	\$47,395
2.02	Utility Staff HP Supplies	\$0	\$3,275	\$0	\$0	\$491	\$3,767
2.04	Additional Staff for Spent Fuel Shipping	\$8,098	\$0	\$0	\$0	\$1,215	\$9,313
2.05	Security Guard Force	\$18,445	\$0	\$0	\$0	\$2,767	\$21,212
2.06	Insurance	\$0	\$0	\$0	\$6,575	\$986	\$7,561
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$15,467	\$2,320	\$17,787
2.08	Energy	\$0	\$0	\$0	\$1,350	\$203	\$1,553
2.09	Materials and Services	\$0	\$21,212	\$0	\$0	\$3,182	\$24,394
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$2,582	\$387	\$2,970
Undistributed	Subtotal	\$68,485	\$24,487	\$0	\$25,974	\$17,003	\$135,952
Dry Pd 3	Subtotal	\$68,485	\$24,487	\$0	\$25,974	\$17,003	\$135,952

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 4 ISFSI Decommissioning							
Distributed							
15.01	Preparation and NRC Review of License Termination Plan	\$63	\$0	\$0	\$101	\$21	\$186
15.02	Verification Survey of Horizontal Storage Modules	\$74	\$27	\$0	\$0	\$13	\$115
15.03	Preparation of Final Report on Decommissioning and NRC Review	\$31	\$0	\$0	\$60	\$12	\$102
15.04	Clean Demolition of ISFSI	\$1,215	\$662	\$1,875	\$0	\$554	\$4,305
Distributed	Subtotal	\$1,383	\$689	\$1,875	\$161	\$600	\$4,708
Undistributed							
2.01	Utility Spent Fuel Staff	\$686	\$0	\$0	\$0	\$89	\$775
2.05	Security Guard Force	\$663	\$0	\$0	\$0	\$99	\$762
2.08	Energy	\$0	\$0	\$0	\$5	\$1	\$5
2.09	Materials and Services	\$0	\$379	\$0	\$0	\$57	\$436
2.12	Decommissioning General Contractor Staff	\$408	\$0	\$0	\$0	\$61	\$469
Undistributed	Subtotal	\$1,757	\$379	\$0	\$5	\$307	\$2,447
Dry Pd 4	Subtotal	\$3,140	\$1,068	\$1,875	\$166	\$907	\$7,155

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
B. Spent Fuel	Subtotal	\$118,651	\$79,489	\$1,875	\$39,182	\$34,839	\$274,041
C. Greenfield							
Grn Pd 1	Clean Building Demolition						
Distributed							
16.01	Clean Building Demolition Equipment	\$0	\$738	\$0	\$0	\$170	\$907
16.02	Demolish Low-Level Radwaste Building	\$2,288	\$1,129	\$204	\$0	\$584	\$4,204
16.03	Demolish Turbine Building	\$2,607	\$1,258	\$151	\$0	\$648	\$4,664
16.04	Demolish Data Acquisition and Technical Support Building	\$214	\$142	\$50	\$0	\$67	\$472
16.05	Demolish Control and Administrative Buildings	\$571	\$260	\$58	\$0	\$142	\$1,031
16.06	Demolish Guard Facility	\$91	\$42	\$8	\$0	\$22	\$163
16.07	Demolish HPCI and RCIC Building	\$120	\$135	\$6	\$0	\$48	\$309
16.08	Demolish Reactor Building	\$3,298	\$1,836	\$295	\$0	\$890	\$6,319
16.09	Demolish Cooling Towers and Related Structures	\$533	\$696	\$185	\$0	\$253	\$1,667
16.10	Demolish Training Center	\$97	\$42	\$10	\$0	\$23	\$172
16.11	Demolish Plant Support Center	\$222	\$159	\$59	\$0	\$73	\$514
16.12	Remove and Dispose of Underground Storage Tanks	\$18	\$22	\$0	\$0	\$7	\$48
16.13	Demolish Off-Gas Stack	\$85	\$45	\$18	\$0	\$24	\$172
16.14	Demolish Existing Waste Water Treatment Plant	\$13	\$1	\$3	\$0	\$2	\$20
16.15	Demolish Remaining Structures	\$1,524	\$2,042	\$496	\$0	\$732	\$4,794
Distributed	Subtotal	\$11,681	\$8,547	\$1,543	\$0	\$3,685	\$25,456
Undistributed							
3.01	Utility Staff	\$3,765	\$0	\$0	\$0	\$489	\$4,255
3.02	Security Guard Force	\$606	\$0	\$0	\$0	\$91	\$697
3.03	Decommissioning General Contractor Staff	\$6,313	\$0	\$0	\$0	\$821	\$7,133
3.04	Energy	\$0	\$0	\$0	\$392	\$59	\$451
3.05	Insurance	\$0	\$0	\$0	\$141	\$21	\$163

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Undistributed	Subtotal	\$10,684	\$0	\$0	\$533	\$1,481	\$12,699
Grn Pd 1	Subtotal	\$22,365	\$8,547	\$1,543	\$533	\$5,166	\$38,155

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Grn Pd 2 Site Restoration							
Distributed							
17.01	Site Restoration Equipment	\$0	\$103	\$0	\$0	\$24	\$127
17.02	Remove Temporary Structures	\$37	\$30	\$0	\$0	\$12	\$78
17.03	Finish Grading and Re-Vegetate Site	\$376	\$272	\$0	\$0	\$111	\$760
Distributed	Subtotal	\$413	\$405	\$0	\$0	\$147	\$965
Undistributed							
3.01	Utility Staff	\$619	\$0	\$0	\$0	\$81	\$700
3.02	Security Guard Force	\$154	\$0	\$0	\$0	\$23	\$177
3.03	Decommissioning General Contractor Staff	\$1,113	\$0	\$0	\$0	\$145	\$1,257
3.04	Energy	\$0	\$0	\$0	\$2	\$0	\$3
3.05	Insurance	\$0	\$0	\$0	\$36	\$5	\$41
Undistributed	Subtotal	\$1,886	\$0	\$0	\$38	\$254	\$2,178
Grn Pd 2	Subtotal	\$2,299	\$405	\$0	\$38	\$401	\$3,143

Table 2
Duane Arnold SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Scenario Number 2		License Status	Existing	Unit 1 Shut Down Date	2/21/2014
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
C. Greenfield	Subtotal	\$24,664	\$8,952	\$1,543	\$571	\$5,567	\$41,298
Scenario No. 2	Total	\$400,347	\$162,282	\$79,273	\$130,594	\$121,132	\$893,636

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
A. License Termination							
Decon Pd 1 Decommissioning Planning Prior to Shutdown							
Distributed							
1.01	Prepare Written Notification of Cessation of Operations	\$0	\$0	\$0	\$0	\$0	\$0
1.02	Prepare Written Notification of Fuel Removal from Vessel	\$0	\$0	\$0	\$0	\$0	\$0
1.03	Decommissioning Planning and Design	\$236	\$0	\$0	\$0	\$31	\$267
1.04	Prepare Integrated Work Sequence and Schedule for Decommissioning	\$137	\$0	\$0	\$0	\$18	\$155
1.05	Prepare Decommissioning Activity Specifications	\$2,486	\$20	\$0	\$0	\$326	\$2,832
1.06	Prepare License Termination Plan	\$317	\$10	\$0	\$0	\$42	\$369
1.07	Prepare Detailed Work Procedures for Decommissioning	\$2,259	\$8	\$0	\$0	\$295	\$2,561
1.08	Preparation of Decommissioning License Documents	\$1,661	\$7	\$0	\$0	\$217	\$1,885
1.09	Planning and Design of Site Repowering	\$579	\$7	\$0	\$0	\$76	\$662
1.10	Design Containment Access Modifications	\$221	\$3	\$0	\$0	\$29	\$253
1.11	Planning and Design of Primary System Decontamination	\$202	\$2	\$0	\$0	\$26	\$230
1.12	Select Decommissioning General Contractor	\$251	\$4	\$0	\$0	\$33	\$289
Distributed	Subtotal	\$8,349	\$61	\$0	\$0	\$1,093	\$9,503
Undistributed							
1.01	Utility Staff	\$2,480	\$0	\$0	\$0	\$322	\$2,802
1.10	Decommissioning General Contractor Staff	\$1,929	\$0	\$0	\$0	\$251	\$2,179
Undistributed	Subtotal	\$4,409	\$0	\$0	\$0	\$573	\$4,981
Decon Pd 1	Subtotal	\$12,758	\$61	\$0	\$0	\$1,666	\$14,484

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Decon Pd 2 Site Modifications and Preparations							
Distributed							
2.01	Administrative Activities	\$757	\$4	\$0	\$0	\$99	\$860
2.02	Planning for Asbestos Abatement	\$132	\$2	\$0	\$0	\$17	\$152
2.03	Planning and Design of Site Characterization	\$311	\$3	\$0	\$0	\$41	\$356
2.04	Perform Baseline Radiation Survey	\$233	\$88	\$0	\$0	\$42	\$363
2.05	Primary System Decontamination	\$848	\$805	\$894	\$0	\$586	\$3,134
2.06	Flush and Drain Non-Essential Systems	\$35	\$6	\$596	\$0	\$146	\$783
2.07	Hot Spot Removal	\$545	\$176	\$894	\$0	\$372	\$1,987
2.08	Finalize Residual Radiation Inventory	\$37	\$41	\$0	\$0	\$10	\$88
2.09	Select Shipping Casks and Obtain Shipping Permits	\$29	\$0	\$0	\$0	\$4	\$33
2.10	Design, Specify, and Procure Special Items and Materials	\$782	\$5,300	\$0	\$0	\$791	\$6,873
2.11	Modify Containment Access	\$300	\$554	\$0	\$0	\$111	\$965
2.12	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	\$0	\$869	\$0	\$0	\$113	\$982
2.13	Repower Site	\$524	\$1,578	\$0	\$0	\$273	\$2,376
2.14	Test Special Cutting and Handling Equipment and Train Operators	\$882	\$145	\$0	\$0	\$134	\$1,161
2.15	Procure Non-Engineered Standard Equipment	\$0	\$4,444	\$0	\$0	\$578	\$5,022
2.16	Asbestos Abatement	\$145	\$57	\$196	\$0	\$92	\$490
Distributed	Subtotal	\$5,560	\$14,072	\$2,580	\$0	\$3,409	\$25,625
Undistributed							
1.01	Utility Staff	\$33,684	\$0	\$0	\$0	\$4,379	\$38,063
1.02	Utility Staff HP Supplies	\$0	\$1,161	\$0	\$0	\$174	\$1,335
1.03	Security Guard Force	\$2,577	\$0	\$0	\$0	\$387	\$2,963
1.04	Insurance	\$0	\$0	\$0	\$1,235	\$185	\$1,420
1.05	Property Taxes	\$0	\$0	\$0	\$20	\$3	\$23
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$767	\$115	\$882

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date: 1/1/2025			

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
1.07	Materials and Services	\$0	\$10,398	\$0	\$0	\$1,560	\$11,958
1.08	DAW Disposal	\$0	\$0	\$45	\$0	\$7	\$52
1.09	Energy	\$0	\$0	\$0	\$1,000	\$150	\$1,150
1.10	Decommissioning General Contractor Staff	\$21,060	\$0	\$0	\$0	\$2,738	\$23,798
1.11	DGC HP Supplies	\$0	\$992	\$0	\$0	\$149	\$1,141
Undistributed	Subtotal	\$57,321	\$12,551	\$45	\$3,022	\$9,847	\$82,785
Decon Pd 2	Subtotal	\$62,881	\$26,623	\$2,625	\$3,022	\$13,256	\$108,410

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Decon Pd 3 Major Component Removal							
Distributed							
3.01	Remove, Package and Dispose of Non-Essential Systems	\$10,049	\$2,322	\$7,230	\$0	\$4,508	\$24,109
3.02	Segment, Package and Dispose of Nuclear Steam Supply System	\$2,343	\$923	\$29,805	\$0	\$7,606	\$40,677
3.03	Decon Shield Plugs, Pool Plugs and Stud Tensioners	\$37	\$7	\$142	\$0	\$43	\$229
3.04	Volume Reduce Control Rods Blades and LPRMS	\$323	\$201	\$5,173	\$0	\$1,310	\$7,006
3.05	Purchase Dry Storage Modules for GTCC Waste	\$0	\$1,096	\$0	\$0	\$252	\$1,348
3.06	Finalize Internals and Vessel Segmenting Details	\$18	\$2	\$0	\$0	\$4	\$24
3.07	Reactor Vessel Insulation Removal and Disposal	\$104	\$15	\$214	\$0	\$109	\$441
3.08	Segment, Package and Ship Reactor Internals	\$3,080	\$1,018	\$22,310	\$0	\$7,352	\$33,759
3.09	Package and Ship Reactor Pressure Vessel	\$2,922	\$1,073	\$6,513	\$0	\$3,336	\$13,843
3.10	Drain Dryer Separator Pool and Process Liquid Waste	\$0	\$0	\$0	\$0	\$0	\$0
3.11	Removal and Disposal of Sacrificial Shield Wall and Reactor Pedestal	\$219	\$447	\$830	\$0	\$344	\$1,840
3.12	Remove and Dispose of Hazardous Waste	\$0	\$0	\$0	\$131	\$20	\$151
Distributed	Subtotal	\$19,095	\$7,104	\$72,217	\$131	\$24,884	\$123,427
Undistributed							
1.01	Utility Staff	\$47,010	\$0	\$0	\$0	\$6,111	\$53,121
1.02	Utility Staff HP Supplies	\$0	\$1,784	\$0	\$0	\$268	\$2,052
1.03	Security Guard Force	\$4,186	\$0	\$0	\$0	\$628	\$4,813
1.04	Insurance	\$0	\$0	\$0	\$2,006	\$301	\$2,306
1.05	Property Taxes	\$0	\$0	\$0	\$33	\$5	\$37
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$2,051	\$308	\$2,359
1.07	Materials and Services	\$0	\$14,145	\$0	\$0	\$2,122	\$16,267
1.08	DAW Disposal	\$0	\$0	\$209	\$0	\$31	\$240
1.09	Energy	\$0	\$0	\$0	\$1,953	\$293	\$2,246
1.10	Decommissioning General Contractor Staff	\$46,118	\$0	\$0	\$0	\$5,995	\$52,113

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
1.11	DGC HP Supplies	\$0	\$2,470	\$0	\$0	\$370	\$2,840
Undistributed	Subtotal	\$97,314	\$18,399	\$209	\$6,043	\$16,432	\$138,394
Decon Pd 3	Subtotal	\$116,409	\$25,503	\$72,426	\$6,174	\$41,316	\$261,821

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Decon Pd 4 Balance of Plant Decontamination Distributed							
4.01	Remove and Dispose of Spent Fuel Storage Racks	\$51	\$234	\$1,451	\$0	\$399	\$2,136
4.02	Drain Spent Fuel Pool and Process Liquid Waste	\$0	\$0	\$0	\$0	\$0	\$0
4.03	Flush and Drain Essential Systems Following Fuel Pool Closure	\$24	\$10	\$596	\$0	\$145	\$775
4.04	Removal and Disposal of Spent Resins, Filter Media and Tank Sludge	\$25	\$25	\$1,490	\$0	\$354	\$1,895
4.05	Removal and Disposal of Off Gas System Adsorber	\$25	\$25	\$2,429	\$0	\$570	\$3,049
4.06	Segment, Package and Dispose of Refueling Bridge	\$50	\$9	\$262	\$0	\$74	\$395
4.07	Segment, Package and Dispose of Spent Fuel Pool Island Equipment	\$7	\$1	\$135	\$0	\$33	\$176
4.08	Remove, Package and Dispose of Remaining Active Plant Systems	\$3,210	\$1,032	\$1,407	\$0	\$1,299	\$6,948
4.09	Decon Reactor Building	\$2,761	\$2,213	\$4,493	\$0	\$2,177	\$11,644
4.10	Decon Turbine Building	\$541	\$768	\$530	\$0	\$423	\$2,262
4.11	Decon Radwaste Building	\$116	\$144	\$169	\$0	\$99	\$528
4.12	Decon HPCI and RCIC Building	\$26	\$39	\$25	\$0	\$21	\$110
4.13	Decon Administration Building	\$9	\$5	\$10	\$0	\$6	\$30
4.14	Decon Off-Gas Retention Building	\$44	\$17	\$21	\$0	\$19	\$100
4.15	Decon Low Level Radwaste Storage and Processing	\$208	\$312	\$255	\$0	\$178	\$954
4.16	Decon Off-Gas Stack	\$52	\$48	\$142	\$0	\$56	\$298
4.17	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	\$22	\$4	\$131	\$0	\$36	\$194
4.18	Remove Underground Storm Drains and Manholes	\$33	\$25	\$34	\$0	\$21	\$114
4.19	Final Status Survey for Structures	\$5,188	\$928	\$0	\$921	\$1,545	\$8,583
4.20	Final Status Survey for Land Areas	\$915	\$54	\$0	\$0	\$223	\$1,191
4.21	Prepare Final Report of Dismantling Program	\$65	\$3	\$0	\$0	\$16	\$83
Distributed	Subtotal	\$13,372	\$5,896	\$13,580	\$921	\$7,694	\$41,465
Undistributed							
1.01	Utility Staff	\$20,571	\$0	\$0	\$0	\$2,674	\$23,245

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
1.02	Utility Staff HP Supplies	\$0	\$1,361	\$0	\$0	\$204	\$1,565
1.03	Security Guard Force	\$2,373	\$0	\$0	\$0	\$356	\$2,729
1.04	Insurance	\$0	\$0	\$0	\$1,137	\$171	\$1,307
1.05	Property Taxes	\$0	\$0	\$0	\$18	\$3	\$21
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$706	\$106	\$812
1.07	Materials and Services	\$0	\$6,642	\$0	\$0	\$996	\$7,638
1.08	DAW Disposal	\$0	\$0	\$160	\$0	\$24	\$184
1.09	Energy	\$0	\$0	\$0	\$966	\$145	\$1,111
1.10	Decommissioning General Contractor Staff	\$18,328	\$0	\$0	\$0	\$2,383	\$20,711
1.11	DGC HP Supplies	\$0	\$778	\$0	\$0	\$117	\$895
Undistributed	Subtotal	\$41,272	\$8,781	\$160	\$2,827	\$7,179	\$60,218
Decon Pd 4	Subtotal	\$54,644	\$14,677	\$13,740	\$3,748	\$14,873	\$101,683

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
A. License Termination Subtotal		\$246,692	\$66,864	\$88,791	\$12,944	\$71,111	\$486,398
B. Spent Fuel							
Dry Pd 1 Fuel Pool Island Design							
Distributed							
5.01	Design Spent Fuel Support System Modifications	\$370	\$6	\$0	\$0	\$49	\$425
5.02	Design Control Room Relocation	\$358	\$5	\$0	\$0	\$47	\$411
5.03	Design Spent Fuel Storage Security Modifications	\$275	\$4	\$0	\$0	\$36	\$315
Distributed	Subtotal	\$1,003	\$15	\$0	\$0	\$132	\$1,151
Undistributed							
2.01	Utility Spent Fuel Staff	\$93	\$0	\$0	\$0	\$12	\$106
Undistributed	Subtotal	\$93	\$0	\$0	\$0	\$12	\$106
Dry Pd 1	Subtotal	\$1,096	\$15	\$0	\$0	\$144	\$1,257

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date: 1/1/2025			

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 2 Spent Fuel Cooling and Transfer to Dry Storage							
Distributed							
6.01	Install Spent Fuel Pool System Modifications	\$119	\$1,658	\$0	\$0	\$231	\$2,008
6.02	Implement Control Room Modifications	\$956	\$1,434	\$0	\$0	\$311	\$2,701
6.03	Implement Spent Fuel Pool Security Modifications	\$500	\$750	\$0	\$0	\$163	\$1,413
6.04	Purchase of Dry Storage Modules for Fuel Assemblies	\$0	\$23,012	\$0	\$0	\$3,452	\$26,464
Distributed	Subtotal	\$1,575	\$26,854	\$0	\$0	\$4,157	\$32,586
Undistributed							
2.01	Utility Spent Fuel Staff	\$2,050	\$0	\$0	\$0	\$267	\$2,317
2.02	Utility Staff HP Supplies	\$0	\$791	\$0	\$0	\$119	\$910
2.03	Fuel Pool Maintenance and Operation Staff	\$15,545	\$0	\$0	\$0	\$2,332	\$17,877
2.05	Security Guard Force	\$26,784	\$0	\$0	\$0	\$4,018	\$30,801
2.06	Insurance	\$0	\$0	\$0	\$4,241	\$636	\$4,877
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$6,376	\$956	\$7,332
2.08	Energy	\$0	\$0	\$0	\$1,433	\$215	\$1,648
2.09	Materials and Services	\$0	\$13,131	\$0	\$0	\$1,970	\$15,101
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$1,000	\$150	\$1,150
Undistributed	Subtotal	\$44,379	\$13,922	\$0	\$13,050	\$10,663	\$82,013
Dry Pd 2	Subtotal	\$45,954	\$40,776	\$0	\$13,050	\$14,820	\$114,599

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 3 Dry Storage During Decommissioning							
Undistributed							
2.01	Utility Spent Fuel Staff	\$4,223	\$0	\$0	\$0	\$549	\$4,772
2.02	Utility Staff HP Supplies	\$0	\$330	\$0	\$0	\$49	\$379
2.04	Additional Staff for Spent Fuel Shipping	\$815	\$0	\$0	\$0	\$122	\$938
2.05	Security Guard Force	\$1,857	\$0	\$0	\$0	\$279	\$2,136
2.06	Insurance	\$0	\$0	\$0	\$662	\$99	\$761
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$1,557	\$234	\$1,791
2.08	Energy	\$0	\$0	\$0	\$11	\$2	\$13
2.09	Materials and Services	\$0	\$2,136	\$0	\$0	\$320	\$2,456
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$260	\$39	\$299
Undistributed	Subtotal	\$6,895	\$2,466	\$0	\$2,490	\$1,693	\$13,545
Dry Pd 3	Subtotal	\$6,895	\$2,466	\$0	\$2,490	\$1,693	\$13,545

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 4 Dry Storage Only							
Undistributed							
2.01	Utility Spent Fuel Staff	\$29,194	\$0	\$0	\$0	\$3,795	\$32,990
2.02	Utility Staff HP Supplies	\$0	\$2,280	\$0	\$0	\$342	\$2,622
2.04	Additional Staff for Spent Fuel Shipping	\$5,637	\$0	\$0	\$0	\$846	\$6,483
2.05	Security Guard Force	\$12,839	\$0	\$0	\$0	\$1,926	\$14,765
2.06	Insurance	\$0	\$0	\$0	\$7,572	\$1,136	\$8,708
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$10,766	\$1,615	\$12,381
2.08	Energy	\$0	\$0	\$0	\$940	\$141	\$1,081
2.09	Materials and Services	\$0	\$14,765	\$0	\$0	\$2,215	\$16,980
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$1,797	\$270	\$2,067
2.11	Property Taxes	\$0	\$0	\$0	\$240	\$36	\$276
Undistributed	Subtotal	\$47,670	\$17,045	\$0	\$21,315	\$12,322	\$98,353
Dry Pd 4	Subtotal	\$47,670	\$17,045	\$0	\$21,315	\$12,322	\$98,353

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 5 ISFSI Decommissioning							
Distributed							
9.01	Preparation and NRC Review of License Termination Plan	\$63	\$0	\$0	\$101	\$21	\$186
9.02	Verification Survey of Horizontal Storage Modules	\$46	\$22	\$0	\$0	\$9	\$77
9.03	Preparation of Final Report on Decommissioning and NRC Review	\$31	\$0	\$0	\$60	\$12	\$102
9.04	Clean Demolition of ISFSI	\$1,103	\$612	\$1,514	\$0	\$481	\$3,710
Distributed	Subtotal	\$1,243	\$634	\$1,514	\$161	\$523	\$4,075
Undistributed							
2.01	Utility Spent Fuel Staff	\$686	\$0	\$0	\$0	\$89	\$775
2.05	Security Guard Force	\$663	\$0	\$0	\$0	\$99	\$762
2.06	Insurance	\$0	\$0	\$0	\$155	\$23	\$178
2.08	Energy	\$0	\$0	\$0	\$5	\$1	\$5
2.09	Materials and Services	\$0	\$379	\$0	\$0	\$57	\$436
2.11	Property Taxes	\$0	\$0	\$0	\$12	\$2	\$14
2.12	Decommissioning General Contractor Staff	\$408	\$0	\$0	\$0	\$61	\$469
Undistributed	Subtotal	\$1,757	\$379	\$0	\$172	\$332	\$2,639
Dry Pd 5	Subtotal	\$3,000	\$1,013	\$1,514	\$333	\$855	\$6,714

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
B. Spent Fuel	Subtotal	\$104,615	\$61,315	\$1,514	\$37,188	\$29,834	\$234,468
C. Greenfield							
Grn Pd 1	Clean Building Demolition						
Distributed							
10.01	Clean Building Demolition Equipment	\$0	\$738	\$0	\$0	\$170	\$907
10.02	Install Temporary Office Buildings	\$14	\$63	\$0	\$0	\$16	\$93
10.03	Demolish Low-Level Radwaste Building	\$2,288	\$1,129	\$204	\$0	\$584	\$4,204
10.04	Demolish Turbine Building	\$2,607	\$1,258	\$151	\$0	\$648	\$4,664
10.05	Demolish Data Acquisition and Technical Support Building	\$214	\$142	\$50	\$0	\$67	\$472
10.06	Demolish Control and Administrative Buildings	\$571	\$260	\$58	\$0	\$142	\$1,031
10.07	Demolish Guard Facility	\$91	\$42	\$8	\$0	\$22	\$163
10.08	Demolish HPCI and RCIC Building	\$120	\$135	\$6	\$0	\$48	\$309
10.09	Demolish Reactor Building	\$3,298	\$1,836	\$295	\$0	\$890	\$6,319
10.10	Demolish Cooling Towers and Related Structures	\$533	\$696	\$185	\$0	\$253	\$1,667
10.11	Demolish Training Center	\$97	\$42	\$10	\$0	\$23	\$172
10.12	Demolish Plant Support Center	\$222	\$159	\$59	\$0	\$73	\$514
10.13	Remove and Dispose of Underground Storage Tanks	\$18	\$22	\$0	\$0	\$7	\$48
10.14	Demolish Off-Gas Stack	\$85	\$45	\$18	\$0	\$24	\$172
10.15	Demolish Existing Waste Water Treatment Plant	\$13	\$1	\$3	\$0	\$2	\$20
10.16	Demolish Remaining Structures	\$1,524	\$2,042	\$496	\$0	\$732	\$4,794
Distributed	Subtotal	\$11,695	\$8,610	\$1,543	\$0	\$3,701	\$25,549
Undistributed							
3.01	Utility Staff	\$3,765	\$0	\$0	\$0	\$489	\$4,255
3.02	Security Guard Force	\$606	\$0	\$0	\$0	\$91	\$697
3.03	Decommissioning General Contractor Staff	\$6,313	\$0	\$0	\$0	\$821	\$7,133
3.04	Energy	\$0	\$0	\$0	\$244	\$37	\$281

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands								
No	Item Description		Labor	Equipment	Disposal	Other	Contingency	Total
3.05	Insurance		\$0	\$0	\$0	\$141	\$21	\$163
Undistributed	Subtotal		\$10,684	\$0	\$0	\$385	\$1,459	\$12,529
Grn Pd 1	Subtotal		\$22,379	\$8,610	\$1,543	\$385	\$5,160	\$38,078

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Grn Pd 2 Site Restoration							
Distributed							
11.01	Site Restoration Equipment	\$0	\$103	\$0	\$0	\$24	\$127
11.02	Remove Temporary Structures	\$11	\$9	\$0	\$0	\$3	\$23
11.03	Finish Grading and Re-Vegetate Site	\$376	\$272	\$0	\$0	\$111	\$760
Distributed	Subtotal	\$387	\$384	\$0	\$0	\$138	\$910
Undistributed							
3.01	Utility Staff	\$496	\$0	\$0	\$0	\$64	\$560
3.02	Security Guard Force	\$123	\$0	\$0	\$0	\$18	\$142
3.03	Decommissioning General Contractor Staff	\$890	\$0	\$0	\$0	\$116	\$1,006
3.04	Energy	\$0	\$0	\$0	\$2	\$0	\$2
3.05	Insurance	\$0	\$0	\$0	\$29	\$4	\$33
Undistributed	Subtotal	\$1,509	\$0	\$0	\$31	\$202	\$1,743
Grn Pd 2	Subtotal	\$1,896	\$384	\$0	\$31	\$340	\$2,653

Table 3
Duane Arnold Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Scenario Number 3		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Decon	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
C. Greenfield	Subtotal	\$24,275	\$8,994	\$1,543	\$416	\$5,500	\$40,731
Scenario No. 3	Total	\$375,582	\$137,173	\$91,848	\$50,548	\$106,445	\$761,597

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date: 1/1/2025			

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
A. License Termination							
SAFSTOR Pd 1 SAFSTOR Planning Prior to Shutdown							
Distributed							
1.01	Prepare Written Notification of Cessation of Operations	\$0	\$0	\$0	\$0	\$0	\$0
1.02	Prepare Written Notification of Fuel Removal from Vessel	\$0	\$0	\$0	\$0	\$0	\$0
1.03	SAFSTOR Planning and Design	\$236	\$0	\$0	\$0	\$31	\$267
1.04	Planning for SAFSTOR Baseline Radiation Survey	\$311	\$3	\$0	\$0	\$41	\$356
1.05	Prepare SAFSTOR Plan	\$1,881	\$32	\$0	\$0	\$249	\$2,162
1.06	Preparation of SAFSTOR License Documents	\$1,661	\$7	\$0	\$0	\$217	\$1,885
1.07	Prepare SAFSTOR Integrated Work Schedule	\$79	\$4	\$0	\$0	\$11	\$93
1.08	Prepare SAFSTOR Activity Specifications	\$588	\$5	\$0	\$0	\$77	\$670
1.09	Administrative Activities in Preparation for SAFSTOR	\$149	\$0	\$0	\$0	\$19	\$169
1.10	Prepare Detailed SAFSTOR Work Procedures	\$1,158	\$8	\$0	\$0	\$152	\$1,317
1.11	Planning for Asbestos Abatement	\$132	\$2	\$0	\$0	\$17	\$152
1.12	Select SAFSTOR General Contractor	\$251	\$4	\$0	\$0	\$33	\$289
1.13	Planning and Design of Primary System Decontamination	\$202	\$2	\$0	\$0	\$26	\$230
Distributed	Subtotal	\$6,648	\$67	\$0	\$0	\$873	\$7,590
Undistributed							
1.01	Utility Staff	\$2,480	\$0	\$0	\$0	\$322	\$2,802
1.10	Decommissioning General Contractor Staff	\$1,929	\$0	\$0	\$0	\$251	\$2,179
Undistributed	Subtotal	\$4,409	\$0	\$0	\$0	\$573	\$4,981
SAFSTOR Pd 1	Subtotal	\$11,057	\$67	\$0	\$0	\$1,446	\$12,571

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 2 SAFSTOR Preparations Following Shutdown							
Distributed							
2.01	Procure Non-Engineered Standard Equipment For SAFSTOR Preparations	\$0	\$3,417	\$0	\$0	\$444	\$3,862
2.02	Primary System Decontamination	\$848	\$805	\$894	\$0	\$586	\$3,134
2.03	Flush, Drain and De-Energize Non-Essential Systems	\$16	\$6	\$596	\$0	\$142	\$761
2.04	Drain and Process Suppression Pool Water and Hydrolase Torus Walls	\$0	\$0	\$0	\$0	\$0	\$0
2.05	Drain and Process Dryer Storage Pool Water and Hydrolase Dryer Storage Pool	\$0	\$0	\$0	\$0	\$0	\$0
2.06	General Area Cleanup	\$1,146	\$478	\$165	\$0	\$411	\$2,200
2.07	Asbestos Abatement	\$145	\$57	\$196	\$0	\$92	\$490
2.08	Remove and Dispose of Hazardous Waste	\$0	\$0	\$0	\$131	\$20	\$151
2.09	Prepare SAFSTOR Report	\$46	\$0	\$0	\$0	\$6	\$52
Distributed	Subtotal	\$2,201	\$4,763	\$1,851	\$131	\$1,701	\$10,650
Undistributed							
1.01	Utility Staff	\$16,842	\$0	\$0	\$0	\$2,189	\$19,031
1.02	Utility Staff HP Supplies	\$0	\$580	\$0	\$0	\$87	\$668
1.03	Security Guard Force	\$1,288	\$0	\$0	\$0	\$193	\$1,482
1.04	Insurance	\$0	\$0	\$0	\$617	\$93	\$710
1.05	Property Taxes	\$0	\$0	\$0	\$10	\$2	\$12
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$383	\$57	\$441
1.07	Materials and Services	\$0	\$5,199	\$0	\$0	\$780	\$5,979
1.08	DAW Disposal	\$0	\$0	\$28	\$0	\$4	\$32
1.09	Energy	\$0	\$0	\$0	\$500	\$75	\$575
1.10	Decommissioning General Contractor Staff	\$10,530	\$0	\$0	\$0	\$1,369	\$11,899
1.11	DGC HP Supplies	\$0	\$496	\$0	\$0	\$74	\$571
Undistributed	Subtotal	\$28,660	\$6,275	\$28	\$1,510	\$4,923	\$41,400

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 2	Subtotal	\$30,861	\$11,038	\$1,879	\$1,641	\$6,624	\$52,050

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 3 SAFSTOR Preparation Delay During Spent Fuel Pool Operations							
Undistributed							
1.01	Utility Staff	\$697	\$0	\$0	\$0	\$91	\$788
1.02	Utility Staff HP Supplies	\$0	\$107	\$0	\$0	\$16	\$123
1.03	Security Guard Force	\$428	\$0	\$0	\$0	\$64	\$492
1.04	Insurance	\$0	\$0	\$0	\$2,461	\$369	\$2,830
1.05	Property Taxes	\$0	\$0	\$0	\$40	\$6	\$46
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$836	\$125	\$961
1.07	Materials and Services	\$0	\$324	\$0	\$0	\$49	\$372
1.09	Energy	\$0	\$0	\$0	\$889	\$133	\$1,022
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$449	\$67	\$517
Undistributed	Subtotal	\$1,125	\$431	\$0	\$4,675	\$920	\$7,151
SAFSTOR Pd 3	Subtotal	\$1,125	\$431	\$0	\$4,675	\$920	\$7,151

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 4 Completion of SAFSTOR Preparations							
Distributed							
4.01	Volume Reduce Control Rods Blades and LPRMS	\$323	\$201	\$5,173	\$0	\$1,310	\$7,006
4.02	Drain Spent Fuel Pool and Process Liquid Waste	\$0	\$0	\$0	\$0	\$0	\$0
4.03	Flush and Drain Essential Systems Following Fuel Pool Closure	\$24	\$10	\$596	\$0	\$145	\$775
4.04	Removal and Disposal of Spent Resins, Filter Media and Tank Sludge	\$25	\$25	\$1,490	\$0	\$354	\$1,895
4.05	Removal and Disposal of Off Gas System Adsorber	\$25	\$25	\$2,429	\$0	\$570	\$3,049
4.06	Segment, Package and Dispose of Spent Fuel Pool Island Equipment	\$7	\$1	\$135	\$0	\$33	\$176
4.07	Secure Site for Dormancy Period	\$0	\$0	\$0	\$1,500	\$225	\$1,725
Distributed	Subtotal	\$404	\$262	\$9,823	\$1,500	\$2,637	\$14,626
Undistributed							
1.01	Utility Staff	\$2,261	\$0	\$0	\$0	\$294	\$2,555
1.02	Utility Staff HP Supplies	\$0	\$130	\$0	\$0	\$20	\$150
1.03	Security Guard Force	\$442	\$0	\$0	\$0	\$66	\$508
1.04	Insurance	\$0	\$0	\$0	\$508	\$76	\$584
1.05	Property Taxes	\$0	\$0	\$0	\$8	\$1	\$9
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$315	\$47	\$363
1.07	Materials and Services	\$0	\$742	\$0	\$0	\$111	\$853
1.08	DAW Disposal	\$0	\$0	\$5	\$0	\$1	\$5
1.09	Energy	\$0	\$0	\$0	\$317	\$48	\$364
1.11	DGC HP Supplies	\$0	\$96	\$0	\$0	\$14	\$110
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$93	\$14	\$107
Undistributed	Subtotal	\$2,703	\$968	\$5	\$1,241	\$692	\$5,608
SAFSTOR Pd 4	Subtotal	\$3,107	\$1,230	\$9,828	\$2,741	\$3,329	\$20,234

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 5 Dormancy With Dry Storage							
Distributed							
5.01	Bituminous Roof Replacement - 20 year	\$259	\$89	\$38	\$0	\$58	\$444
Distributed	Subtotal	\$259	\$89	\$38	\$0	\$58	\$444
Undistributed							
1.01	Utility Staff	\$4,862	\$0	\$0	\$0	\$632	\$5,494
1.02	Utility Staff HP Supplies	\$0	\$744	\$0	\$0	\$112	\$856
1.03	Security Guard Force	\$2,984	\$0	\$0	\$0	\$448	\$3,432
1.04	Insurance	\$0	\$0	\$0	\$17,158	\$2,574	\$19,732
1.05	Property Taxes	\$0	\$0	\$0	\$279	\$42	\$320
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$5,828	\$874	\$6,702
1.07	Materials and Services	\$0	\$2,258	\$0	\$0	\$339	\$2,596
1.09	Energy	\$0	\$0	\$0	\$1,021	\$153	\$1,175
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$3,133	\$470	\$3,603
Undistributed	Subtotal	\$7,846	\$3,002	\$0	\$27,419	\$5,644	\$43,910
SAFSTOR Pd 5	Subtotal	\$8,105	\$3,091	\$38	\$27,419	\$5,702	\$44,354

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 6 Dormancy Only							
Distributed							
6.01	Bituminous Roof Replacement - 40 year	\$259	\$89	\$38	\$0	\$58	\$444
Distributed	Subtotal	\$259	\$89	\$38	\$0	\$58	\$444
Undistributed							
1.01	Utility Staff	\$3,971	\$0	\$0	\$0	\$516	\$4,487
1.02	Utility Staff HP Supplies	\$0	\$497	\$0	\$0	\$75	\$572
1.03	Security Guard Force	\$9,965	\$0	\$0	\$0	\$1,495	\$11,460
1.04	Insurance	\$0	\$0	\$0	\$9,135	\$1,370	\$10,505
1.05	Property Taxes	\$0	\$0	\$0	\$186	\$28	\$214
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$3,892	\$584	\$4,476
1.07	Materials and Services	\$0	\$4,222	\$0	\$0	\$633	\$4,856
1.09	Energy	\$0	\$0	\$0	\$682	\$102	\$785
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$4,185	\$628	\$4,813
Undistributed	Subtotal	\$13,936	\$4,719	\$0	\$18,080	\$5,431	\$42,168
SAFSTOR Pd 6	Subtotal	\$14,195	\$4,808	\$38	\$18,080	\$5,489	\$42,612

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date: 1/1/2025			

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 7 Decommissioning Planning During Dormancy							
Distributed							
7.01	Decommissioning Planning and Design	\$236	\$0	\$0	\$0	\$31	\$267
7.02	Planning and Design of Site Characterization	\$311	\$3	\$0	\$0	\$41	\$356
7.03	Prepare Integrated Work Sequence and Schedule for Decommissioning	\$137	\$0	\$0	\$0	\$18	\$155
7.04	Prepare Decommissioning Activity Specifications	\$2,486	\$20	\$0	\$0	\$326	\$2,832
7.05	Prepare License Termination Plan	\$317	\$10	\$0	\$0	\$42	\$369
7.06	Prepare Detailed Work Procedures for Decommissioning	\$2,259	\$8	\$0	\$0	\$295	\$2,561
7.07	Preparation of Decommissioning License Documents	\$1,661	\$7	\$0	\$0	\$217	\$1,885
7.08	Planning and Design of Site Revitalization	\$915	\$14	\$0	\$0	\$121	\$1,051
7.09	Administrative Activities	\$757	\$4	\$0	\$0	\$99	\$860
7.10	Design Containment Access Modifications	\$221	\$3	\$0	\$0	\$29	\$253
7.11	Select Decommissioning General Contractor	\$251	\$4	\$0	\$0	\$33	\$289
Distributed	Subtotal	\$9,551	\$73	\$0	\$0	\$1,252	\$10,878
Undistributed							
1.01	Utility Staff	\$3,729	\$0	\$0	\$0	\$485	\$4,214
1.02	Utility Staff HP Supplies	\$0	\$101	\$0	\$0	\$15	\$116
1.04	Insurance	\$0	\$0	\$0	\$1,063	\$159	\$1,222
1.05	Property Taxes	\$0	\$0	\$0	\$17	\$3	\$20
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$660	\$99	\$759
1.07	Materials and Services	\$0	\$1,244	\$0	\$0	\$187	\$1,431
1.09	Energy	\$0	\$0	\$0	\$63	\$9	\$73
1.10	Decommissioning General Contractor Staff	\$1,929	\$0	\$0	\$0	\$251	\$2,179
1.11	DGC HP Supplies	\$0	\$128	\$0	\$0	\$19	\$147
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$388	\$58	\$446

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Undistributed	Subtotal	\$5,658	\$1,473	\$0	\$2,191	\$1,285	\$10,607
SAFSTOR Pd 7	Subtotal	\$15,209	\$1,546	\$0	\$2,191	\$2,537	\$21,485

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 8 Dismantlement Site Modifications and Preparations							
Distributed							
8.01	Revitalize Infrastructure and Repower Site	\$0	\$0	\$0	\$27,957	\$3,634	\$31,591
8.02	Perform Post-SAFSTOR Baseline Radiation Survey	\$233	\$88	\$0	\$0	\$42	\$363
8.03	Finalize Residual Radiation Inventory	\$37	\$41	\$0	\$0	\$10	\$88
8.04	Select Shipping Casks and Obtain Shipping Permits	\$29	\$0	\$0	\$0	\$4	\$33
8.05	Design, Specify, and Procure Special Items and Materials	\$782	\$5,300	\$0	\$0	\$791	\$6,873
8.06	Modify Containment Access	\$300	\$554	\$0	\$0	\$111	\$965
8.07	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	\$0	\$869	\$0	\$0	\$113	\$982
8.08	Test Special Cutting and Handling Equipment and Train Operators	\$882	\$145	\$0	\$0	\$134	\$1,161
8.09	Procure Non-Engineered Standard Equipment	\$0	\$4,444	\$0	\$0	\$578	\$5,022
Distributed	Subtotal	\$2,263	\$11,441	\$0	\$27,957	\$5,417	\$47,078
Undistributed							
1.01	Utility Staff	\$23,514	\$0	\$0	\$0	\$3,057	\$26,571
1.02	Utility Staff HP Supplies	\$0	\$810	\$0	\$0	\$122	\$932
1.03	Security Guard Force	\$1,799	\$0	\$0	\$0	\$270	\$2,069
1.04	Insurance	\$0	\$0	\$0	\$862	\$129	\$991
1.05	Property Taxes	\$0	\$0	\$0	\$14	\$2	\$16
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$881	\$132	\$1,014
1.07	Materials and Services	\$0	\$7,259	\$0	\$0	\$1,089	\$8,348
1.08	DAW Disposal	\$0	\$0	\$21	\$0	\$3	\$24
1.09	Energy	\$0	\$0	\$0	\$581	\$87	\$669
1.10	Decommissioning General Contractor Staff	\$14,702	\$0	\$0	\$0	\$1,911	\$16,613
1.11	DGC HP Supplies	\$0	\$693	\$0	\$0	\$104	\$797
Undistributed	Subtotal	\$40,015	\$8,762	\$21	\$2,338	\$6,906	\$58,044

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 8	Subtotal	\$42,278	\$20,203	\$21	\$30,295	\$12,323	\$105,122

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 9 Major Component Removal							
Distributed							
9.01	Remove, Package and Dispose of Non-Essential Systems	\$10,049	\$2,322	\$7,230	\$0	\$4,508	\$24,109
9.02	Segment, Package and Dispose of Nuclear Steam Supply System	\$2,343	\$923	\$29,805	\$0	\$7,606	\$40,677
9.03	Decon Shield Plugs, Pool Plugs and Stud Tensioners	\$37	\$7	\$142	\$0	\$43	\$229
9.04	Remove and Dispose of Spent Fuel Storage Racks	\$51	\$234	\$1,451	\$0	\$399	\$2,136
9.05	Finalize Internals and Vessel Segmenting Details	\$18	\$0	\$0	\$0	\$4	\$22
9.06	Reactor Vessel Insulation Removal and Disposal	\$104	\$15	\$214	\$0	\$109	\$441
9.07	Segment, Package and Ship Reactor Internals	\$2,790	\$950	\$8,641	\$0	\$3,773	\$16,153
9.08	Package and Ship Reactor Pressure Vessel	\$2,922	\$1,073	\$6,513	\$0	\$3,336	\$13,843
9.09	Drain Dryer Separator Pool and Process Liquid Waste	\$0	\$0	\$0	\$0	\$0	\$0
9.10	Removal and Disposal of Sacrificial Shield Wall	\$219	\$447	\$830	\$0	\$344	\$1,840
9.11	Segment, Package and Dispose of Refueling Bridge	\$50	\$9	\$262	\$0	\$74	\$395
9.12	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	\$22	\$4	\$131	\$0	\$36	\$194
9.13	Remove, Package and Dispose of Remaining Active Plant Systems	\$3,210	\$1,032	\$1,407	\$0	\$1,299	\$6,948
Distributed	Subtotal	\$21,815	\$7,016	\$56,626	\$0	\$21,531	\$106,987
Undistributed							
1.01	Utility Staff	\$28,823	\$0	\$0	\$0	\$3,747	\$32,570
1.02	Utility Staff HP Supplies	\$0	\$1,094	\$0	\$0	\$164	\$1,258
1.03	Security Guard Force	\$2,566	\$0	\$0	\$0	\$385	\$2,951
1.04	Insurance	\$0	\$0	\$0	\$1,230	\$184	\$1,414
1.05	Property Taxes	\$0	\$0	\$0	\$20	\$3	\$23
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,258	\$189	\$1,446
1.07	Materials and Services	\$0	\$8,673	\$0	\$0	\$1,301	\$9,974
1.08	DAW Disposal	\$0	\$0	\$246	\$0	\$37	\$282
1.09	Energy	\$0	\$0	\$0	\$1,106	\$166	\$1,272

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
1.10	Decommissioning General Contractor Staff	\$28,276	\$0	\$0	\$0	\$3,676	\$31,952
1.11	DGC HP Supplies	\$0	\$1,514	\$0	\$0	\$227	\$1,741
Undistributed	Subtotal	\$59,665	\$11,281	\$246	\$3,614	\$10,079	\$84,883
SAFSTOR Pd 9	Subtotal	\$81,480	\$18,297	\$56,872	\$3,614	\$31,610	\$191,870

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
SAFSTOR Pd 10 Site Decontamination							
Distributed							
10.01	Decon Reactor Building	\$2,761	\$2,213	\$4,493	\$0	\$2,177	\$11,644
10.02	Decon Turbine Building	\$541	\$768	\$530	\$0	\$423	\$2,262
10.03	Decon Radwaste Building	\$116	\$144	\$169	\$0	\$99	\$528
10.04	Decon HPCI and RCIC Building	\$26	\$39	\$25	\$0	\$21	\$110
10.05	Decon Administration Building	\$9	\$5	\$10	\$0	\$6	\$30
10.06	Decon Off-Gas Retention Building	\$44	\$17	\$21	\$0	\$19	\$100
10.07	Decon Low Level Radwaste Storage and Processing	\$208	\$312	\$255	\$0	\$178	\$954
10.08	Decon Off-Gas Stack	\$52	\$48	\$142	\$0	\$56	\$298
10.10	Remove Underground Storm Drains and Manholes	\$33	\$25	\$34	\$0	\$21	\$114
10.11	Final Status Survey for Structures	\$5,188	\$928	\$0	\$921	\$915	\$7,952
10.12	Final Status Survey for Land Areas	\$915	\$54	\$0	\$0	\$126	\$1,094
10.13	Prepare Final Report of Dismantling Program	\$65	\$3	\$0	\$0	\$9	\$76
Distributed	Subtotal	\$9,958	\$4,556	\$5,679	\$921	\$4,050	\$25,162
Undistributed							
1.01	Utility Staff	\$19,014	\$0	\$0	\$0	\$2,472	\$21,486
1.02	Utility Staff HP Supplies	\$0	\$1,258	\$0	\$0	\$189	\$1,447
1.03	Security Guard Force	\$2,193	\$0	\$0	\$0	\$329	\$2,522
1.04	Insurance	\$0	\$0	\$0	\$1,051	\$158	\$1,208
1.05	Property Taxes	\$0	\$0	\$0	\$17	\$3	\$20
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$652	\$98	\$750
1.07	Materials and Services	\$0	\$6,139	\$0	\$0	\$921	\$7,060
1.08	DAW Disposal	\$0	\$0	\$115	\$0	\$17	\$132
1.09	Energy	\$0	\$0	\$0	\$815	\$122	\$937
1.10	Decommissioning General Contractor Staff	\$16,941	\$0	\$0	\$0	\$2,202	\$19,144

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
1.11	DGC HP Supplies	\$0	\$720	\$0	\$0	\$108	\$827
Undistributed	Subtotal	\$38,148	\$8,117	\$115	\$2,535	\$6,619	\$55,533
SAFSTOR Pd 1	Subtotal	\$48,106	\$12,673	\$5,794	\$3,456	\$10,669	\$80,695

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
A. License Termination Subtotal		\$255,523	\$73,384	\$74,470	\$94,112	\$80,649	\$578,144
B. Spent Fuel							
Dry Pd 1 Fuel Pool Island Design							
Distributed							
11.01	Design Spent Fuel Support System Modifications	\$370	\$6	\$0	\$0	\$49	\$425
11.02	Design Control Room Relocation	\$358	\$5	\$0	\$0	\$47	\$411
11.03	Design Spent Fuel Storage Security Modifications	\$275	\$4	\$0	\$0	\$36	\$315
Distributed	Subtotal	\$1,003	\$15	\$0	\$0	\$132	\$1,151
Undistributed							
2.01	Utility Spent Fuel Staff	\$93	\$0	\$0	\$0	\$12	\$106
Undistributed	Subtotal	\$93	\$0	\$0	\$0	\$12	\$106
Dry Pd 1	Subtotal	\$1,096	\$15	\$0	\$0	\$144	\$1,257

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 2 Spent Fuel Cooling and Transfer to Dry Storage							
Distributed							
12.01	Install Spent Fuel Pool System Modifications	\$119	\$1,658	\$0	\$0	\$231	\$2,008
12.02	Implement Control Room Modifications	\$956	\$1,434	\$0	\$0	\$311	\$2,701
12.03	Implement Spent Fuel Pool Security Modifications	\$500	\$750	\$0	\$0	\$163	\$1,413
12.04	Purchase of Dry Storage Modules for Fuel Assemblies	\$0	\$23,012	\$0	\$0	\$3,452	\$26,464
Distributed	Subtotal	\$1,575	\$26,854	\$0	\$0	\$4,157	\$32,586
Undistributed							
2.01	Utility Spent Fuel Staff	\$2,049	\$0	\$0	\$0	\$266	\$2,316
2.02	Utility Staff HP Supplies	\$0	\$791	\$0	\$0	\$119	\$910
2.03	Fuel Pool Maintenance and Operation Staff	\$15,537	\$0	\$0	\$0	\$2,330	\$17,867
2.05	Security Guard Force	\$26,769	\$0	\$0	\$0	\$4,015	\$30,784
2.06	Insurance	\$0	\$0	\$0	\$4,239	\$636	\$4,875
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$6,372	\$956	\$7,328
2.08	Energy	\$0	\$0	\$0	\$1,432	\$215	\$1,647
2.09	Materials and Services	\$0	\$13,124	\$0	\$0	\$1,969	\$15,093
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$999	\$150	\$1,149
Undistributed	Subtotal	\$44,355	\$13,915	\$0	\$13,042	\$10,656	\$81,969
Dry Pd 2	Subtotal	\$45,930	\$40,769	\$0	\$13,042	\$14,813	\$114,555

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 3 Dry Storage During Dormancy							
Undistributed							
2.01	Utility Spent Fuel Staff	\$33,420	\$0	\$0	\$0	\$4,345	\$37,765
2.02	Utility Staff HP Supplies	\$0	\$2,610	\$0	\$0	\$391	\$3,001
2.04	Additional Staff for Spent Fuel Shipping	\$6,453	\$0	\$0	\$0	\$968	\$7,421
2.05	Security Guard Force	\$14,697	\$0	\$0	\$0	\$2,205	\$16,902
2.06	Insurance	\$0	\$0	\$0	\$5,239	\$786	\$6,025
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$12,324	\$1,849	\$14,173
2.08	Energy	\$0	\$0	\$0	\$1,076	\$161	\$1,237
2.09	Materials and Services	\$0	\$16,902	\$0	\$0	\$2,535	\$19,438
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$2,058	\$309	\$2,366
Undistributed	Subtotal	\$54,570	\$19,512	\$0	\$20,697	\$13,549	\$108,328
Dry Pd 3	Subtotal	\$54,570	\$19,512	\$0	\$20,697	\$13,549	\$108,328

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Dry Pd 4 ISFSI Decommissioning							
Distributed							
14.01	Preparation and NRC Review of License Termination Plan	\$63	\$0	\$0	\$101	\$21	\$186
14.02	Verification Survey of Horizontal Storage Modules	\$46	\$22	\$0	\$0	\$9	\$77
14.03	Preparation of Final Report on Decommissioning and NRC Review	\$31	\$0	\$0	\$60	\$12	\$102
14.04	Clean Demolition of ISFSI	\$1,103	\$612	\$1,514	\$0	\$481	\$3,710
Distributed	Subtotal	\$1,243	\$634	\$1,514	\$161	\$523	\$4,075
Undistributed							
2.01	Utility Spent Fuel Staff	\$687	\$0	\$0	\$0	\$89	\$776
2.05	Security Guard Force	\$664	\$0	\$0	\$0	\$100	\$764
2.08	Energy	\$0	\$0	\$0	\$5	\$1	\$5
2.09	Materials and Services	\$0	\$380	\$0	\$0	\$57	\$437
2.12	Decommissioning General Contractor Staff	\$409	\$0	\$0	\$0	\$61	\$470
Undistributed	Subtotal	\$1,760	\$380	\$0	\$5	\$308	\$2,452
Dry Pd 4	Subtotal	\$3,003	\$1,014	\$1,514	\$166	\$831	\$6,527

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4	License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified	
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025	

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
B. Spent Fuel	Subtotal	\$104,599	\$61,310	\$1,514	\$33,905	\$29,337	\$230,667
C. Greenfield							
Grn Pd 1	Clean Building Demolition						
Distributed							
15.01	Clean Building Demolition Equipment	\$0	\$738	\$0	\$0	\$170	\$907
15.02	Demolish Low-Level Radwaste Building	\$2,288	\$1,129	\$204	\$0	\$584	\$4,204
15.03	Demolish Turbine Building	\$2,607	\$1,258	\$151	\$0	\$648	\$4,664
15.04	Demolish Data Acquisition and Technical Support Building	\$214	\$142	\$50	\$0	\$67	\$472
15.05	Demolish Control and Administrative Buildings	\$571	\$260	\$58	\$0	\$142	\$1,031
15.06	Demolish Guard Facility	\$91	\$42	\$8	\$0	\$22	\$163
15.07	Demolish HPCI and RCIC Building	\$120	\$135	\$6	\$0	\$48	\$309
15.08	Demolish Reactor Building	\$3,298	\$1,836	\$295	\$0	\$890	\$6,319
15.09	Demolish Cooling Towers and Related Structures	\$533	\$696	\$185	\$0	\$253	\$1,667
15.10	Demolish Training Center	\$97	\$42	\$10	\$0	\$23	\$172
15.11	Demolish Plant Support Center	\$222	\$159	\$59	\$0	\$73	\$514
15.12	Remove and Dispose of Underground Storage Tanks	\$18	\$22	\$0	\$0	\$7	\$48
15.13	Demolish Off-Gas Stack	\$85	\$45	\$18	\$0	\$24	\$172
15.14	Demolish Existing Waste Water Treatment Plant	\$13	\$1	\$3	\$0	\$2	\$20
15.15	Demolish Remaining Structures	\$1,524	\$2,042	\$496	\$0	\$732	\$4,794
Distributed	Subtotal	\$11,681	\$8,547	\$1,543	\$0	\$3,685	\$25,456
Undistributed							
3.01	Utility Staff	\$3,765	\$0	\$0	\$0	\$489	\$4,255
3.02	Security Guard Force	\$606	\$0	\$0	\$0	\$91	\$697
3.03	Decommissioning General Contractor Staff	\$6,313	\$0	\$0	\$0	\$821	\$7,133
3.04	Energy	\$0	\$0	\$0	\$392	\$59	\$451
3.05	Insurance	\$0	\$0	\$0	\$141	\$21	\$163

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands							
No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Undistributed	Subtotal	\$10,684	\$0	\$0	\$533	\$1,481	\$12,699
Grn Pd 1	Subtotal	\$22,365	\$8,547	\$1,543	\$533	\$5,166	\$38,155

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
Grn Pd 2 Site Restoration							
Distributed							
16.01	Site Restoration Equipment	\$0	\$103	\$0	\$0	\$24	\$127
16.02	Remove Temporary Structures	\$37	\$30	\$0	\$0	\$12	\$78
16.03	Finish Grading and Re-Vegetate Site	\$376	\$272	\$0	\$0	\$111	\$760
Distributed	Subtotal	\$413	\$405	\$0	\$0	\$147	\$965
Undistributed							
3.01	Utility Staff	\$619	\$0	\$0	\$0	\$81	\$700
3.02	Security Guard Force	\$154	\$0	\$0	\$0	\$23	\$177
3.03	Decommissioning General Contractor Staff	\$1,113	\$0	\$0	\$0	\$145	\$1,257
3.04	Energy	\$0	\$0	\$0	\$2	\$0	\$3
3.05	Insurance	\$0	\$0	\$0	\$36	\$5	\$41
Undistributed	Subtotal	\$1,886	\$0	\$0	\$38	\$254	\$2,178
Grn Pd 2	Subtotal	\$2,299	\$405	\$0	\$38	\$401	\$3,143

Table 4
Duane Arnold SAFSTOR, License Extension, Yucca Mountain Opening 2025

Scenario Number 4		License Status	Extension	Unit 1 Shut Down Date	2/21/2034
Decommissioning Alternative	Safestor	Fuel Pool Systems	Modified		
Spent Fuel Alternative	Dry	Repository Opening Date:	1/1/2025		

2008 Dollars in Thousands

No	Item Description	Labor	Equipment	Disposal	Other	Contingency	Total
C. Greenfield	Subtotal	\$24,664	\$8,952	\$1,543	\$571	\$5,567	\$41,298
Scenario No. 4	Total	\$384,786	\$143,646	\$77,527	\$128,588	\$115,553	\$850,109

Appendix E
Annual Cash Flow Tables

Duane Arnold Annual Cost By Account

2008 Dollars in Thousands

Scenario No 1 Prompt Dismantlement, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Year	License Termination	Spent Fuel	Greenfield	Total
2012	\$103	\$0	\$0	\$103
2013	\$12,587	\$1,257	\$0	\$13,844
2014	\$48,264	\$22,295	\$0	\$70,559
2015	\$54,019	\$25,934	\$0	\$79,953
2016	\$68,770	\$25,934	\$0	\$94,703
2017	\$70,929	\$25,934	\$0	\$96,863
2018	\$70,929	\$25,934	\$0	\$96,863
2019	\$61,000	\$7,050	\$0	\$68,050
2020	\$54,128	\$3,908	\$0	\$58,035
2021	\$13,310	\$3,908	\$25,385	\$42,603
2022	\$5,496	\$3,908	\$15,346	\$24,749
2023	\$13,950	\$3,908	\$0	\$17,858
2024	\$13,950	\$3,908	\$0	\$17,858
2025	\$11,565	\$3,948	\$0	\$15,513
2026	\$0	\$4,104	\$0	\$4,104
2027	\$0	\$4,104	\$0	\$4,104
2028	\$0	\$4,104	\$0	\$4,104
2029	\$0	\$4,104	\$0	\$4,104
2030	\$0	\$4,104	\$0	\$4,104
2031	\$0	\$4,104	\$0	\$4,104
2032	\$0	\$4,104	\$0	\$4,104
2033	\$0	\$4,104	\$0	\$4,104
2034	\$0	\$4,104	\$0	\$4,104
2035	\$0	\$4,104	\$0	\$4,104
2036	\$0	\$4,104	\$0	\$4,104
2037	\$0	\$4,104	\$0	\$4,104
2038	\$0	\$4,104	\$0	\$4,104
2039	\$0	\$4,104	\$0	\$4,104
2040	\$0	\$4,104	\$0	\$4,104
2041	\$0	\$4,104	\$0	\$4,104
2042	\$0	\$4,104	\$0	\$4,104
2043	\$0	\$4,104	\$0	\$4,104
2044	\$0	\$4,104	\$0	\$4,104
2045	\$0	\$4,104	\$0	\$4,104
2046	\$0	\$4,104	\$0	\$4,104
2047	\$0	\$4,104	\$0	\$4,104
2048	\$0	\$4,104	\$0	\$4,104
2049	\$0	\$4,104	\$0	\$4,104
2050	\$0	\$4,104	\$0	\$4,104
2051	\$0	\$4,104	\$0	\$4,104
2052	\$0	\$4,104	\$0	\$4,104
2053	\$0	\$4,900	\$0	\$4,900
2054	\$0	\$4,777	\$0	\$4,777
Total	\$499,002	\$278,300	\$40,731	\$818,033

Duane Arnold Annual Cost By Account

2008 Dollars in Thousands

Scenario No 2 SAFSTOR, Existing License, Yucca Mountain Opening 2025, Interim Waste Storage

Year	License Termination	Spent Fuel	Greenfield	Total
2012	\$90	\$0	\$0	\$90
2013	\$10,925	\$1,257	\$0	\$12,182
2014	\$44,630	\$22,299	\$0	\$66,929
2015	\$8,936	\$25,939	\$0	\$34,875
2016	\$1,790	\$25,939	\$0	\$27,729
2017	\$1,790	\$25,939	\$0	\$27,729
2018	\$1,790	\$25,939	\$0	\$27,729
2019	\$13,330	\$7,027	\$0	\$20,357
2020	\$3,795	\$3,949	\$0	\$7,743
2021	\$3,795	\$3,949	\$0	\$7,743
2022	\$3,795	\$3,949	\$0	\$7,743
2023	\$3,795	\$3,949	\$0	\$7,743
2024	\$3,795	\$3,949	\$0	\$7,743
2025	\$2,035	\$3,949	\$0	\$5,984
2026	\$1,448	\$3,949	\$0	\$5,397
2027	\$1,448	\$3,949	\$0	\$5,397
2028	\$1,448	\$3,949	\$0	\$5,397
2029	\$1,448	\$3,949	\$0	\$5,397
2030	\$1,448	\$3,949	\$0	\$5,397
2031	\$1,448	\$3,949	\$0	\$5,397
2032	\$1,448	\$3,949	\$0	\$5,397
2033	\$1,448	\$3,949	\$0	\$5,397
2034	\$1,448	\$3,949	\$0	\$5,397
2035	\$1,448	\$3,949	\$0	\$5,397
2036	\$1,448	\$3,949	\$0	\$5,397
2037	\$1,448	\$3,949	\$0	\$5,397
2038	\$1,448	\$3,949	\$0	\$5,397
2039	\$1,448	\$3,949	\$0	\$5,397
2040	\$1,448	\$3,949	\$0	\$5,397
2041	\$1,448	\$3,949	\$0	\$5,397
2042	\$1,448	\$3,949	\$0	\$5,397
2043	\$1,448	\$3,949	\$0	\$5,397
2044	\$1,448	\$3,949	\$0	\$5,397
2045	\$1,448	\$3,949	\$0	\$5,397
2046	\$1,448	\$3,949	\$0	\$5,397
2047	\$1,448	\$3,949	\$0	\$5,397
2048	\$1,448	\$3,949	\$0	\$5,397
2049	\$1,448	\$3,949	\$0	\$5,397
2050	\$1,448	\$3,949	\$0	\$5,397
2051	\$1,448	\$3,949	\$0	\$5,397
2052	\$1,448	\$3,949	\$0	\$5,397
2053	\$1,448	\$4,749	\$0	\$6,197
2054	\$1,620	\$4,644	\$0	\$6,263
2055	\$2,305	\$0	\$0	\$2,305
2056	\$2,305	\$0	\$0	\$2,305
2057	\$2,305	\$0	\$0	\$2,305
2058	\$2,305	\$0	\$0	\$2,305
2059	\$2,305	\$0	\$0	\$2,305
2060	\$2,305	\$0	\$0	\$2,305
2061	\$2,305	\$0	\$0	\$2,305
2062	\$2,305	\$0	\$0	\$2,305

2063	\$2,305	\$0	\$0	\$2,305
2064	\$2,305	\$0	\$0	\$2,305
2065	\$2,305	\$0	\$0	\$2,305
2066	\$8,156	\$0	\$0	\$8,156
2067	\$12,229	\$0	\$0	\$12,229
2068	\$63,483	\$0	\$0	\$63,483
2069	\$79,252	\$0	\$0	\$79,252
2070	\$96,018	\$0	\$0	\$96,018
2071	\$81,018	\$0	\$0	\$81,018
2072	\$47,704	\$0	\$0	\$47,704
2073	\$18,639	\$0	\$20,552	\$39,191
2074	\$0	\$0	\$20,746	\$20,746
<hr/>				
Total	\$578,297	\$274,041	\$41,298	\$893,636

Duane Arnold Annual Cost By Account

2008 Dollars in Thousands

Scenario No 3 Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

Year	License Termination	Spent Fuel	Greenfield	Total
2032	\$103	\$0	\$0	\$103
2033	\$12,587	\$1,257	\$0	\$13,844
2034	\$48,234	\$19,696	\$0	\$67,929
2035	\$53,983	\$22,910	\$0	\$76,894
2036	\$76,852	\$22,910	\$0	\$99,762
2037	\$80,306	\$22,910	\$0	\$103,217
2038	\$80,306	\$22,910	\$0	\$103,217
2039	\$65,333	\$6,619	\$0	\$71,952
2040	\$55,135	\$3,907	\$0	\$59,042
2041	\$13,558	\$3,907	\$25,385	\$42,850
2042	\$0	\$3,991	\$15,346	\$19,337
2043	\$0	\$4,104	\$0	\$4,104
2044	\$0	\$4,104	\$0	\$4,104
2045	\$0	\$4,104	\$0	\$4,104
2046	\$0	\$4,104	\$0	\$4,104
2047	\$0	\$4,104	\$0	\$4,104
2048	\$0	\$4,104	\$0	\$4,104
2049	\$0	\$4,104	\$0	\$4,104
2050	\$0	\$4,104	\$0	\$4,104
2051	\$0	\$4,104	\$0	\$4,104
2052	\$0	\$4,104	\$0	\$4,104
2053	\$0	\$4,104	\$0	\$4,104
2054	\$0	\$4,104	\$0	\$4,104
2055	\$0	\$4,104	\$0	\$4,104
2056	\$0	\$4,104	\$0	\$4,104
2057	\$0	\$4,104	\$0	\$4,104
2058	\$0	\$4,104	\$0	\$4,104
2059	\$0	\$4,104	\$0	\$4,104
2060	\$0	\$4,104	\$0	\$4,104
2061	\$0	\$4,104	\$0	\$4,104
2062	\$0	\$4,104	\$0	\$4,104
2063	\$0	\$4,104	\$0	\$4,104
2064	\$0	\$4,104	\$0	\$4,104
2065	\$0	\$4,104	\$0	\$4,104
2066	\$0	\$4,675	\$0	\$4,675
2067	\$0	\$4,387	\$0	\$4,387
Total	\$486,398	\$234,468	\$40,731	\$761,597

Duane Arnold Annual Cost By Account

2008 Dollars in Thousands

Scenario No 4 SAFSTOR, License Extension, Yucca Mountain Opening 2025

Year	License Termination	Spent Fuel	Greenfield	Total
2032	\$90	\$0	\$0	\$90
2033	\$10,925	\$1,257	\$0	\$12,182
2034	\$46,090	\$19,699	\$0	\$65,789
2035	\$9,050	\$22,914	\$0	\$31,964
2036	\$1,789	\$22,914	\$0	\$24,704
2037	\$1,789	\$22,914	\$0	\$24,704
2038	\$1,789	\$22,914	\$0	\$24,704
2039	\$20,545	\$6,605	\$0	\$27,150
2040	\$1,593	\$3,949	\$0	\$5,541
2041	\$1,593	\$3,949	\$0	\$5,541
2042	\$1,593	\$3,949	\$0	\$5,541
2043	\$1,593	\$3,949	\$0	\$5,541
2044	\$1,593	\$3,949	\$0	\$5,541
2045	\$1,593	\$3,949	\$0	\$5,541
2046	\$1,593	\$3,949	\$0	\$5,541
2047	\$1,593	\$3,949	\$0	\$5,541
2048	\$1,593	\$3,949	\$0	\$5,541
2049	\$1,593	\$3,949	\$0	\$5,541
2050	\$1,593	\$3,949	\$0	\$5,541
2051	\$1,593	\$3,949	\$0	\$5,541
2052	\$1,593	\$3,949	\$0	\$5,541
2053	\$1,593	\$3,949	\$0	\$5,541
2054	\$1,593	\$3,949	\$0	\$5,541
2055	\$1,593	\$3,949	\$0	\$5,541
2056	\$1,593	\$3,949	\$0	\$5,541
2057	\$1,593	\$3,949	\$0	\$5,541
2058	\$1,593	\$3,949	\$0	\$5,541
2059	\$1,593	\$3,949	\$0	\$5,541
2060	\$1,593	\$3,949	\$0	\$5,541
2061	\$1,593	\$3,949	\$0	\$5,541
2062	\$1,593	\$3,949	\$0	\$5,541
2063	\$1,593	\$3,949	\$0	\$5,541
2064	\$1,593	\$3,949	\$0	\$5,541
2065	\$1,593	\$3,949	\$0	\$5,541
2066	\$1,593	\$4,516	\$0	\$6,109
2067	\$1,728	\$4,270	\$0	\$5,997
2068	\$2,291	\$0	\$0	\$2,291
2069	\$2,291	\$0	\$0	\$2,291
2070	\$2,291	\$0	\$0	\$2,291
2071	\$2,291	\$0	\$0	\$2,291
2072	\$2,291	\$0	\$0	\$2,291
2073	\$2,291	\$0	\$0	\$2,291
2074	\$2,291	\$0	\$0	\$2,291
2075	\$2,291	\$0	\$0	\$2,291
2076	\$2,291	\$0	\$0	\$2,291
2077	\$2,291	\$0	\$0	\$2,291
2078	\$2,291	\$0	\$0	\$2,291
2079	\$2,291	\$0	\$0	\$2,291
2080	\$2,291	\$0	\$0	\$2,291
2081	\$2,291	\$0	\$0	\$2,291
2082	\$2,291	\$0	\$0	\$2,291

2083	\$2,291	\$0	\$0	\$2,291
2084	\$2,291	\$0	\$0	\$2,291
2085	\$2,291	\$0	\$0	\$2,291
2086	\$8,267	\$0	\$0	\$8,267
2087	\$12,428	\$0	\$0	\$12,428
2088	\$66,616	\$0	\$0	\$66,616
2089	\$84,924	\$0	\$0	\$84,924
2090	\$95,935	\$0	\$0	\$95,935
2091	\$73,366	\$0	\$0	\$73,366
2092	\$47,331	\$0	\$0	\$47,331
2093	\$11,251	\$0	\$25,713	\$36,964
2094	\$0	\$0	\$15,585	\$15,585
<hr/>				
Total	\$578,144	\$230,667	\$41,298	\$850,109

Appendix F

Detailed Annual Cash Flow Tables

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Scenario No 1							
Unit No. Unit 1							
Cost Account A. License Termination							
2012	\$91	\$0	\$0	\$0	\$92	\$12	\$103
2013	\$11,087	\$53	\$0	\$0	\$11,140	\$1,448	\$12,587
2014	\$28,733	\$12,061	\$167	\$1,498	\$42,460	\$5,803	\$48,264
2015	\$31,564	\$14,012	\$194	\$1,741	\$47,512	\$6,505	\$54,019
2016	\$35,332	\$8,831	\$12,501	\$1,881	\$58,545	\$10,226	\$68,770
2017	\$35,770	\$7,861	\$14,590	\$1,894	\$60,114	\$10,816	\$70,929
2018	\$35,770	\$7,861	\$14,590	\$1,894	\$60,114	\$10,816	\$70,929
2019	\$32,158	\$7,931	\$9,718	\$2,126	\$51,935	\$9,067	\$61,000
2020	\$29,639	\$7,963	\$6,383	\$2,281	\$46,270	\$7,860	\$54,128
2021	\$7,288	\$1,958	\$1,570	\$561	\$11,378	\$1,933	\$13,310
2022	\$157	\$131	\$3,792	\$432	\$4,512	\$984	\$5,496
2023	\$397	\$332	\$9,626	\$1,098	\$11,452	\$2,497	\$13,950
2024	\$397	\$332	\$9,626	\$1,098	\$11,452	\$2,497	\$13,950
2025	\$329	\$275	\$7,980	\$910	\$9,494	\$2,070	\$11,565
Account Total	\$248,713	\$69,602	\$90,735	\$17,413	\$426,470	\$72,535	\$499,002

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Cost Account B. Spent Fuel							
2013	\$1,096	\$15	\$0	\$0	\$1,112	\$144	\$1,257
2014	\$7,898	\$9,268	\$0	\$2,243	\$19,409	\$2,886	\$22,295
2015	\$9,187	\$10,781	\$0	\$2,609	\$22,577	\$3,357	\$25,934
2016	\$9,187	\$10,781	\$0	\$2,609	\$22,577	\$3,357	\$25,934
2017	\$9,187	\$10,781	\$0	\$2,609	\$22,577	\$3,357	\$25,934
2018	\$9,187	\$10,781	\$0	\$2,609	\$22,577	\$3,357	\$25,934
2019	\$3,017	\$2,146	\$0	\$989	\$6,152	\$898	\$7,050
2020	\$1,989	\$711	\$0	\$719	\$3,419	\$488	\$3,908
2021	\$1,989	\$711	\$0	\$719	\$3,419	\$488	\$3,908
2022	\$1,989	\$711	\$0	\$719	\$3,419	\$488	\$3,908
2023	\$1,989	\$711	\$0	\$719	\$3,419	\$488	\$3,908
2024	\$1,989	\$711	\$0	\$719	\$3,419	\$488	\$3,908
2025	\$1,992	\$712	\$0	\$749	\$3,454	\$494	\$3,948
2026	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2027	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2028	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2029	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2030	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2031	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2032	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2033	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2034	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2035	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2036	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2037	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2038	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
2039	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2040	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2041	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2042	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2043	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2044	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2045	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2046	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2047	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2048	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2049	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2050	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2051	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2052	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2053	\$2,228	\$777	\$657	\$621	\$4,283	\$618	\$4,900
2054	\$2,042	\$695	\$1,218	\$216	\$4,172	\$606	\$4,777
Account Total	\$118,672	\$79,495	\$1,875	\$42,859	\$242,903	\$35,397	\$278,300

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Cost Account C. Greenfield							
2021	\$14,919	\$5,740	\$1,029	\$257	\$21,946	\$3,440	\$25,385
2022	\$9,356	\$3,254	\$514	\$159	\$13,284	\$2,060	\$15,346
Account Total	\$24,275	\$8,994	\$1,543	\$416	\$35,230	\$5,500	\$40,731

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Unit Total	\$391,660	\$158,091	\$94,153	\$60,688	\$704,603	\$113,432	\$818,033
Scenario Total	\$391,660	\$158,091	\$94,153	\$60,688	\$704,603	\$113,432	\$818,033
Scenario No 2							
Unit No. Unit 1							
Cost Account A. License Termination							
2012	\$79	\$0	\$0	\$0	\$79	\$10	\$90
2013	\$9,609	\$58	\$0	\$0	\$9,669	\$1,257	\$10,925
2014	\$27,785	\$9,441	\$422	\$1,404	\$39,052	\$5,576	\$44,630
2015	\$4,783	\$1,714	\$73	\$1,240	\$7,811	\$1,125	\$8,936
2016	\$282	\$108	\$0	\$1,170	\$1,559	\$230	\$1,790
2017	\$282	\$108	\$0	\$1,170	\$1,559	\$230	\$1,790
2018	\$282	\$108	\$0	\$1,170	\$1,559	\$230	\$1,790
2019	\$3,368	\$1,381	\$3,642	\$2,942	\$11,334	\$1,995	\$13,330
2020	\$298	\$178	\$1,706	\$996	\$3,178	\$617	\$3,795
2021	\$298	\$178	\$1,706	\$996	\$3,178	\$617	\$3,795
2022	\$298	\$178	\$1,706	\$996	\$3,178	\$617	\$3,795
2023	\$298	\$178	\$1,706	\$996	\$3,178	\$617	\$3,795
2024	\$298	\$178	\$1,706	\$996	\$3,178	\$617	\$3,795
2025	\$293	\$128	\$426	\$895	\$1,742	\$293	\$2,035
2026	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2027	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2028	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2029	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2030	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2031	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2032	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
2033	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2034	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2035	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2036	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2037	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2038	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2039	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2040	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2041	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2042	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2043	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2044	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2045	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2046	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2047	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2048	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2049	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2050	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2051	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2052	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2053	\$290	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2054	\$386	\$141	\$2	\$883	\$1,412	\$208	\$1,620
2055	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305
2056	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305
2057	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305
2058	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305
2059	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
2060	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305
2061	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305
2062	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305
2063	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305
2064	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305
2065	\$771	\$261	\$3	\$972	\$2,008	\$297	\$2,305
2066	\$5,501	\$635	\$1	\$1,046	\$7,184	\$972	\$8,156
2067	\$8,798	\$894	\$0	\$1,094	\$10,787	\$1,441	\$12,229
2068	\$27,190	\$11,899	\$12	\$16,937	\$56,037	\$7,445	\$63,483
2069	\$33,427	\$12,247	\$8,891	\$13,971	\$68,535	\$10,717	\$79,252
2070	\$40,740	\$9,149	\$28,436	\$1,879	\$80,204	\$15,816	\$96,018
2071	\$36,881	\$8,627	\$20,622	\$2,031	\$68,162	\$12,858	\$81,018
2072	\$28,216	\$7,433	\$3,398	\$2,352	\$41,401	\$6,306	\$47,704
2073	\$11,024	\$2,904	\$1,328	\$919	\$16,176	\$2,464	\$18,639
Account Total	\$257,032	\$73,841	\$75,855	\$90,841	\$497,578	\$80,726	\$578,297

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Cost Account B. Spent Fuel							
2013	\$1,096	\$15	\$0	\$0	\$1,112	\$144	\$1,257
2014	\$7,898	\$9,272	\$0	\$2,243	\$19,413	\$2,886	\$22,299
2015	\$9,187	\$10,785	\$0	\$2,609	\$22,581	\$3,357	\$25,939
2016	\$9,187	\$10,785	\$0	\$2,609	\$22,581	\$3,357	\$25,939
2017	\$9,187	\$10,785	\$0	\$2,609	\$22,581	\$3,357	\$25,939
2018	\$9,187	\$10,785	\$0	\$2,609	\$22,581	\$3,357	\$25,939
2019	\$2,998	\$2,119	\$0	\$1,015	\$6,132	\$895	\$7,027
2020	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2021	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2022	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2023	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2024	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2025	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2026	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2027	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2028	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2029	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2030	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2031	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2032	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2033	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2034	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2035	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2036	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2037	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2038	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
2039	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2040	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2041	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2042	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2043	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2044	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2045	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2046	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2047	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2048	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2049	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2050	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2051	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2052	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2053	\$2,229	\$778	\$658	\$486	\$4,152	\$598	\$4,749
2054	\$2,038	\$693	\$1,217	\$108	\$4,056	\$589	\$4,644
Account Total	\$118,651	\$79,489	\$1,875	\$39,182	\$239,199	\$34,839	\$274,041

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Cost Account C. Greenfield							
2073	\$12,047	\$4,604	\$831	\$287	\$17,770	\$2,783	\$20,552
2074	\$12,617	\$4,348	\$712	\$284	\$17,962	\$2,784	\$20,746
Account Total	\$24,664	\$8,952	\$1,543	\$571	\$35,732	\$5,567	\$41,298

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Unit Total	\$400,347	\$162,282	\$79,273	\$130,594	\$772,509	\$121,132	\$893,636
Scenario Total	\$400,347	\$162,282	\$79,273	\$130,594	\$772,509	\$121,132	\$893,636
Scenario No 3							
Unit No. Unit 1							
Cost Account A. License Termination							
2032	\$91	\$0	\$0	\$0	\$92	\$12	\$103
2033	\$11,087	\$53	\$0	\$0	\$11,140	\$1,448	\$12,587
2034	\$28,516	\$11,412	\$1,124	\$1,295	\$42,349	\$5,885	\$48,234
2035	\$31,312	\$13,257	\$1,307	\$1,505	\$47,382	\$6,601	\$53,983
2036	\$35,251	\$8,669	\$19,243	\$1,847	\$65,009	\$11,844	\$76,852
2037	\$35,705	\$7,822	\$22,215	\$1,894	\$67,635	\$12,673	\$80,306
2038	\$35,705	\$7,822	\$22,215	\$1,894	\$67,635	\$12,673	\$80,306
2039	\$32,109	\$7,912	\$13,405	\$1,979	\$55,406	\$9,929	\$65,333
2040	\$29,629	\$7,958	\$7,450	\$2,032	\$47,073	\$8,064	\$55,135
2041	\$7,286	\$1,957	\$1,832	\$500	\$11,575	\$1,983	\$13,558
Account Total	\$246,692	\$66,864	\$88,791	\$12,944	\$415,297	\$71,111	\$486,398

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Cost Account B. Spent Fuel							
2033	\$1,096	\$15	\$0	\$0	\$1,112	\$144	\$1,257
2034	\$7,898	\$7,008	\$0	\$2,243	\$17,149	\$2,547	\$19,696
2035	\$9,187	\$8,152	\$0	\$2,609	\$19,948	\$2,963	\$22,910
2036	\$9,187	\$8,152	\$0	\$2,609	\$19,948	\$2,963	\$22,910
2037	\$9,187	\$8,152	\$0	\$2,609	\$19,948	\$2,963	\$22,910
2038	\$9,187	\$8,152	\$0	\$2,609	\$19,948	\$2,963	\$22,910
2039	\$3,017	\$1,772	\$0	\$989	\$5,777	\$841	\$6,619
2040	\$1,989	\$711	\$0	\$718	\$3,419	\$488	\$3,907
2041	\$1,989	\$711	\$0	\$718	\$3,419	\$488	\$3,907
2042	\$1,992	\$712	\$0	\$787	\$3,492	\$499	\$3,991
2043	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2044	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2045	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2046	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2047	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2048	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2049	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2050	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2051	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2052	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2053	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2054	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2055	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2056	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2057	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2058	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
2059	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2060	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2061	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2062	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2063	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2064	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2065	\$1,989	\$711	\$0	\$889	\$3,590	\$514	\$4,104
2066	\$2,178	\$758	\$525	\$624	\$4,085	\$591	\$4,675
2067	\$1,960	\$662	\$989	\$218	\$3,830	\$559	\$4,387
Account Total	\$104,615	\$61,315	\$1,514	\$37,188	\$204,634	\$29,834	\$234,468

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Cost Account C. Greenfield							
2041	\$14,919	\$5,740	\$1,029	\$257	\$21,946	\$3,440	\$25,385
2042	\$9,356	\$3,254	\$514	\$159	\$13,284	\$2,060	\$15,346
Account Total	\$24,275	\$8,994	\$1,543	\$416	\$35,230	\$5,500	\$40,731

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Unit Total	\$375,582	\$137,173	\$91,848	\$50,548	\$655,161	\$106,445	\$761,597
Scenario Total	\$375,582	\$137,173	\$91,848	\$50,548	\$655,161	\$106,445	\$761,597
Scenario No 4							
Unit No. Unit 1							
Cost Account A. License Termination							
2032	\$79	\$0	\$0	\$0	\$79	\$10	\$90
2033	\$9,609	\$58	\$0	\$0	\$9,669	\$1,257	\$10,925
2034	\$27,773	\$9,452	\$1,608	\$1,404	\$40,238	\$5,846	\$46,090
2035	\$4,698	\$1,686	\$271	\$1,239	\$7,895	\$1,154	\$9,050
2036	\$282	\$108	\$0	\$1,170	\$1,559	\$230	\$1,789
2037	\$282	\$108	\$0	\$1,170	\$1,559	\$230	\$1,789
2038	\$282	\$108	\$0	\$1,170	\$1,559	\$230	\$1,789
2039	\$3,157	\$1,249	\$9,828	\$2,942	\$17,177	\$3,369	\$20,545
2040	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2041	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2042	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2043	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2044	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2045	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2046	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2047	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2048	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2049	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2050	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2051	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2052	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
2053	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2054	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2055	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2056	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2057	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2058	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2059	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2060	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2061	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2062	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2063	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2064	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2065	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2066	\$291	\$111	\$1	\$984	\$1,388	\$205	\$1,593
2067	\$381	\$139	\$1	\$984	\$1,505	\$222	\$1,728
2068	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2069	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2070	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2071	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2072	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2073	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2074	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2075	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2076	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2077	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2078	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2079	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
2080	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2081	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2082	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2083	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2084	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2085	\$763	\$258	\$2	\$972	\$1,996	\$295	\$2,291
2086	\$5,498	\$634	\$1	\$1,148	\$7,281	\$986	\$8,267
2087	\$8,798	\$894	\$0	\$1,267	\$10,960	\$1,468	\$12,428
2088	\$27,323	\$12,594	\$13	\$18,875	\$58,805	\$7,811	\$66,616
2089	\$35,159	\$11,995	\$13,252	\$12,439	\$72,845	\$12,079	\$84,924
2090	\$40,740	\$9,149	\$28,436	\$1,807	\$80,132	\$15,805	\$95,935
2091	\$34,948	\$8,360	\$16,780	\$1,912	\$62,001	\$11,367	\$73,366
2092	\$28,216	\$7,433	\$3,398	\$2,027	\$41,076	\$6,258	\$47,331
2093	\$6,707	\$1,767	\$808	\$482	\$9,764	\$1,488	\$11,251
Account Total	\$255,523	\$73,384	\$74,470	\$94,112	\$497,497	\$80,649	\$578,144

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Cost Account B. Spent Fuel							
2033	\$1,096	\$15	\$0	\$0	\$1,112	\$144	\$1,257
2034	\$7,898	\$7,011	\$0	\$2,243	\$17,152	\$2,547	\$19,699
2035	\$9,187	\$8,155	\$0	\$2,609	\$19,951	\$2,963	\$22,914
2036	\$9,187	\$8,155	\$0	\$2,609	\$19,951	\$2,963	\$22,914
2037	\$9,187	\$8,155	\$0	\$2,609	\$19,951	\$2,963	\$22,914
2038	\$9,187	\$8,155	\$0	\$2,609	\$19,951	\$2,963	\$22,914
2039	\$2,998	\$1,752	\$0	\$1,015	\$5,765	\$840	\$6,605
2040	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2041	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2042	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2043	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2044	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2045	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2046	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2047	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2048	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2049	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2050	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2051	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2052	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2053	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2054	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2055	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2056	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2057	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2058	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
2059	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2060	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2061	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2062	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2063	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2064	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2065	\$1,989	\$711	\$0	\$754	\$3,455	\$494	\$3,949
2066	\$2,177	\$758	\$524	\$489	\$3,947	\$570	\$4,516
2067	\$1,965	\$663	\$990	\$109	\$3,728	\$544	\$4,270
Account Total	\$104,599	\$61,310	\$1,514	\$33,905	\$201,330	\$29,337	\$230,667

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Cost Account C. Greenfield							
2093	\$15,072	\$5,760	\$1,040	\$359	\$22,232	\$3,481	\$25,713
2094	\$9,592	\$3,192	\$503	\$212	\$13,500	\$2,086	\$15,585
Account Total	\$24,664	\$8,952	\$1,543	\$571	\$35,732	\$5,567	\$41,298

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Unit Total	\$384,786	\$143,646	\$77,527	\$128,588	\$734,559	\$115,553	\$850,109
Scenario Total	\$384,786	\$143,646	\$77,527	\$128,588	\$734,559	\$115,553	\$850,109

ENCLOSURE 4

Affidavit of Proprietary Information

NextEra Energy Duane Arnold, LLC Affidavit Required by 10 CFR 2.390

NextEra Energy Duane Arnold, LLC

AFFIDAVIT

I, Christopher R. Costanzo, state as follows:

- (1) I am Vice President, Duane Arnold Energy Center, NextEra Energy Duane Arnold, LLC, and have the responsibility for reviewing the information described in paragraph (2) that is sought to be withheld.
- (2) The information sought to be withheld is a Settlement Agreement ("Agreement") between the United States Government and NextEra Energy Duane Arnold, LLC. The Agreement concluded years of litigation concerning the Department of Energy's breach of its contract to accept and dispose of spent nuclear fuel and high-level waste from the Duane Arnold Energy Center and the FPL and NextEra Energy Resources nuclear fleet.
- (3) Several additional companies are also parties to the Agreement, including Florida Power & Light Co., NextEra Energy Seabrook, LLC, NextEra Energy Point Beach, LLC, several joint owners of Seabrook Station and a former owner of the Duane Arnold Energy Center. These additional parties, to the best of my knowledge and belief, maintain an interest in its confidentiality.
- (4) To the best of my knowledge and belief, the United States Government has maintained the confidentiality of the Agreement, with the exception of specific portions that it filed with the United States Court of Federal Claims in the course of litigation involving Canal Electric Company. A copy of the redacted version of the Agreement filed by the Government in that case is included with this submittal and represents the portion that is publicly available and which NextEra does not seek to be protected from public disclosure under 10 CFR 2.390.
- (5) In making this application for the withholding of confidential information of which it is the owner, NextEra relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for confidential "commercial or financial information" (Exemption 4). The material for which exemption from disclosure is here sought is confidential commercial and financial information.
- (6) To address 10 CFR 2.390(b)(4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by NextEra, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by NextEra, no public disclosure has been made, and it is not available in public sources,

except as described in paragraph (4). All disclosures to third parties, including any required transmittals to NRC or other regulatory bodies, have been made, or must be made, pursuant to regulatory provisions or confidentiality agreements that provide for maintenance of the information in confidence.

- (7) Public disclosure of the information sought to be withheld is likely to cause substantial harm to NextEra's competitive position. The value of the information goes beyond the actual text of the Agreement and includes the significant legal and business resources expended in the course of settlement negotiations that culminated in the Agreement. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and thus deprive NextEra of the opportunity to exercise its competitive advantage gained through the Agreement.
- (8) The Agreement involves several additional parties, including the United States Government and other private parties who are not affiliated with FPL or NextEra. As a result, the public disclosure of the information sought to be withheld could potentially cause substantial harm to these parties, as well.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this 15th day of February, 2010



Christopher R. Costanzo
Vice President, Duane Arnold Energy Center
NextEra Energy Duane Arnold, LLC

ENCLOSURE 6

Redacted Version of Settlement Agreement

SETTLEMENT AGREEMENT

I. Recitals

For the purpose of disposing of Plaintiffs' claims, without any further judicial proceedings and without there being any trial or adjudication of any issue of law or fact, and without constituting an admission of liability on the part of the United States, and for no other purpose, the parties stipulate and agree as follows:

A. "Plaintiffs" for these purposes are Florida Power & Light Company, FPL Energy Seabrook, LLC, Massachusetts Municipal Wholesale Electric Company, Taunton Municipal Lighting Plant, Hudson Light and Power Department, FPL Energy Point Beach, LLC, FPL Energy Duane Arnold, LLC, and Interstate Power and Light Company and their direct or indirect wholly-owned subsidiaries or affiliates. (Unless the context requires otherwise, the singular shall include the plural, and vice versa.) This Agreement shall inure to the benefit of, and be assignable to, successors or affiliates of Plaintiffs, or other parties to whom the Standard Contracts (as identified below) are assigned.

B. Plaintiffs are the Purchasers under six Standard Contracts with the United States Department of Energy (DOE) for the acceptance of spent nuclear fuel and high level waste ("SNF/HLW") under the Nuclear Waste Policy Act, the material terms of which are reproduced at 10 C.F.R. § 961.11, and which are numbered DE-CR01-83NE44383, DE-CR01-83NE44471, DE-CR01-83NE44472, DE-CR01-86RW00111, DE-CR01-83NE44425, and DE-CR01-83NE44390 (for these purposes, the "Contracts").

C. The Contracts cover the Turkey Point Unit 3 and Turkey Point Unit 4, St. Lucie Unit 1 and St. Lucie Unit 2, Seabrook Unit 1, Point Beach Nuclear Plant, Units 1 and 2, and Duane Arnold Energy Center (for these purposes, the "Sites").

Government was mistaken about an existing material fact that constituted a basic assumption underlying this Agreement.

V. Other provisions.

A.

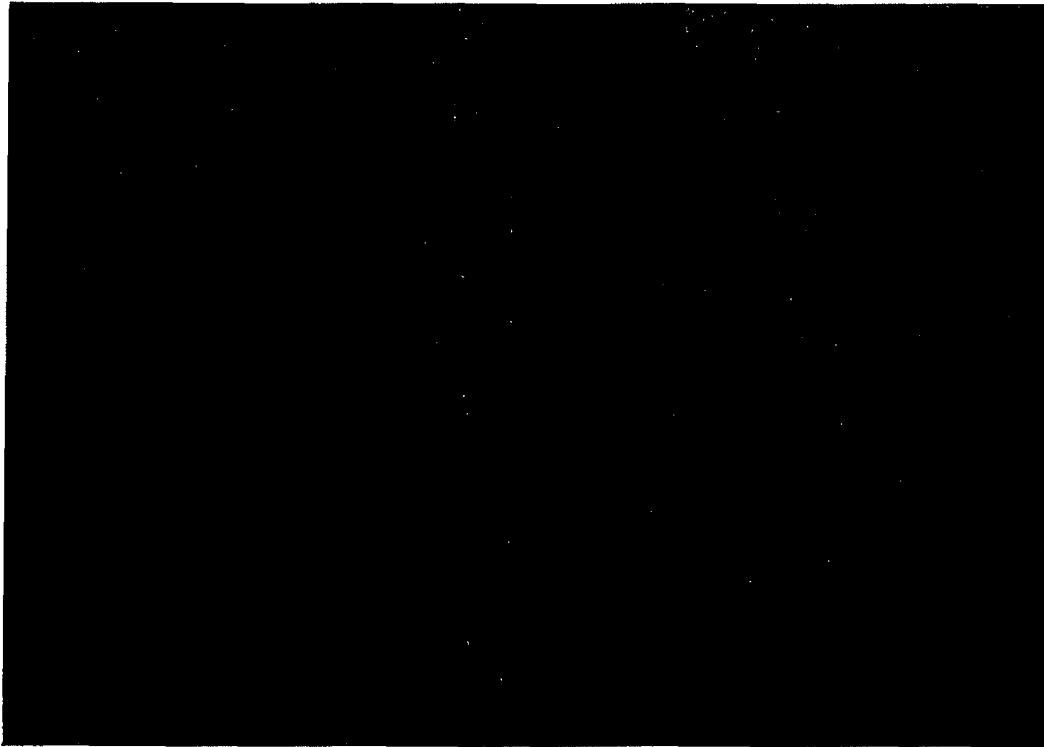


B.



C.





D. As part of and to effectuate this settlement, the Government exercises its sole discretion to accept the assignment of claims that the plaintiff in Canal Electric Co. v. United States, No. 04-0035C (Fed. Cl.), has purported to make to FPL Energy Seabrook, LLC, to the extent that the Department of Energy and/or the Department of Justice have been made aware of those claims through the plaintiff's complaint in the Canal Electric case and have been made aware of the assignment through the assignment provisions in the Purchase and Sale Agreement among North Atlantic Energy Corporation, The United Illuminating Company, Great Bay Power Corporation, New England Power Company, The Connecticut Power & Light Company, Canal Electric Company, Little Bay Power Corporation, New Hampshire Electric Cooperative, Inc., North Atlantic Energy Service Corporation, and FPL Energy Seabrook, LLC, dated April 13, 2002. FPL Energy Seabrook, LLC, agrees that the claims asserted by Canal Electric

Company in the Canal Electric case lack merit and that it will not seek to recover any damages from the Government based upon those claims. To the extent that any court of law finds that the Government's acceptance of this assignment is void or otherwise invalid, and to the extent that the Government is obligated to pay Canal Electric Company or its successors any damages arising out of the Canal Electric case, FPL Energy Seabrook, LLC, agrees to indemnify the United States for any amounts that the Government pays upon those claims pursuant to the terms of this agreement.

E. [REDACTED]

F. [REDACTED]

G. [REDACTED]

H. [REDACTED]

AGREED TO:

FOR THE GOVERNMENT:

Jeanne E. Davidson
JEANNE E. DAVIDSON
Director

3/30/09
Date

Commercial Litigation Branch,
Civil Division
U.S. Department of Justice
1100 L Street, N.W.
Attn: Classification Unit
8th Floor
Washington, D.C. 20530

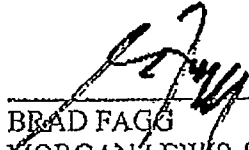
AUTHORIZED REPRESENTATIVE OF
THE ATTORNEY GENERAL

FOR THE PLAINTIFFS:

Alex D. Tomasz
ALEX D. TOMASZCZAK
PILLSBURY, WINTHROP, SHAW, PITTMAN, LLP
1650 Tysons Blvd.
Suite 1400
McLean, Virginia 22102

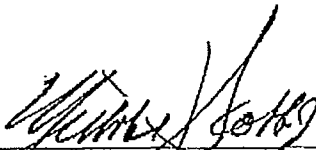
March 30, 2009
Date

ATTORNEY AND AUTHORIZED
REPRESENTATIVE OF
FLORIDA POWER AND LIGHT COMPANY
FPL ENERGY SEABROOK, LLC
FPL ENERGY DUANE ARNOLD, LLC
FPL ENERGY POINT BEACH, LLC


BRAD FAGG
MORGAN LEWIS & BOCKIUS LLP
1111 Pennsylvania Ave., N.W.
Washington, D.C. 20004


March 30, 2009
Date

ATTORNEY AND AUTHORIZED
REPRESENTATIVE OF
INTERSTATE POWER AND LIGHT COMPANY


NICHOLAS J. SCOBBO, JR.
FERRITER, SCOBBO & RODOPHELE, PC
125 High Street
Boston, Massachusetts 02110

3/31/09
Date

ATTORNEY AND AUTHORIZED
REPRESENTATIVE OF
MASSACHUSETTS MUNICIPAL WHOLESALE
ELECTRIC COMPANY AND
HUDSON LIGHT AND POWER DEPARTMENT


ROBERT G. FUNKE
58 Tremont Street
P.O. Box 628
Taunton, Massachusetts 02780

as of 3/31/09
Date

ATTORNEY AND AUTHORIZED
REPRESENTATIVE OF
TAUNTON MUNICIPAL LIGHTING PLANT