

Decommissioning Cost Estimate Study for the Duane Arnold Energy Center

Project No. 137079

Revision 0

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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	\$495,699
2	\$579,393
3	\$482,746
4	\$578,794

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	\$278,233
2	\$274,041
3	\$234,441
4	\$230,632

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

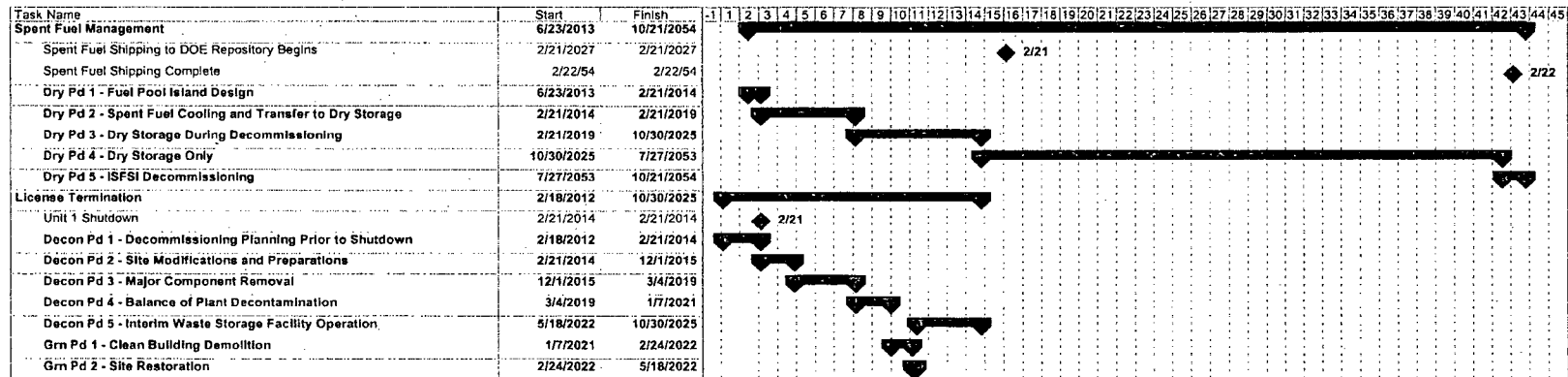
Table 1-3
Greenfield Cost Summary by Scenario
(2008 Dollars in Thousands)

Scenario	Greenfield
1	\$40,710
2	\$41,298
3	\$40,710
4	\$40,969

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

DUANE ARNOLD ENERGY CENTER 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.

The study analyzes the following four scenarios, 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).
- 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	377,714
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

DUANE ARNOLD ENERGY CENTER SCENARIO 1 SUMMARY SCHEDULE

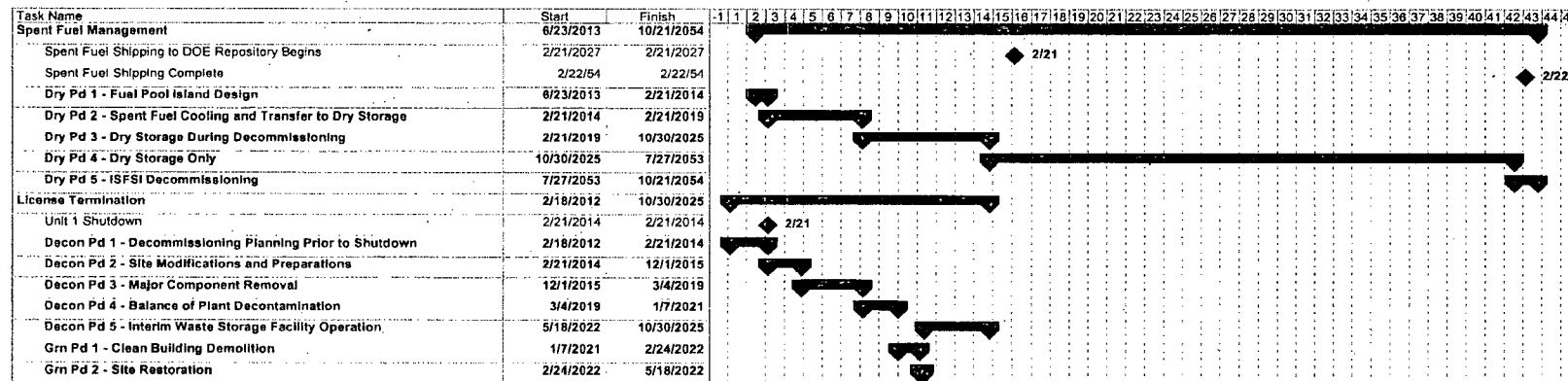


Table 6-1
Scenario 1 Cost and Schedule Summary
(2008 Dollars in Thousands)

Period No.	Period Description	Start	End	Years	Total Cost
License Termination (50.75(c))					
Decon Pd 1	Decommissioning Planning and Design Prior to Shutdown	2/18/2012	2/21/2014	2.00	\$22,704
Decon Pd 2	Site Modifications and Preparations	2/21/2014	12/1/2015	1.77	\$96,555
Decon Pd 3	Major Component Removal	12/1/2015	3/4/2019	3.25	\$231,249
Decon Pd 4	Balance of Plant Decontamination	3/4/2019	1/7/2021	1.84	\$99,858
Decon Pd 5	Interim Waste Storage Facility Operation	5/18/2022	10/30/2025	3.45	\$45,333
Account Total				12.31	\$495,699
Spent Fuel (50.54(bb))					
Dry Pd 1	Fuel Pool Island Design	6/23/2013	2/21/2014	0.66	\$1,256
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 Dormancy	2/21/2019	10/30/2025	6.68	\$26,136
Dry Pd 4	Dry Storage Only	10/30/2025	7/27/2053	27.74	\$113,846
Dry Pd 5	ISFSI Decommissioning	7/27/2053	10/21/2054	1.23	\$7,274
Account Total				41.30	\$278,233
Greenfield					
Grn Pd 1	Clean Building Demolition	1/10/2021	2/27/2022	1.13	\$38,078
Grn Pd 2	Site Restoration	2/27/2022	5/21/2022	0.22	\$2,632
Account Total				1.35	\$40,710
Scenario Total					\$814,642

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	3.25	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	0.5	2	2	3	
Security Guard Force	3	12	12	12	1
Waste Operations	2.5	29	21	20	0.25
	22.25	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		26			
Health Physics			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	Gm Pd 1	Gm 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	Decon Pd 5
Administration	8	17	17	11	8
Engineering	5.5	16	16	9	5.5
Field Operations	2	11	11	8	2
Health Physics	5	23	35	19	5
Management	3	3	3	3	3
Quality Assurance	3	4	5	3	3
Waste Operations		2	16	16	
	26.5	76	103	69	26.5

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

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	13,091,971	222,569	224,005	\$567,930	\$2,365,025	\$0	\$12,230,627	\$15,163,582
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
	24,104,285	377,714	395,733	\$2,285,023	\$10,088,187	\$0	\$45,636,701	\$58,009,911
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	477,263,146	5,478,600	5,499,280	\$3,966,966	\$11,209,743	\$26,994,305	\$51,984,389	\$94,155,403

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

DUANE ARNOLD ENERGY CENTER SCENARIO 2 SUMMARY SCHEDULE

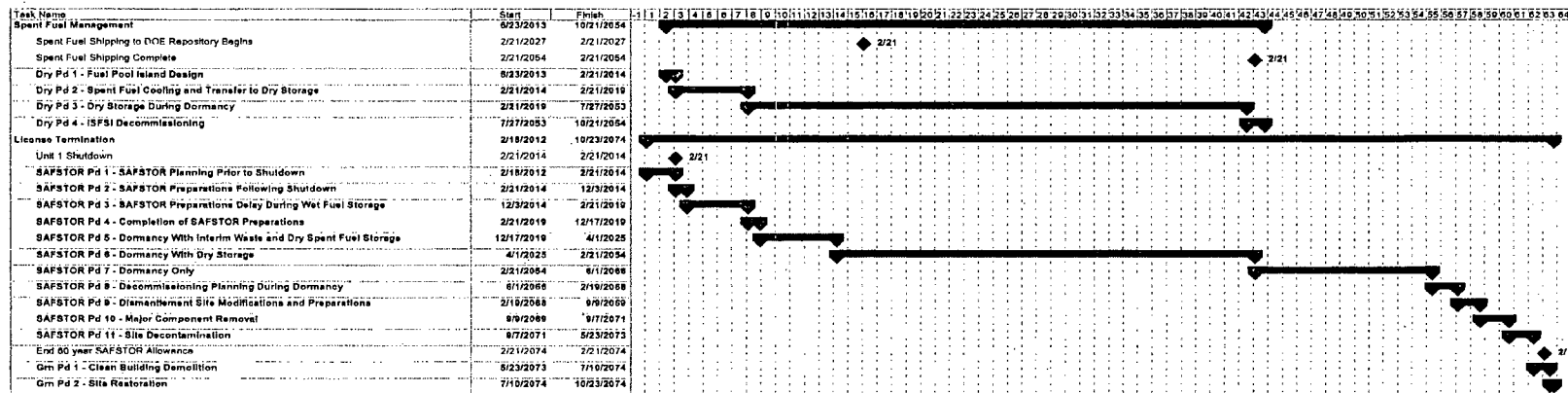


Table 6-5
Scenario 2 Cost and Schedule Summary
(2008 Dollars in Thousands)

Period No.	Period Description	Start	End	Years	Total Cost
License Termination (50.75(c))					
SAFSTOR Pd 1	SAFSTOR Planning and Design Prior to Shutdown	2/18/2012	2/21/2014	2.00	\$18,324
SAFSTOR Pd 2	SAFSTOR Preparations Following Shutdown	2/21/2014	12/3/2014	0.78	\$41,214
SAFSTOR Pd 3	SAFSTOR Preparation Delay During Spent Fuel Operations	12/3/2014	2/21/2019	4.21	\$7,554
SAFSTOR Pd 4	Completion of SAFSTOR Preparations	2/21/2019	12/17/2019	0.81	\$12,896
SAFSTOR Pd 5	Dormancy With Interim Waste and Dry Spent Fuel Storage	12/17/2019	4/1/2025	5.28	\$20,068
SAFSTOR Pd 6	Dormancy With Dry Storage	4/1/2025	2/21/2054	28.89	\$41,845
SAFSTOR Pd 7	Dormancy Only	2/21/2054	6/1/2066	12.27	\$28,269
SAFSTOR Pd 8	Decommissioning Planning During Dormancy	6/1/2066	2/19/2068	1.71	\$24,773
SAFSTOR Pd 9	Dismantlement Site Modifications and Preparation	2/19/2068	9/9/2069	1.55	\$111,149
SAFSTOR Pd 10	Major Component Removal	9/9/2069	9/7/2071	1.99	\$191,919
SAFSTOR Pd 11	Site Decontamination	9/7/2071	5/23/2073	1.70	\$81,422
Account Total				61.19	\$579,393
Spent Fuel (50.54(bb))					
Dry Pd 1	Fuel Pool Island Design	6/23/2013	2/21/2014	0.66	\$1,256
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 Dormancy	2/21/2019	7/27/2053	34.42	\$135,952
Dry Pd 4	ISFSI Decommissioning	7/27/2053	10/21/2054	1.23	\$7,082
Account Total				41.30	\$274,011
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					\$894,702

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	3.25	27	0.75	7	0.75	0.75	0.75	3.25	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	0.5	2		0.5			0.5	0.5	2	2	3
Security Guard Force	3	12	1	5	1	1	5	3	12	12	12
	22.25	160	2.5	27.75	2.5	2.5	7	22.25	160	134	111

Table 6-6
Scenario 2 DAEC Staff Level
(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		26		
Health Physics			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	5	23		5				5	23	35	19
Management	3	3		3				3	3	3	3
Quality Assurance	3	4		3				3	4	5	3
Waste Operations		2		8					2	16	16
	26.5	76	0	36	0	0	0	26.5	76	103	69

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 in Thousands)

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

DUANE ARNOLD ENERGY CENTER SCENARIO 3 SUMMARY SCHEDULE

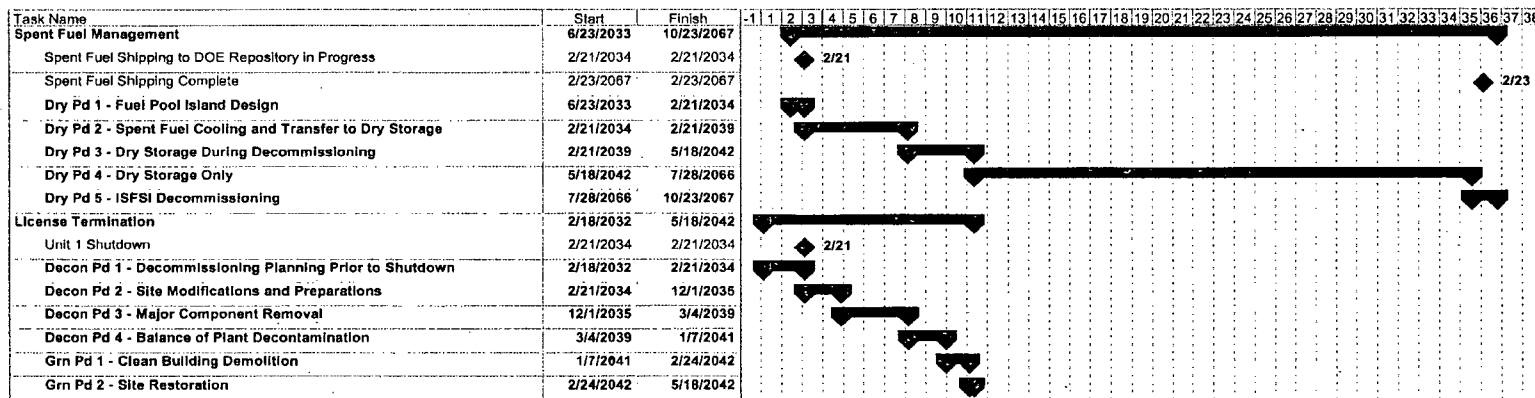


Table 6-9
Scenario 3 Cost and Schedule Summary
(2008 Dollars in Thousands)

Period No.	Period Description	Start	End	Years	Total Cost
License Termination (50.75(c))					
Decon Pd 1	Decommissioning Planning and Design Prior to Shutdown	2/18/2032	2/21/2034	2.00	\$21,605
Decon Pd 2	Site Modifications and Preparations	2/21/2034	12/1/2035	1.77	\$97,547
Decon Pd 3	Major Component Removal	12/1/2035	3/4/2039	3.25	\$261,821
Decon Pd 4	Balance of Plant Decontamination	3/4/2039	1/7/2041	1.84	\$101,773
Account Total				8.86	\$482,746
Spent Fuel (50.54(bb))					
Dry Pd 1	Fuel Pool Island Design	6/23/2033	2/21/2034	0.66	\$1,256
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	5/18/2042	3.23	\$12,645
Dry Pd 4	Dry Storage Only	5/18/2042	7/28/2066	24.19	\$99,295
Dry Pd	ISFSI Decommissioning	7/28/2066	10/23/2067	1.23	\$6,646
Account Total				34.30	\$234,441
Greenfield					
Grn Pd 1	Clean Building Demolition	1/7/2041	2/24/2042	1.13	\$38,078
Grn Pd 2	Site Restoration	2/24/2042	5/18/2042	0.22	\$2,632
Account Total				1.35	\$40,710
Scenario Total					\$757,897

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

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.

Figure 6-4

DUANE ARNOLD ENERGY CENTER SCENARIO 4 SUMMARY SCHEDULE

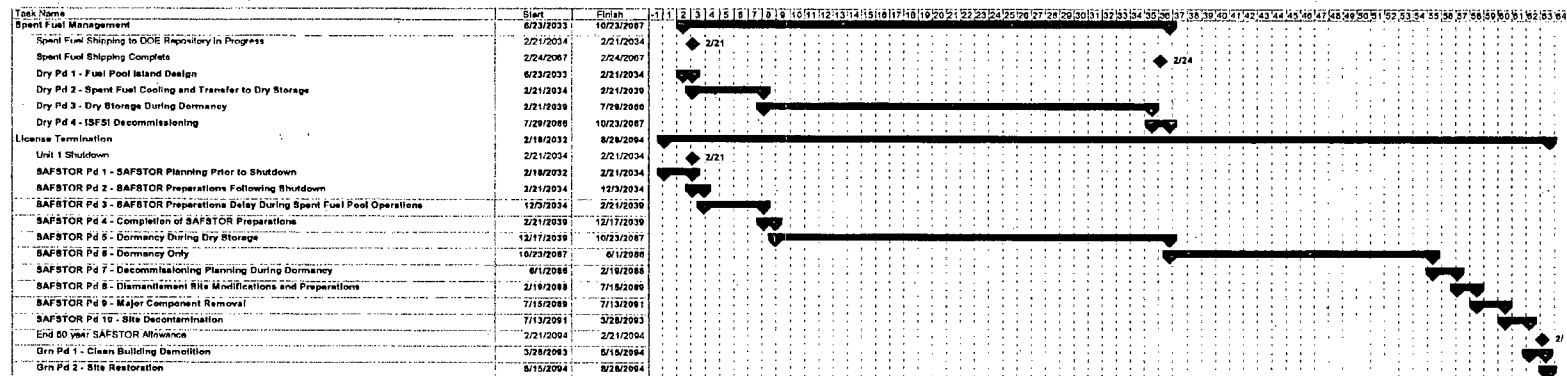


Table 6-11
Scenario 4 DAEC Staff Levels

License Termination – 50.75(c) DAEC Staff

	SAFSTOR	SAFSTOR	SAFSTOR	SAFSTOR	SAFSTOR	SAFSTOR	SAFSTOR	SAFSTOR	SAFSTOR	SAFSTOR
Department	Pd 1	Pd 2	Pd 3	Pd 4	Pd 5	Pd 6	Pd 7	Pd 8	Pd 9	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	3.25	27	0.75	7	0.75	0.75	3.25	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	0.5	2		0.5		0.5	0.5	2	2	3
Security Guard Force	3	12	1	5	1	5	3	12	12	12
	22.25	160	2.5	27.75	2.5	7	22.25	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		26		
Health Physics			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	Gm Pd 1	Gm 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	5	23		5			5	23	35	19
Management	3	3		3			3	3	3	3
Quality Assurance	3	4		3			3	4	5	3
Waste Operations		2		8				2	16	16
	26.5	76	0	36	0	0	26.5	76	103	69

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 6-13
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 and Design Prior to Shutdown	2/18/2032	2/21/2034	2.00	\$18,324
SAFSTOR Pd 2	SAFSTOR Preparations Following Shutdown	2/21/2034	12/3/2034	0.78	\$42,894
SAFSTOR Pd 3	SAFSTOR Preparation Delay During Spent Fuel Operations	12/3/2034	2/21/2039	4.21	\$7,554
SAFSTOR Pd 4	Completion SAFSTOR Preparations	2/21/2039	12/17/2039	0.81	\$20,195
SAFSTOR Pd 5	Dormancy With Dry Storage	12/17/2039	10/23/2067	27.85	\$44,354
SAFSTOR Pd 6	Dormancy Only	10/23/2067	6/1/2086	18.60	\$42,625
SAFSTOR Pd 7	Decommissioning Planning During Dormancy	6/1/2086	2/19/2088	1.71	\$25,075
SAFSTOR Pd 8	Dismantlement Site Modifications and Preparation	2/19/2088	7/15/2089	1.40	\$105,235
SAFSTOR Pd 9	Major Component Removal	7/15/2089	7/13/2091	1.99	\$191,753
SAFSTOR Pd 10	Site Decontamination	7/13/2091	3/28/2093	1.70	\$80,785
Account Total				61.05	\$578,794
Spent Fuel (50.54(bb))					
Dry Pd 1	Fuel Pool Island Design	6/23/2033	2/21/2034	0.66	\$1,256
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	7/29/2066	27.43	\$108,328
Dry Pd 4	ISFSI Decommissioning	7/29/2066	10/23/2067	1.23	\$6,449
Account Total				34.31	\$230,632
Greenfield					
Grn Pd 1	Clean Building Demolition	3/28/2093	5/15/2094	1.13	\$37,826
Grn Pd 2	Site Restoration	5/15/2094	8/28/2094	0.28	\$3,143
Account Total				1.41	\$40,969
Scenario Total					\$850,395

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

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	228,355,200	3,501,446	3,501,446	\$0	\$0	\$0	\$844,914	\$844,914
Scrap Metal Recycler	159,729,866	1,092,247	1,092,247	\$0	\$351,406	\$0	\$0	\$351,406
Grand Total	462,511,992	5,369,927	5,390,629	\$2,402,933	\$12,896,430	\$11,254,843	\$50,964,640	\$77,518,845

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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 Support 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	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
52	Decon Pd 2 - Site Modifications and Preparations	93 wks	2/21/2014	12/1/2015
53	Decon Pd 2 Begins	0 wks	2/21/2014	2/21/2014
54	Perform Baseline Radiation Survey	21 wks	2/21/2014	7/15/2014
55	Perform Primary System Decontamination and Place Waste in Interim S	27 wks	4/30/2014	11/4/2014
56	Flush and Drain Non-Essential Systems and Place Waste in Interim Stor	2 wks	11/5/2014	11/18/2014
57	Perform Hot Spot Removal and Place Waste in Interim Storage	5 wks	11/19/2014	12/23/2014
58	Finalize Residual Radiation Inventory	7 wks	12/24/2014	2/10/2015
59	Select Shipping Casks and Obtain Shipping Permits	8 wks	7/16/2014	9/9/2014
60	Design, Specify, and Procure Special Items and Materials	33 wks	2/21/2014	10/7/2014
61	Modify Containment Access	36 wks	12/24/2014	9/1/2015
62	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	18 wks	4/29/2015	6/1/2015
63	Repower Site	9 wks	9/2/2015	11/3/2015
64	Test Special Cutting and Handling Equipment and Train Operators	4 wks	11/4/2015	12/1/2015
65	Procure Non-Engineered Standard Equipment	0 wks	12/1/2015	12/1/2015
66	Asbestos Abatement	10 wks	12/24/2014	3/5/2015
67	Construct Interim Storage Facility for Greater than Class A Waste	12 wks	9/9/2015	12/1/2015
68	Decon Pd 2 Ends	0 wks	12/2/2015	12/1/2015
69	Decon Pd 3 - Major Component Removal	170 wks	12/1/2015	3/4/2019
70	Decon Pd 3 Begins	0 wks	12/1/2015	12/1/2015
71	Remove, Package and Dispose of Non-Essential Systems	82 wks	12/2/2015	6/28/2017
72	Segment, Package and Dispose of Nuclear Steam Supply System	43 wks	6/29/2017	4/24/2018
73	Decon Shield Plugs, Pool Plugs and Stud Tensioners	2 wks	12/2/2015	12/15/2015
74	Volume Reduce Control Rod Blades and Fuel Channels and LPRMS ar	14 wks	12/16/2015	3/23/2016
75	Segment and Dispose of Drywell Head	8.2 wks	12/16/2015	2/10/2016
76	Purchase Dry Storage Modules for GTCC Waste	0 wks	1/6/2016	1/6/2016
77	Finalize Internals and Vessel Segmenting Details	5 wks	12/2/2015	1/5/2016
78	Segment, Package and Place Reactor Internals in Interim Storage	35 wks	1/6/2016	9/7/2016
79	Drain Dryer Separator Pool and Process Liquid Waste	3 wks	11/14/2018	12/4/2018
80	Reactor Vessel Insulation Removal and Disposal	2 wks	10/31/2018	11/13/2018
81	Package and Ship Reactor Pressure Vessel	29 wks	4/25/2018	11/13/2018
82	Removal and Disposal of Sacrificial Shield Wall	16 wks	11/14/2018	3/4/2019
83	Remove and Dispose of Hazardous Waste	2 wks	2/20/2019	3/4/2019
84	Decon Pd 3 Ends	0 wks	3/4/2019	3/4/2019
85	Decon Pd 4 - Balance of Plant Decontamination	96.3 wks	3/4/2019	1/7/2021
86	Decon Pd 4 Begins	0 wks	3/4/2019	3/4/2019
87	Remove and Dispose of Spent Fuel Storage Racks	4 wks	3/5/2019	4/1/2019
88	Drain Spent Fuel Pool and Process Liquid Waste	8 wks	4/2/2019	5/27/2019
89	Segment, Package and Dispose of Refueling Bridge	2 wks	5/28/2019	6/10/2019
90	Segment, Package and Dispose of Spent Fuel Pool Island Equipment	5 wks	6/11/2019	7/15/2019
91	Remove, Package and Dispose of Remaining Active Plant Systems	15 wks	7/16/2019	10/28/2019
92	Decon Reactor Building	28.5 wks	10/29/2019	5/17/2020
109	Decon Turbine Building	21.5 wks	3/5/2019	8/3/2019
116	Decon Radwaste Building	11.7 wks	3/5/2019	5/26/2019
122	Decon HPCI and RCIC Building	2 wks	5/19/2019	6/2/2019
123	Decon Administration Building	1 wk	6/2/2019	6/9/2019
124	Decon Off-Gas Retention Building	2 wks	6/9/2019	6/23/2019
125	Decon LLRW Storage and Processing Building	4 wks	6/23/2019	7/21/2019
126	Decon Off-Gas Stack	4 wks	6/23/2019	7/21/2019
127	Decon and Remove Yard Structures and Tanks	5 wks	6/23/2019	7/28/2019
128	Segment, Package and Dispose of Contaminated Decon Equipment anc	2 wks	7/28/2019	8/11/2019
129	Remove Underground Storm Drains and Manholes	10 wks	7/28/2019	10/6/2019

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	7/21/2019	10/8/2020
131	Final Status Survey for Land Areas	310 days	7/31/2019	10/8/2020
132	Prepare Final Report of Dismantling Program	13 wks	10/8/2020	1/7/2021
133	Decon Pd 4 Ends	0 wks	1/7/2021	1/7/2021
134	Decon Pd 5 - Interim Waste Storage Facility Operation	180.1 wks	5/18/2022	10/30/2025
135	Decon Pd 5 Begins	0 wks	5/18/2022	5/18/2022
136	Greater Than Class A Waste Facility Opens	4.4 wks	1/1/2025	1/30/2025
137	Transport and Dispose of Greater Than Class A Waste in Interim Storag	29 wks	2/2/2025	8/21/2025
138	Perform Final Status Survey of Interim Waste Storage Facility	5 wks	8/24/2025	9/25/2025
139	Clean Demolition of Interim Waste Storage Facility	5 wks	9/28/2025	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	1/7/2021	2/24/2022
142	Gm Pd 1 Begins	0 wks	1/7/2021	1/7/2021
143	Clean Building Demolition Equipment	2 wks	1/7/2021	1/21/2021
144	Install Temporary Office Buildings	2 wks	1/7/2021	1/21/2021
145	Demolish Low-Level Radwaste Building	6 wks	1/21/2021	3/4/2021
146	Demolish Turbine Building	14 wks	1/21/2021	4/29/2021
147	Demolish Data Acquisition and Technical Support Building	2 wks	4/29/2021	5/13/2021
148	Demolish Control and Administrative Buildings	6 wks	4/29/2021	6/10/2021
149	Demolish Guard Facility	3 wks	4/29/2021	5/20/2021
150	Demolish HPCI and RCIC Buiking	2 wks	4/29/2021	5/13/2021
151	Demolish Reactor Building	18 wks	6/9/2021	10/14/2021
152	Demolish Cooling Towers and Related Structures	4 wks	10/14/2021	11/11/2021
153	Demolish Training Center	2 wks	10/14/2021	10/28/2021
154	Demolish Plant Support Center	4 wks	10/14/2021	11/11/2021
155	Remove and Dispose of Underground Storage Tanks	3 wks	10/14/2021	11/4/2021
156	Demolish Off-Gas Stack	3 wks	11/11/2021	12/2/2021
157	Demolish Existing Waste Water Treatment	1 wk	11/11/2021	11/18/2021
158	Demolish Remaining Structures	15 wks	11/11/2021	2/24/2022
159	Gm Pd 1 Ends	0 wks	2/24/2022	2/24/2022
160	Gm Pd 2 - Site Restoration	12 wks	2/24/2022	5/18/2022
161	Gm Pd 2 Begins	0 wks	2/24/2022	2/24/2022
162	Site Restoration Equipment	2 wks	2/24/2022	3/9/2022
163	Remove Temporary Structures	2 wks	3/9/2022	3/23/2022
164	Finish Grading and Re-Vegetate Site	8 wks	3/23/2022	5/18/2022
165	Gm Pd 2 Ends	0 wks	5/18/2022	5/18/2022

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

Task Name	Duration	Start	Finish
Spent Fuel Management	2187.2 wks	6/23/2013	10/21/2054
Spent Fuel Shipping to DOE Repository Begins	0 wks	2/21/2027	2/21/2027
Spent Fuel Shipping Complete	0 wks	2/21/2054	2/21/2054
Dry Pd 1 - Fuel Pool Island Design	35 wks	6/23/2013	2/21/2014
Dry Pd 1 Begins	0 wks	6/23/2013	6/23/2013
Design Spent Fuel Support System Modifications	32 wks	7/1/2013	2/21/2014
Design Control Room Relocation	35 wks	6/23/2013	2/21/2014
Design Spent Fuel Storage Security Modifications	25 wks	9/1/2013	2/21/2014
Dry Pd 1 Ends	0 wks	2/21/2014	2/21/2014
Dry Pd 2 - Spent Fuel Cooling and Transfer to Dry Storage	281 wks	2/21/2014	2/21/2019
Dry Pd 2 Begins	0 wks	2/21/2014	2/21/2014
Install Spent Fuel Pool System Modifications	4 wks	2/21/2014	3/19/2014
Implement Control Room Modifications	48 wks	3/20/2014	2/18/2015
Implement Spent Fuel Pool Security Modifications	36 wks	6/12/2014	2/18/2015
Purchase of Dry Storage Modules for Fuel Assemblies	0 wks	2/18/2015	2/18/2015
Spent Fuel Pool Empty	0 wks	2/21/2019	2/21/2019
Dry Pd 2 Ends	0 wks	2/21/2019	2/21/2019
Dry Pd 3 - Dry Storage During Dormancy	1788.2 wks	2/21/2019	7/27/2053
Dry Pd 3 Begins	0 wks	2/21/2019	2/21/2019
Dry Pd 3 Ends	0 wks	7/27/2053	7/27/2053
Dry Pd 4 - ISFSI Decommissioning	85 wks	7/27/2053	10/21/2054
Dry Pd 4 Begins	0 wks	7/27/2053	7/27/2053
Preparation and NRC Review of License Termination Plan	30 wks	7/27/2053	2/21/2054
Verification Survey of Horizontal Storage Modules	6 wks	2/21/2054	4/1/2054
Preparation of Final Report on Decommissioning and NRC Review	28 wks	4/2/2054	10/21/2054
Clean Demolition of ISFSI	27 wks	4/2/2054	10/7/2054
Dry Pd 4 Ends	0 wks	10/21/2054	10/21/2054
License Termination	3271 wks	2/18/2012	10/23/2074
Unit 1 Shutdown	0 wks	2/21/2014	2/21/2014
SAFSTOR Pd 1 - SAFSTOR Planning Prior to Shutdown	105 wks	2/18/2012	2/21/2014
SAFSTOR Pd 1 Begins	0 wks	2/18/2012	2/18/2012
Prepare Written Notification of Cessation of Operations	0 wks	2/18/2012	2/18/2012
Prepare Written Notification of Fuel Removal from Vessel	0 wks	2/18/2012	2/18/2012
SAFSTOR Planning and Design	17 wks	2/18/2012	6/14/2012
Planning for SAFSTOR Baseline Radiation Survey	18 wks	2/18/2012	6/21/2012
Prepare SAFSTOR Plan	22 wks	2/18/2012	7/19/2012
Preparation of SAFSTOR License Documents	45 wks	2/18/2012	12/27/2012
Prepare SAFSTOR Integrated Work Schedule	4 wks	2/18/2012	3/15/2012
Prepare SAFSTOR Activity Specifications	12 wks	3/18/2012	6/7/2012
Administrative Activities in Preparation for SAFSTOR	8 wks	6/10/2012	8/2/2012
Prepare Detailed SAFSTOR Work Procedures	38 wks	8/5/2012	5/22/2013
Planning for Asbestos Abatement	10 wks	5/5/2013	7/1/2013
Select SAFSTOR General Contractor	32 wks	7/1/2013	2/20/2014
Planning and Design of Primary System Decontamination	27 wks	5/5/2013	11/7/2013
SAFSTOR Pd 1 Ends	0 wks	2/21/2014	2/21/2014
SAFSTOR Pd 2 - SAFSTOR Preparations Following Shutdown	41 wks	2/21/2014	12/3/2014
SAFSTOR Pd 2 Begins	0 wks	2/21/2014	2/21/2014
Procure Non-Engineered Standard Equipment For SAFSTOR Preparations	12 wks	2/21/2014	5/1/2014
Perform Primary System Decontamination and Place Waste in Interim Storage	10 wks	5/15/2014	7/23/2014
Flush, Drain and De-Energize Non-Essential Systems and Secure Site	5 wks	5/15/2014	6/18/2014
Drain and Process Suppression Pool Water and Hydrolase Torus Walls	3 wks	6/19/2014	7/8/2014
Drain and Process Dryer Storage Pool Water and Hydrolase Dryer Storage Pool	3 wks	2/21/2014	3/12/2014
General Area Cleanup	16 wks	7/10/2014	10/29/2014
Asbestos Abatement	10 wks	2/21/2014	4/30/2014
Remove and Dispose of Hazardous Waste	2 wks	4/17/2014	4/30/2014
Prepare SAFSTOR Report	5 wks	10/30/2014	12/3/2014
SAFSTOR Pd 2 Ends	0 wks	12/3/2014	12/3/2014
SAFSTOR Pd 3 - SAFSTOR Preparations Delay During Wet Fuel Storage	220 wks	12/3/2014	2/21/2019
SAFSTOR Pd 3 Begins	0 wks	12/3/2014	12/3/2014
SAFSTOR Pd 3 Ends	0 wks	2/21/2019	2/21/2019
SAFSTOR Pd 4 - Completion of SAFSTOR Preparations	43 wks	2/21/2019	12/17/2019
SAFSTOR Pd Begins	0 wks	2/21/2019	2/20/2019

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

ID	Task Name	Duration	Start	Finish
63	Volume Reduce Control Rods, Fuel Channels, and LPRMs and Place Waste in Interim Storage	14 wks	2/21/2019	5/28/2019
64	Drain Spent Fuel Pool and Process Liquid Waste	8 wks	5/28/2019	7/23/2019
65	Drain and De-Energize Remaining Systems and Secure Site	2 wks	7/24/2019	8/6/2019
66	Removal and Interim Storage of Spent Resins, Filter Media and Tank Sludge	2 wks	8/7/2019	8/20/2019
67	Segment, Package and Dispose of Spent Fuel Pool Island Equipment	5 wks	8/21/2019	9/24/2019
68	Secure Site for Dormancy	12 wks	9/25/2019	12/17/2019
69	SAFSTOR Pd 3 Ends	0 wks	12/17/2019	12/17/2019
70	SAFSTOR Pd 5 - Dormancy With Interim Waste and Dry Spent Fuel Storage	275.8 wks	12/17/2019	4/1/2025
71	SAFSTOR Pd 5 Begins	0 wks	12/17/2019	12/17/2019
72	Transport & Dispose of Greater Than Class A Waste in Interim Storage	13 wks	1/1/2025	4/1/2025
73	SAFSTOR Pd 5 Ends	0 wks	4/1/2025	4/1/2025
74	SAFSTOR Pd 6 - Dormancy With Dry Storage	1807.4 wks	4/1/2025	2/21/2054
75	SAFSTOR Pd 6 Begins	0 wks	4/1/2025	4/1/2025
76	Bituminous Roof Replacement	10 wks	4/5/2034	6/13/2034
77	SAFSTOR Pd 6 Ends	0 wks	2/21/2054	2/21/2054
78	SAFSTOR Pd 7 - Dormancy Only	640.8 wks	2/21/2054	6/1/2066
79	SAFSTOR Pd 7 Begins	0 wks	2/21/2054	2/21/2054
80	Bituminous Roof Replacement	10 wks	4/23/2054	7/1/2054
81	SAFSTOR Pd 7 Ends	0 wks	6/1/2066	6/1/2066
82	SAFSTOR Pd 8 - Decommissioning Planning During Dormancy	80 wks	6/1/2066	2/19/2068
83	SAFSTOR Pd 8 Begins	0 wks	6/1/2066	6/1/2066
84	Decommissioning Planning and Design	17 wks	6/1/2066	9/27/2066
85	Planning and Design of Site Characterization	18 wks	6/1/2066	10/4/2066
86	Prepare Integrated Work Sequence and Schedule for Decommissioning	11 wks	10/5/2066	12/20/2066
87	Prepare Decommissioning Activity Specifications	61 wks	12/21/2066	2/19/2068
88	Prepare License Termination Plan	24 wks	9/28/2066	3/13/2067
89	Prepare Detailed Work Procedures for Decommissioning	75 wks	9/14/2066	2/19/2068
90	Preparation of Decommissioning License Documents	90 wks	6/1/2066	2/19/2068
91	Planning and Design of Site Repowering	35 wks	6/20/2067	2/19/2068
92	Administrative Activities	42 wks	5/2/2067	2/19/2068
93	Design Containment Access Modifications	13 wks	11/21/2067	2/19/2068
94	Select Decommissioning General Contractor	32 wks	7/11/2067	2/19/2068
95	SAFSTOR Pd 8 Ends	0 wks	2/19/2068	2/19/2068
96	SAFSTOR Pd 9 - Dismantlement Site Modifications and Preparations	81 wks	2/19/2068	9/9/2069
97	SAFSTOR Pd 9 Begins	0 wks	2/19/2068	2/19/2068
98	Revitalize Infrastructure and Repower Site	44 wks	2/20/2068	12/24/2068
99	Perform Post-SAFSTOR Baseline Radiation Survey	30 wks	12/25/2068	7/22/2069
100	Finalize Residual Radiation Inventory	7 wks	7/23/2069	9/8/2069
101	Select Shipping Casks and Obtain Shipping Permits	8 wks	12/25/2068	2/18/2069
102	Design, Specify, and Procure Special Items and Materials	33 wks	12/25/2068	8/12/2069
103	Modify Containment Access	36 wks	2/20/2068	10/29/2068
104	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	18 wks	6/26/2068	10/29/2068
105	Test Special Cutting and Handling Equipment and Train Operators	4 wks	10/30/2068	11/26/2068
106	Procure Non-Engineered Standard Equipment	0 wks	9/9/2069	9/9/2069
107	SAFSTOR Pd 9 Ends	0 wks	9/9/2069	9/9/2069
108	SAFSTOR Pd 10 - Major Component Removal	104.2 wks	9/9/2069	9/7/2071
109	SAFSTOR Pd 10 Begins	0 wks	9/9/2069	9/9/2069
110	Remove, Package and Dispose of Non-Essential Systems	82 wks	9/10/2069	4/5/2071
111	Segment, Package and Dispose of Nuclear Steam Supply System	43 wks	11/20/2069	9/16/2070
112	Decon Shield Plugs, Pool Plugs and Stud Tensioners	2 wks	9/10/2069	9/23/2069
113	Remove, Decon, Package and Ship Control Rod Drives	3.4 wks	9/24/2069	10/16/2069
114	Segment and Dispose of Drywell Head	8.2 wks	9/24/2069	11/19/2069
115	Remove and Dispose of Spent Fuel Storage Racks	4 wks	10/17/2069	11/13/2069
116	Finalize Internals and Vessel Segmenting Details	5 wks	9/10/2069	10/14/2069
117	Reactor Vessel Insulation Removal and Disposal	2 wks	12/31/2070	1/13/2071
118	Segment, Package and Ship Reactor Internals	31 wks	11/20/2069	6/24/2070
119	Package and Ship Reactor Pressure Vessel	29 wks	6/25/2070	1/13/2071
120	Drain Dryer Separator Pool and Process Liquid Waste	3 wks	1/14/2071	2/3/2071
121	Removal and Disposal of Sacrificial Shield Wall	16 wks	1/14/2071	5/4/2071
122	Segment, Package and Dispose of Refueling Bridge	3 wks	5/5/2071	5/25/2071
123	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	2 wks	5/26/2071	6/8/2071
124	Remove, Package and Dispose of Remaining Active Plant Systems	15 wks	5/26/2071	9/7/2071

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
125	Remove Underground Storm Drains and Manholes	10 wks	5/26/2071	6/3/2071
126	SAFSTOR Pd 10 Ends	0 wks	9/7/2071	9/7/2071
127	SAFSTOR Pd 11 - Site Decontamination	89 wks	9/7/2071	5/23/2073
128	SAFSTOR Pd 11 Begins	0 wks	9/7/2071	9/7/2071
129	Decon Reactor Building	28.5 wks	9/8/2071	3/27/2072
146	Decon Turbine Building	21.5 wks	9/8/2071	2/8/2072
153	Decon Radwaste Building	11.7 wks	9/8/2071	11/29/2071
159	Decon HPCI and RCIC Building	2 wks	11/22/2071	12/6/2071
160	Decon Administration Building	1 wk	12/6/2071	12/13/2071
161	Decon Off-Gas Retention Building	2 wks	12/13/2071	12/27/2071
162	Decon LLRW Storage and Processing Building	4 wks	12/27/2071	1/24/2072
163	Decon Off-Gas Stack	4 wks	12/27/2071	1/24/2072
164	Decon and Remove Yard Structures and Tanks	5 wks	12/27/2071	1/31/2072
165	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	2 wks	1/31/2072	2/14/2072
166	Perform Final Status Survey of Interim Waste Storage Facility	5 wks	2/14/2072	3/21/2072
167	Final Status Survey for Structures	75 wks	9/15/2071	2/21/2073
168	Final Status Survey for Land Areas	19 wks	10/1/2072	2/21/2073
169	Prepare Final Report of Dismantling Program	13 wks	2/23/2073	5/23/2073
170	SAFSTOR Pd 11 Ends	0 wks	5/23/2073	5/23/2073
171	End 60 year SAFSTOR Allowance	0 wks	2/21/2074	2/21/2074
172	Grn Pd 1 - Clean Building Demolition	59 wks	5/23/2073	7/10/2074
173	Grn Pd 1 Begins	0 wks	5/23/2073	5/23/2073
174	Clean Building Demolition Equipment	2 wks	5/24/2073	6/8/2073
175	Demolish Low-Level Radwaste Building	6 wks	6/7/2073	7/18/2073
176	Demolish Turbine Building	14 wks	6/7/2073	9/1/2073
177	Demolish Data Acquisition and Technical Support Building	2 wks	9/1/2073	9/26/2073
178	Demolish Control and Administrative Buildings	6 wks	9/13/2073	10/24/2073
179	Demolish Guard Facility	3 wks	9/13/2073	10/3/2073
180	Demolish Reactor Building	16 wks	10/25/2073	2/27/2074
181	Demolish Cooling Towers and Related Structures	4 wks	2/28/2074	3/27/2074
182	Demolish Training Center	2 wks	2/28/2074	3/13/2074
183	Demolish Plant Support Center	4 wks	2/28/2074	3/27/2074
184	Remove and Dispose of Underground Storage Tanks	3 wks	2/28/2074	3/20/2074
185	Demolish Off-Gas Stack	3 wks	3/28/2074	4/17/2074
186	Demolish Existing Waste Water Treatment	1 wk	3/28/2074	4/3/2074
187	Demolish Remaining Structures	15 wks	3/28/2074	7/10/2074
188	Grn Pd 1 Ends	0 wks	7/10/2074	7/10/2074
189	Grn Pd 2 - Site Restoration	16 wks	7/10/2074	10/23/2074
190	Grn Pd 2 Begins	0 wks	7/10/2074	7/10/2074
191	Site Restoration Equipment	2 wks	7/11/2074	7/24/2074
192	Remove Temporary Structures	5 wks	7/25/2074	8/28/2074
193	Finish Grading and Re-Vegetate Site	8 wks	8/28/2074	10/23/2074
194	Grn Pd 2 Ends	0 wks	10/23/2074	10/23/2074

Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

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Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

ID	Task Name	Duration	Start	Finish
49	Select Decommissioning General Contractor	32 wks	7/14/2033	2/21/2034
50	Design Interim Storage Facility for Greater than Class A Waste	20 wks	5/19/2033	10/3/2033
51	Decon Pd 1 Ends	0 wks	2/21/2034	2/21/2034
52	Decon Pd 2 - Site Modifications and Preparations	93 wks	2/21/2034	12/1/2035
53	Decon Pd 2 Begins	0 wks	2/21/2034	2/21/2034
54	Perform Baseline Radiation Survey	21 wks	2/21/2034	7/15/2034
55	Perform Primary System Decontamination	27 wks	4/30/2034	11/4/2034
56	Flush and Drain Non-Essential Systems	2.4 wks	11/5/2034	11/22/2034
57	Perform Hot Spot Removal and Place Waste	4.6 wks	11/23/2034	12/23/2034
58	Finalize Residual Radiation Inventory	7 wks	12/24/2034	2/10/2035
59	Select Shipping Casks and Obtain Shipping Permits	8 wks	7/16/2034	9/9/2034
60	Design, Specify, and Procure Special Items and Materials	33 wks	2/21/2034	10/7/2034
61	Modify Containment Access	36 wks	12/24/2034	9/1/2035
62	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	18 wks	4/29/2035	9/1/2035
63	Repower Site	9 wks	9/2/2035	11/3/2035
64	Test Special Cutting and Handling Equipment and Train Operators	4 wks	11/4/2035	12/1/2035
65	Procure Non-Engineered Standard Equipment	0 wks	12/1/2035	12/1/2035
66	Asbestos Abatement	10 wks	12/24/2034	3/3/2035
67	Decon Pd 2 Ends	0 wks	12/1/2035	12/1/2035
68	Decon Pd 3 - Major Component Removal	170 wks	12/1/2035	3/4/2039
69	Decon Pd 3 Begins	0 wks	12/1/2035	12/1/2035
70	Remove, Package and Dispose of Non-Essential Systems	82 wks	12/2/2035	6/28/2037
71	Segment, Package and Dispose of Nuclear Steam Supply System	43 wks	6/29/2037	4/24/2038
72	Decon Shield Plugs, Pool Plugs and Stud Tensioners	2 wks	12/2/2035	12/15/2035
73	Volume Reduce Control Rod Blades and Fuel Channels and LPRMS	14 wks	12/16/2035	3/23/2036
74	Segment and Dispose of Drywell Head	8.2 wks	12/16/2035	2/10/2036
75	Purchase Dry Storage Modules for GTCC Waste	0 wks	2/10/2036	2/10/2036
76	Finalize Internals and Vessel Segmenting Details	5 wks	2/13/2036	3/17/2036
77	Segment, Package and Dispose of Reactor Internals	35 wks	3/20/2036	11/17/2036
78	Drain Dryer Separator Pool and Process Liquid Waste	3 wks	11/20/2036	12/8/2036
79	Package and Ship Reactor Pressure Vessel	29 wks	4/25/2038	11/13/2038
80	Reactor Vessel Insulation Removal and Disposal	2 wks	10/31/2038	11/13/2038
81	Removal and Disposal of Sacrificial Shield Wall	16 wks	11/14/2038	3/4/2039
82	Remove and Dispose of Hazardous Waste	2 wks	2/20/2039	3/4/2039
83	Decon Pd 3 Ends	0 wks	3/4/2039	3/4/2039
84	Decon Pd 4 - Balance of Plant Decontamination	96.3 wks	3/4/2039	1/7/2041
85	Decon Pd 4 Begins	0 wks	3/4/2039	3/4/2039
86	Remove and Dispose of Spent Fuel Storage Racks	4 wks	3/5/2039	4/1/2039
87	Drain Spent Fuel Pool and Process Liquid Waste	8 wks	4/2/2039	5/27/2039
88	Segment, Package and Dispose of Refueling Bridge	2 wks	5/28/2039	6/10/2039
89	Segment, Package and Dispose of Spent Fuel Pool Island Equipment	5 wks	6/11/2039	7/15/2039
90	Remove, Package and Dispose of Remaining Active Plant Systems	15 wks	7/16/2039	10/28/2039
91	Decon Reactor Building	28.5 wks	10/29/2039	5/17/2040
108	Decon Turbine Building	21.5 wks	3/5/2039	8/3/2039
115	Decon Radwaste Building	11.7 wks	3/5/2039	5/26/2039
121	Decon HPCI and RCIC Building	2 wks	5/19/2039	6/2/2039
122	Decon Administration Building	1 wk	6/2/2039	6/9/2039
123	Decon Off-Gas Retention Building	2 wks	6/9/2039	6/23/2039

DUANE ARNOLD ENERGY CENTER SCENARIO 3 DETAILED SCHEDULE

Prompt Dismantlement, License Extension, Yucca Mountain Opening 2025

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				
124	Decon LLRW Storage and Processing Building	4 wks	6/23/2039	7/21/2039																																											
125	Decon Off-Gas Stack	4 wks	6/23/2039	7/21/2039																																											
126	Decon and Remove Yard Structures and Tanks	5 wks	6/23/2039	7/28/2039																																											
127	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	2 wks	7/28/2039	8/11/2039																																											
128	Remove Underground Storm Drains and Manholes	10 wks	7/28/2039	10/6/2039																																											
129	Final Status Survey for Structures	318 days	7/21/2039	10/8/2040																																											
130	Final Status Survey for Land Areas	310 days	7/31/2039	10/8/2040																																											
131	Prepare Final Report of Dismantling Program	13 wks	10/8/2040	1/7/2041																																											
132	Decon Pd 4 Ends	0 wks	1/7/2041	1/7/2041																																											
133	Gm Pd 1 - Clean Building Demolition	59 wks	1/7/2041	2/24/2042																																											
134	Gm Pd 1 Begins	0 wks	1/7/2041	1/7/2041																																											
135	Clean Building Demolition Equipment	2 wks	1/7/2041	1/21/2041																																											
136	Install Temporary Office Buildings	2 wks	1/7/2041	1/21/2041																																											
137	Demolish Low-Level Radwaste Building	6 wks	1/21/2041	3/4/2041																																											
138	Demolish Turbine Building	14 wks	1/21/2041	4/29/2041																																											
139	Demolish Data Acquisition and Technical Support Building	2 wks	4/29/2041	5/13/2041																																											
140	Demolish Control and Administrative Buildings	6 wks	4/29/2041	6/10/2041																																											
141	Demolish Guard Facility	3 wks	4/29/2041	5/20/2041																																											
142	Demolish HPCI and RCIC Building	2 wks	4/29/2041	5/13/2041																																											
143	Demolish Reactor Building	18 wks	6/10/2041	10/14/2041																																											
144	Demolish Cooling Towers and Related Structures	4 wks	10/14/2041	11/11/2041																																											
145	Demolish Training Center	2 wks	10/14/2041	10/28/2041																																											
146	Demolish Plant Support Center	4 wks	10/14/2041	11/11/2041																																											
147	Remove and Dispose of Underground Storage Tanks	3 wks	10/14/2041	11/4/2041																																											
148	Demolish Off-Gas Stack	3 wks	11/11/2041	12/2/2041																																											
149	Demolish Existing Waste Water Treatment	1 wk	11/11/2041	11/18/2041																																											
150	Demolish Remaining Structures	15 wks	11/11/2041	2/24/2042																																											
151	Gm Pd 1 Ends	0 wks	2/24/2042	2/24/2042																																											
152	Gm Pd 2 - Site Restoration	12 wks	2/24/2042	5/18/2042																																											
153	Gm Pd 2 Begins	0 wks	2/24/2042	2/24/2042																																											
154	Site Restoration Equipment	2 wks	2/24/2042	3/9/2042																																											
155	Remove Temporary Structures	2 wks	3/9/2042	3/23/2042																																</											

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

Task Name	Duration	Start	Finish
Spent Fuel Management	1792.2 wks	6/23/2033	10/23/2087
Spent Fuel Shipping to DOE Repository In Progress	0 wks	2/21/2034	2/21/2034
Spent Fuel Shipping Complete	0 wks	2/24/2067	2/24/2067
Dry Pd 1 - Fuel Pool Island Design	35 wks	6/23/2033	2/21/2034
Dry Pd 1 Begins	0 wks	6/23/2033	6/23/2033
Design Spent Fuel Support System Modifications	32 wks	7/14/2033	2/21/2034
Design Control Room Relocation	35 wks	6/23/2033	2/21/2034
Design Spent Fuel Storage Security Modifications	25 wks	9/1/2033	2/21/2034
Dry Pd 1 Ends	0 wks	2/21/2034	2/21/2034
Dry Pd 2 - Spent Fuel Cooling and Transfer to Dry Storage	261 wks	2/21/2034	2/21/2039
Dry Pd 2 Begins	0 wks	2/21/2034	2/21/2034
Install Spent Fuel Pool System Modifications	4 wks	2/21/2034	3/19/2034
Implement Control Room Modifications	48 wks	3/20/2034	2/18/2035
Implement Spent Fuel Pool Security Modifications	36 wks	6/12/2034	2/18/2035
Purchase of Dry Storage Modules for Fuel Assemblies	0 wks	2/18/2035	2/18/2035
Spent Fuel Pool Empty	0 wks	2/21/2039	2/21/2039
Dry Pd 2 Ends	0 wks	2/21/2039	2/21/2039
Dry Pd 3 - Dry Storage During Dormancy	1431.2 wks	2/21/2039	7/29/2086
Dry Pd 3 Begins	0 wks	2/21/2039	2/21/2039
Dry Pd 3 Ends	0 wks	7/29/2086	7/29/2086
Dry Pd 4 - ISFSI Decommissioning	85 wks	7/29/2086	10/23/2087
Dry Pd 4 Begins	0 wks	7/29/2086	7/29/2086
Preparation and NRC Review of License Termination Plan	30 wks	7/29/2086	2/24/2087
Verification Survey of Horizontal Storage Modules	6 wks	2/24/2087	4/3/2087
Preparation of Final Report on Decommissioning and NRC Review	29 wks	4/6/2087	10/23/2087
Clean Demolition of ISFSI	27 wks	4/6/2087	10/9/2087
Dry Pd 4 Ends	0 wks	10/23/2087	10/23/2087
License Termination	3262.8 wks	2/18/2032	8/28/2084
Unit 1 Shutdown	0 wks	2/21/2034	2/21/2034
SAFSTOR Pd 1 - SAFSTOR Planning Prior to Shutdown	105 wks	2/18/2032	2/21/2034
SAFSTOR Pd 1 Begins	0 wks	2/18/2032	2/18/2032
Prepare Written Notification of Cessation of Operations	0 wks	2/18/2032	2/18/2032
Prepare Written Notification of Fuel Removal from Vessel	0 wks	2/18/2032	2/18/2032
SAFSTOR Planning and Design	17 wks	2/18/2032	6/14/2032
Planning for SAFSTOR Baseline Radiation Survey	18 wks	2/18/2032	6/21/2032
Prepare SAFSTOR Plan	22 wks	2/18/2032	7/19/2032
Preparation of SAFSTOR License Documents	45 wks	2/18/2032	12/27/2032
Prepare SAFSTOR Integrated Work Schedule	4 wks	2/18/2032	3/15/2032
Prepare SAFSTOR Activity Specifications	12 wks	3/19/2032	6/7/2032
Administrative Activities in Preparation for SAFSTOR	8 wks	6/10/2032	8/2/2032
Prepare Detailed SAFSTOR Work Procedures	39 wks	8/5/2032	5/2/2033
Planning for Asbestos Abatement	10 wks	5/5/2033	7/11/2033
Select SAFSTOR General Contractor	32 wks	7/14/2033	2/20/2034
Planning and Design of Primary System Decontamination	27 wks	5/5/2033	11/7/2033
SAFSTOR Pd 1 Ends	0 wks	2/21/2034	2/21/2034
SAFSTOR Pd 2 - SAFSTOR Preparations Following Shutdown	41 wks	2/21/2034	12/3/2034
SAFSTOR Pd 2 Begins	0 wks	2/21/2034	2/21/2034
Procure Non-Engineered Standard Equipment For SAFSTOR Preparations	12 wks	2/21/2034	5/14/2034
Perform Primary System Decontamination and Place Waste in Interim Storage	10 wks	5/15/2034	7/23/2034
Flush, Drain and De-Energize Non-Essential Systems and Secure Site	5 wks	5/15/2034	6/18/2034
Drain and Process Suppression Pool Water and Hydrolyze Torus Walls	3 wks	6/19/2034	7/8/2034
Drain and Process Dryer Storage Pool Water and Hydrolyze Dryer Storage Pool	3 wks	2/21/2034	3/12/2034
General Area Cleanup	16 wks	7/10/2034	10/29/2034
Asbestos Abatement	10 wks	2/21/2034	4/30/2034
Remove and Dispose of Hazardous Waste	2 wks	4/17/2034	4/30/2034
Prepare SAFSTOR Report	5 wks	10/30/2034	12/3/2034
SAFSTOR Pd 2 Ends	0 wks	12/3/2034	12/3/2034
SAFSTOR Pd 3 - SAFSTOR Preparations Delay During Spent Fuel Pool Operations	220 wks	12/3/2034	2/21/2039
SAFSTOR Pd 3 Begins	0 wks	12/3/2034	12/3/2034
SAFSTOR Pd 3 Ends	0 wks	2/21/2039	2/21/2039
SAFSTOR Pd 4 - Completion of SAFSTOR Preparations	43 wks	2/21/2039	12/17/2039
SAFSTOR Pd 4 Begins	0 wks	2/21/2039	2/21/2039

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

Task Name	Duration	Start	Finish
Volume Reduce Control Rods, Fuel Channels, & LPRMs	14 wks	2/21/2039	5/19/2039
Drain Spent Fuel Pool and Process Liquid Waste	8 wks	5/29/2038	7/23/2038
Drain and De-Energize Remaining Systems and Secure Site	2 wks	7/24/2039	8/6/2039
Removal and Interim Storage of Spent Resins, Filter Media and Tank Sludge	2 wks	8/7/2039	8/20/2039
Segment, Package and Dispose of Spent Fuel Pool Island Equipment	5 wks	8/21/2039	9/24/2039
Secure Site for Dormancy	12 wks	9/25/2039	12/17/2039
SAFSTOR Pd 4 Ends	0 wks	12/17/2039	12/17/2039
SAFSTOR Pd 5 - Dormancy During Dry Storage	1453.2 wks	12/17/2039	10/23/2067
SAFSTOR Pd 5 Begins	0 wks	12/17/2039	12/17/2039
Bituminous Roof Replacement	10 wks	5/4/2054	6/12/2054
SAFSTOR Pd 5 Ends	0 wks	10/23/2067	10/23/2067
SAFSTOR Pd 6 - Dormancy Only	570.4 wks	10/23/2067	8/1/2086
SAFSTOR Pd 6 Begins	0 wks	10/23/2067	10/23/2067
Bituminous Roof Replacement	10 wks	11/28/2068	1/13/2069
SAFSTOR Pd 6 Ends	0 wks	8/1/2086	8/1/2086
SAFSTOR Pd 7 - Decommissioning Planning During Dormancy	90 wks	8/1/2086	2/19/2088
SAFSTOR Pd 7 Begins	0 wks	8/1/2086	8/1/2086
Decommissioning Planning and Design	17 wks	8/1/2086	9/27/2086
Planning and Design of Site Characterization	18 wks	8/1/2086	10/4/2086
Prepare Integrated Work Sequence and Schedule for Decommissioning	11 wks	10/5/2086	12/20/2086
Prepare Decommissioning Activity Specifications	61 wks	12/21/2086	2/19/2088
Prepare License Termination Plan	24 wks	9/28/2086	3/13/2087
Prepare Detailed Work Procedures for Decommissioning	75 wks	9/14/2086	2/19/2088
Preparation of Decommissioning License Documents	90 wks	8/1/2086	2/19/2088
Planning and Design of Site Repowering	35 wks	6/20/2087	2/19/2088
Administrative Activities	42 wks	5/2/2087	2/19/2088
Design Containment Access Modifications	13 wks	11/21/2087	2/19/2088
Select Decommissioning General Contractor	32 wks	7/11/2087	2/19/2088
SAFSTOR Pd 7 Ends	0 wks	2/19/2088	2/19/2088
SAFSTOR Pd 8 - Dismantlement Site Modifications and Preparations	73 wks	2/19/2088	7/15/2089
SAFSTOR Pd 8 Begins	0 wks	2/19/2088	2/19/2088
Revitalize Infrastructure and Repower Site	36 wks	2/20/2088	10/29/2088
Perform Post-SAFSTOR Baseline Radiation Survey	30 wks	10/30/2088	5/27/2089
Finalize Residual Radiation Inventory	7 wks	5/28/2089	7/15/2089
Select Shipping Casks and Obtain Shipping Permits	8 wks	10/30/2088	12/24/2088
Design, Specify, and Procure Special Items and Materials	33 wks	10/30/2088	6/17/2089
Modify Containment Access	36 wks	2/20/2088	10/29/2088
Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	18 wks	6/26/2088	10/28/2088
Test Special Cutting and Handling Equipment and Train Operators	4 wks	10/30/2088	11/26/2088
Procure Non-Engineered Standard Equipment	0 wks	7/15/2089	7/15/2089
SAFSTOR Pd 8 Ends	0 wks	7/15/2089	7/15/2089
SAFSTOR Pd 9 - Major Component Removal	104.2 wks	7/15/2089	7/13/2091
SAFSTOR Pd 9 Begins	0 wks	7/15/2089	7/15/2089
Remove, Package and Dispose of Non-Essential Systems	82 wks	7/16/2089	2/9/2091
Segment, Package and Dispose of Nuclear Steam Supply System	43 wks	9/25/2089	7/22/2090
Decon Shield Plugs, Pool Plugs and Stud Tensioners	2 wks	7/16/2089	7/26/2089
Remove, Decon, Package and Ship Control Rod Drives	3.4 wks	7/30/2089	8/21/2089
Segment and Dispose of Drywell Head	8.2 wks	7/30/2089	9/24/2089
Purchase Dry Storage Modules for GTCC Waste	0 wks	7/15/2089	7/15/2089
Remove and Dispose of Spent Fuel Storage Racks	4 wks	8/22/2089	9/18/2089
Finalize Internals and Vessel Segmenting Details	5 wks	7/16/2089	8/19/2089
Reactor Vessel Insulation Removal and Disposal	2 wks	11/5/2090	11/18/2090
Segment, Package and Ship Reactor Internals	31 wks	9/25/2089	4/29/2090
Package and Ship Reactor Pressure Vessel	29 wks	4/30/2090	11/18/2090
Drain Dryer Separator Pool and Process Liquid Waste	3 wks	11/19/2090	12/9/2090
Removal and Disposal of Sacrificial Shield Wall	16 wks	11/19/2090	3/9/2091
Segment, Package and Dispose of Refueling Bridge	3 wks	3/10/2091	3/30/2091
Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	2 wks	3/31/2091	4/13/2091
Remove, Package and Dispose of Remaining Active Plant Systems	15 wks	3/31/2091	7/13/2091
Remove Underground Storm Drains and Manholes	10 wks	3/31/2091	6/8/2091
SAFSTOR Pd 9 Ends	0 wks	7/13/2091	7/13/2091
SAFSTOR Pd 10 - Site Decontamination	89 wks	7/13/2091	3/28/2093

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	7/13/2091	7/13/2091
126	Decon Reactor Building	28.5 wks	7/14/2091	1/30/2092
143	Decon Turbine Building	21.5 wks	7/14/2091	12/12/2091
150	Decon Radwaste Building	11.7 wks	8/15/2091	11/3/2091
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	12/1/2091
159	Decon LLRW Storage and Processing Building	4 wks	12/1/2091	12/29/2091
160	Decon Off-Gas Stack	4 wks	12/1/2091	12/29/2091
161	Decon and Remove Yard Structures and Tanks	5 wks	12/1/2091	1/5/2092
162	Segment, Package and Dispose of Contaminated Decon Equipment and Tooling	2 wks	1/5/2092	1/19/2092
163	Perform Final Status Survey of Interim Waste Storage Facility	5 wks	1/19/2092	2/23/2092
164	Final Status Survey for Structures	75 wks	7/21/2091	12/27/2092
165	Final Status Survey for Land Areas	19 wks	7/17/2092	12/27/2092
166	Prepare Final Report of Dismantling Program	13 wks	12/28/2092	3/27/2093
167	SAFSTOR Pd 10 Ends	0 wks	3/28/2093	3/27/2093
168	End 60 year SAFSTOR Allowance	0 wks	2/21/2094	2/21/2094
169	Grn Pd 1 - Clean Building Demolition	59 wks	3/28/2093	5/15/2094
170	Grn Pd 1 Begins	0 wks	3/28/2093	3/28/2093
171	Clean Building Demolition Equipment	2 wks	3/29/2093	4/11/2093
172	Demolish Low-Level Radwaste Building	6 wks	4/12/2093	5/23/2093
173	Demolish Turbine Building	14 wks	4/12/2093	7/18/2093
174	Demolish Data Acquisition and Technical Support Building	2 wks	7/19/2093	8/1/2093
175	Demolish Control and Administrative Buildings	6 wks	7/19/2093	8/29/2093
176	Demolish Guard Facility	3 wks	7/19/2093	8/8/2093
177	Demolish Reactor Building	18 wks	8/30/2093	1/2/2094
178	Demolish Cooling Towers and Related Structures	4 wks	1/3/2094	1/30/2094
179	Demolish Training Center	2 wks	1/3/2094	1/16/2094
180	Demolish Plant Support Center	4 wks	1/3/2094	1/30/2094
181	Remove and Dispose of Underground Storage Tanks	3 wks	1/3/2094	1/23/2094
182	Demolish Off-Gas Stack	3 wks	1/31/2094	2/20/2094
183	Demolish Existing Waste Water Treatment	1 wk	1/31/2094	2/6/2094
184	Demolish Remaining Structures	15 wks	1/31/2094	5/15/2094
185	Grn Pd 1 Ends	0 wks	5/15/2094	5/15/2094
186	Grn Pd 2 - Site Restoration	15 wks	5/15/2094	8/28/2094
187	Grn Pd 2 Begins	0 wks	5/15/2094	5/15/2094
188	Site Restoration Equipment	2 wks	5/16/2094	5/29/2094
189	Remove Temporary Structures	5 wks	5/30/2094	7/3/2094
190	Finish Grading and Re-Vegetate Site	6 wks	7/4/2094	8/28/2094
191	Grn Pd 2 Ends	0 wks	8/28/2094	8/28/2094

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	Planning and Design of Site Characterization	\$311	\$3	\$0	\$0	\$41	\$356
1.05	Prepare Integrated Work Sequence and Schedule for Decommissioning	\$137	\$0	\$0	\$0	\$18	\$155
1.06	Prepare Decommissioning Activity Specifications	\$2,486	\$20	\$0	\$0	\$326	\$2,832
1.07	Prepare License Termination Plan	\$317	\$10	\$0	\$0	\$42	\$369
1.08	Prepare Detailed Work Procedures for Decommissioning	\$2,259	\$8	\$0	\$0	\$295	\$2,561
1.09	Preparation of Decommissioning License Documents	\$1,661	\$7	\$0	\$0	\$217	\$1,885
1.10	Planning and Design of Site Repowering	\$579	\$7	\$0	\$0	\$76	\$662
1.11	Administrative Activities	\$757	\$4	\$0	\$0	\$99	\$860
1.12	Design Containment Access Modifications	\$221	\$3	\$0	\$0	\$29	\$253
1.13	Planning and Design of Primary System Decontamination	\$202	\$2	\$0	\$0	\$26	\$230
1.14	Planning for Asbestos Abatement	\$132	\$2	\$0	\$0	\$17	\$152
1.15	Select Decommissioning General Contractor	\$251	\$4	\$0	\$0	\$33	\$289
1.16	Design Interim Storage Facility for Greater than Class A Waste	\$487	\$9	\$0	\$476	\$126	\$1,099
Distributed	Subtotal	\$10,036	\$79	\$0	\$476	\$1,376	\$11,970
Undistributed							
1.01	Utility Staff	\$4,631	\$0	\$0	\$0	\$602	\$5,233
1.03	Security Guard Force	\$646	\$0	\$0	\$0	\$97	\$743
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$0	\$0	\$0
1.09	Energy	\$0	\$0	\$0	\$0	\$0	\$0
1.10	Decommissioning General Contractor Staff	\$4,211	\$0	\$0	\$0	\$547	\$4,758

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
Undistributed	Subtotal	\$9,488	\$0	\$0	\$0	\$1,246	\$10,734
Decon Pd 1	Subtotal	\$19,524	\$79	\$0	\$476	\$2,622	\$22,704

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	Perform Baseline Radiation Survey	\$233	\$88	\$0	\$0	\$42	\$363
2.02	Perform Primary System Decontamination and Place Waste in Interim Storage	\$848	\$805	\$77	\$0	\$398	\$2,129
2.03	Flush and Drain Non-Essential Systems and Place Waste in Interim Storage	\$35	\$6	\$29	\$0	\$16	\$86
2.04	Perform Hot Spot Removal and Place Waste in Interim Storage	\$545	\$176	\$43	\$0	\$176	\$941
2.05	Finalize Residual Radiation Inventory	\$37	\$41	\$0	\$0	\$10	\$88
2.06	Select Shipping Casks and Obtain Shipping Permits	\$29	\$0	\$0	\$0	\$4	\$33
2.07	Design, Specify, and Procure Special Items and Materials	\$782	\$5,300	\$0	\$0	\$791	\$6,873
2.08	Modify Containment Access	\$300	\$554	\$0	\$0	\$111	\$965
2.09	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	\$0	\$869	\$0	\$0	\$113	\$982
2.10	Repower Site	\$524	\$1,578	\$0	\$0	\$273	\$2,376
2.11	Test Special Cutting and Handling Equipment and Train Operators	\$882	\$145	\$0	\$0	\$134	\$1,161
2.12	Procure Non-Engineered Standard Equipment	\$0	\$4,444	\$0	\$0	\$578	\$5,022
2.13	Asbestos Abatement	\$145	\$57	\$196	\$0	\$92	\$490
2.14	Construct Interim Storage Facility for Greater than Class A Waste	\$27	\$1,527	\$0	\$0	\$202	\$1,756
Distributed	Subtotal	\$4,387	\$15,590	\$345	\$0	\$2,940	\$23,265
Undistributed							
1.01	Utility Staff	\$29,818	\$0	\$0	\$0	\$3,876	\$33,695
1.02	Utility Staff HP Supplies	\$0	\$1,028	\$0	\$0	\$154	\$1,182
1.03	Security Guard Force	\$2,281	\$0	\$0	\$0	\$342	\$2,623
1.04	Insurance	\$0	\$0	\$0	\$1,093	\$164	\$1,257
1.05	Property Taxes	\$0	\$0	\$0	\$18	\$3	\$20
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$679	\$102	\$780
1.07	Materials and Services	\$0	\$9,205	\$0	\$0	\$1,381	\$10,586
1.08	DAW Disposal	\$0	\$0	\$45	\$0	\$7	\$52

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
1.09	Energy	\$0	\$0	\$0	\$885	\$133	\$1,018
1.10	Decommissioning General Contractor Staff	\$18,644	\$0	\$0	\$0	\$2,424	\$21,067
1.11	DGC HP Supplies	\$0	\$878	\$0	\$0	\$132	\$1,010
Undistributed	Subtotal	\$50,743	\$11,111	\$45	\$2,675	\$8,718	\$73,290
Decon Pd 2	Subtotal	\$55,130	\$26,701	\$390	\$2,675	\$11,658	\$96,555

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 Interim 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	\$20,601	\$0	\$0	\$0	\$2,678	\$23,279

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	\$1,363	\$0	\$0	\$204	\$1,568
1.03	Security Guard Force	\$2,376	\$0	\$0	\$0	\$356	\$2,733
1.04	Insurance	\$0	\$0	\$0	\$1,139	\$171	\$1,309
1.05	Property Taxes	\$0	\$0	\$0	\$18	\$3	\$21
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,164	\$175	\$1,339
1.07	Materials and Services	\$0	\$6,652	\$0	\$0	\$998	\$7,650
1.08	DAW Disposal	\$0	\$0	\$160	\$0	\$24	\$184
1.09	Energy	\$0	\$0	\$0	\$968	\$145	\$1,113
1.10	Decommissioning General Contractor Staff	\$18,355	\$0	\$0	\$0	\$2,386	\$20,742
1.11	DGC HP Supplies	\$0	\$780	\$0	\$0	\$117	\$896
Undistributed	Subtotal	\$41,332	\$8,795	\$160	\$3,289	\$7,257	\$60,834
Decon Pd 4	Subtotal	\$54,704	\$14,691	\$11,755	\$4,210	\$14,495	\$99,858

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	\$603	\$0	\$0	\$0	\$78	\$681
1.02	Utility Staff HP Supplies	\$0	\$92	\$0	\$0	\$14	\$106
1.03	Security Guard Force	\$370	\$0	\$0	\$0	\$55	\$425
1.04	Insurance	\$0	\$0	\$0	\$2,127	\$319	\$2,446
1.05	Property Taxes	\$0	\$0	\$0	\$35	\$5	\$40
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,321	\$198	\$1,519
1.07	Materials and Services	\$0	\$280	\$0	\$0	\$42	\$322
1.08	DAW Disposal	\$0	\$0	\$3	\$0	\$0	\$4
1.09	Energy	\$0	\$0	\$0	\$41	\$6	\$47
Undistributed	Subtotal	\$973	\$372	\$3	\$3,524	\$717	\$5,590
Decon Pd 5	Subtotal	\$1,346	\$1,095	\$31,023	\$3,774	\$8,095	\$45,333

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		\$247,323	\$68,196	\$90,735	\$17,309	\$72,134	\$495,699
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	\$105
2.08	Energy	\$0	\$0	\$0	\$0	\$0	\$0
Undistributed	Subtotal	\$93	\$0	\$0	\$0	\$12	\$105
Dry Pd 1	Subtotal	\$1,096	\$15	\$0	\$0	\$144	\$1,256

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	\$33,794	\$0	\$0	\$0	\$4,393	\$38,187
2.02	Utility Staff HP Supplies	\$0	\$2,639	\$0	\$0	\$396	\$3,035
2.04	Additional Staff for Spent Fuel Shipping	\$6,525	\$0	\$0	\$0	\$979	\$7,504
2.05	Security Guard Force	\$14,862	\$0	\$0	\$0	\$2,229	\$17,091
2.06	Insurance	\$0	\$0	\$0	\$8,765	\$1,315	\$10,080
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$12,462	\$1,869	\$14,331
2.08	Energy	\$0	\$0	\$0	\$1,088	\$163	\$1,251
2.09	Materials and Services	\$0	\$17,091	\$0	\$0	\$2,564	\$19,655
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$2,081	\$312	\$2,393
2.11	Property Taxes	\$0	\$0	\$0	\$277	\$42	\$319
Undistributed	Subtotal	\$55,181	\$19,730	\$0	\$24,673	\$14,262	\$113,846
Dry Pd 4	Subtotal	\$55,181	\$19,730	\$0	\$24,673	\$14,262	\$113,846

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	\$684	\$0	\$0	\$0	\$89	\$773
2.05	Security Guard Force	\$662	\$0	\$0	\$0	\$99	\$761
2.06	Insurance	\$0	\$0	\$0	\$154	\$23	\$178
2.08	Energy	\$0	\$0	\$0	\$5	\$1	\$5
2.09	Materials and Services	\$0	\$378	\$0	\$0	\$57	\$435
2.11	Property Taxes	\$0	\$0	\$0	\$12	\$2	\$14
2.12	Decommissioning General Contractor Staff	\$348	\$0	\$0	\$0	\$52	\$400
Undistributed	Subtotal	\$1,694	\$378	\$0	\$171	\$323	\$2,566
Dry Pd 5	Subtotal	\$3,077	\$1,067	\$1,875	\$332	\$923	\$7,274

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	\$118,612	\$79,495	\$1,875	\$42,861	\$35,388	\$278,233
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	\$490	\$0	\$0	\$0	\$64	\$553
3.02	Security Guard Force	\$122	\$0	\$0	\$0	\$18	\$140
3.03	Decommissioning General Contractor Staff	\$880	\$0	\$0	\$0	\$114	\$994
3.04	Energy	\$0	\$0	\$0	\$2	\$0	\$2
3.05	Insurance	\$0	\$0	\$0	\$28	\$4	\$33
Undistributed	Subtotal	\$1,492	\$0	\$0	\$30	\$200	\$1,722
Grn Pd 2	Subtotal	\$1,879	\$384	\$0	\$30	\$338	\$2,632

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	\$24,258	\$8,994	\$1,543	\$415	\$5,498	\$40,710
Scenario No. 1	Total	\$390,193	\$156,685	\$94,153	\$60,585	\$113,020	\$814,642

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	\$4,631	\$0	\$0	\$0	\$602	\$5,233
1.03	Security Guard Force	\$646	\$0	\$0	\$0	\$97	\$743
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$0	\$0	\$0
1.09	Energy	\$0	\$0	\$0	\$0	\$0	\$0
1.10	Decommissioning General Contractor Staff	\$4,211	\$0	\$0	\$0	\$547	\$4,758
Undistributed	Subtotal	\$9,488	\$0	\$0	\$0	\$1,246	\$10,734
SAFSTOR Pd 1	Subtotal	\$16,136	\$67	\$0	\$0	\$2,119	\$18,324

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 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	\$13,115	\$0	\$0	\$0	\$1,705	\$14,819
1.02	Utility Staff HP Supplies	\$0	\$452	\$0	\$0	\$68	\$520
1.03	Security Guard Force	\$1,003	\$0	\$0	\$0	\$150	\$1,154
1.04	Insurance	\$0	\$0	\$0	\$481	\$72	\$553
1.05	Property Taxes	\$0	\$0	\$0	\$8	\$1	\$9
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$298	\$45	\$343
1.07	Materials and Services	\$0	\$4,048	\$0	\$0	\$607	\$4,656
1.08	DAW Disposal	\$0	\$0	\$28	\$0	\$4	\$32
1.09	Energy	\$0	\$0	\$0	\$389	\$58	\$448
1.10	Decommissioning General Contractor Staff	\$8,200	\$0	\$0	\$0	\$1,066	\$9,266
1.11	DGC HP Supplies	\$0	\$386	\$0	\$0	\$58	\$444
Undistributed	Subtotal	\$22,318	\$4,886	\$28	\$1,176	\$3,834	\$32,244

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 2	Subtotal	\$24,538	\$9,649	\$495	\$1,307	\$5,221	\$41,214

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 3 SAFSTOR Preparation Delay During Spent Fuel Pool Operations							
Undistributed							
1.01	Utility Staff	\$737	\$0	\$0	\$0	\$96	\$832
1.02	Utility Staff HP Supplies	\$0	\$113	\$0	\$0	\$17	\$130
1.03	Security Guard Force	\$452	\$0	\$0	\$0	\$68	\$520
1.04	Insurance	\$0	\$0	\$0	\$2,599	\$390	\$2,989
1.05	Property Taxes	\$0	\$0	\$0	\$42	\$6	\$49
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$883	\$132	\$1,015
1.07	Materials and Services	\$0	\$342	\$0	\$0	\$51	\$393
1.09	Energy	\$0	\$0	\$0	\$939	\$141	\$1,080
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$475	\$71	\$546
Undistributed	Subtotal	\$1,189	\$455	\$0	\$4,938	\$972	\$7,554
SAFSTOR Pd 3	Subtotal	\$1,189	\$455	\$0	\$4,938	\$972	\$7,554

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 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	\$2,246	\$0	\$0	\$0	\$292	\$2,538
1.02	Utility Staff HP Supplies	\$0	\$130	\$0	\$0	\$19	\$149
1.03	Security Guard Force	\$439	\$0	\$0	\$0	\$66	\$504
1.04	Insurance	\$0	\$0	\$0	\$504	\$76	\$580
1.05	Property Taxes	\$0	\$0	\$0	\$8	\$1	\$9
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$313	\$47	\$360
1.07	Materials and Services	\$0	\$737	\$0	\$0	\$110	\$847
1.08	DAW Disposal	\$0	\$0	\$9	\$0	\$1	\$10
1.09	Energy	\$0	\$0	\$0	\$315	\$47	\$362
1.11	DGC HP Supplies	\$0	\$95	\$0	\$0	\$14	\$109
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$92	\$14	\$106
Undistributed	Subtotal	\$2,685	\$962	\$9	\$1,232	\$687	\$5,574
SAFSTOR Pd 4	Subtotal	\$3,299	\$1,353	\$3,577	\$2,732	\$1,934	\$12,896

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 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	\$163
1.03	Security Guard Force	\$567	\$0	\$0	\$0	\$85	\$652
1.04	Insurance	\$0	\$0	\$0	\$3,259	\$489	\$3,748
1.05	Property Taxes	\$0	\$0	\$0	\$53	\$8	\$61
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,107	\$166	\$1,273
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	\$1,490	\$570	\$1	\$5,271	\$1,081	\$8,413
SAFSTOR Pd 5	Subtotal	\$1,575	\$941	\$9,020	\$5,271	\$3,260	\$20,068

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 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	\$5,044	\$0	\$0	\$0	\$656	\$5,700
1.02	Utility Staff HP Supplies	\$0	\$772	\$0	\$0	\$116	\$888
1.03	Security Guard Force	\$3,096	\$0	\$0	\$0	\$464	\$3,560
1.04	Insurance	\$0	\$0	\$0	\$14,189	\$2,128	\$16,317
1.05	Property Taxes	\$0	\$0	\$0	\$289	\$43	\$332
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$6,046	\$907	\$6,953
1.07	Materials and Services	\$0	\$2,342	\$0	\$0	\$351	\$2,694
1.09	Energy	\$0	\$0	\$0	\$1,060	\$159	\$1,219
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$3,250	\$488	\$3,738
Undistributed	Subtotal	\$8,140	\$3,114	\$0	\$24,834	\$5,312	\$41,401
SAFSTOR Pd 6	Subtotal	\$8,399	\$3,203	\$38	\$24,834	\$5,370	\$41,845

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 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	\$2,620	\$0	\$0	\$0	\$341	\$2,961
1.02	Utility Staff HP Supplies	\$0	\$328	\$0	\$0	\$49	\$377
1.03	Security Guard Force	\$6,576	\$0	\$0	\$0	\$986	\$7,562
1.04	Insurance	\$0	\$0	\$0	\$6,028	\$904	\$6,932
1.05	Property Taxes	\$0	\$0	\$0	\$123	\$18	\$141
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$2,568	\$385	\$2,954
1.07	Materials and Services	\$0	\$2,786	\$0	\$0	\$418	\$3,204
1.09	Energy	\$0	\$0	\$0	\$450	\$68	\$518
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$2,762	\$414	\$3,176
Undistributed	Subtotal	\$9,196	\$3,114	\$0	\$11,931	\$3,583	\$27,825
SAFSTOR Pd 7	Subtotal	\$9,455	\$3,203	\$38	\$11,931	\$3,641	\$28,269

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 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	\$3,962	\$0	\$0	\$0	\$515	\$4,477
1.02	Utility Staff HP Supplies	\$0	\$136	\$0	\$0	\$20	\$157
1.03	Security Guard Force	\$553	\$0	\$0	\$0	\$83	\$636
1.04	Insurance	\$0	\$0	\$0	\$1,059	\$159	\$1,218
1.05	Property Taxes	\$0	\$0	\$0	\$17	\$3	\$20
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$360	\$54	\$414
1.07	Materials and Services	\$0	\$1,241	\$0	\$0	\$186	\$1,427
1.09	Energy	\$0	\$0	\$0	\$63	\$9	\$73
1.10	Decommissioning General Contractor Staff	\$4,211	\$0	\$0	\$0	\$547	\$4,758
1.11	DGC HP Supplies	\$0	\$200	\$0	\$0	\$30	\$230
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$387	\$58	\$445

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	\$8,726	\$1,577	\$0	\$1,886	\$1,664	\$13,855
SAFSTOR Pd 8	Subtotal	\$18,277	\$1,650	\$0	\$1,886	\$2,916	\$24,733

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 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	\$26,137	\$0	\$0	\$0	\$3,398	\$29,535
1.02	Utility Staff HP Supplies	\$0	\$901	\$0	\$0	\$135	\$1,036
1.03	Security Guard Force	\$2,000	\$0	\$0	\$0	\$300	\$2,299
1.04	Insurance	\$0	\$0	\$0	\$958	\$144	\$1,102
1.05	Property Taxes	\$0	\$0	\$0	\$16	\$2	\$18
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$595	\$89	\$684
1.07	Materials and Services	\$0	\$8,068	\$0	\$0	\$1,210	\$9,279
1.08	DAW Disposal	\$0	\$0	\$21	\$0	\$3	\$24
1.09	Energy	\$0	\$0	\$0	\$646	\$97	\$743
1.10	Decommissioning General Contractor Staff	\$16,342	\$0	\$0	\$0	\$2,124	\$18,466
1.11	DGC HP Supplies	\$0	\$770	\$0	\$0	\$115	\$885
Undistributed	Subtotal	\$44,479	\$9,739	\$21	\$2,215	\$7,617	\$64,071

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 9	Subtotal	\$46,742	\$21,180	\$21	\$30,172	\$13,034	\$111,149

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 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	\$28,783	\$0	\$0	\$0	\$3,742	\$32,525
1.02	Utility Staff HP Supplies	\$0	\$1,093	\$0	\$0	\$164	\$1,256
1.03	Security Guard Force	\$2,563	\$0	\$0	\$0	\$384	\$2,947
1.04	Insurance	\$0	\$0	\$0	\$1,228	\$184	\$1,412
1.05	Property Taxes	\$0	\$0	\$0	\$20	\$3	\$23
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,256	\$188	\$1,444
1.07	Materials and Services	\$0	\$8,661	\$0	\$0	\$1,299	\$9,960
1.08	DAW Disposal	\$0	\$0	\$246	\$0	\$37	\$282
1.09	Energy	\$0	\$0	\$0	\$1,248	\$187	\$1,436

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
1.10	Decommissioning General Contractor Staff	\$28,237	\$0	\$0	\$0	\$3,671	\$31,908
1.11	DGC HP Supplies	\$0	\$1,512	\$0	\$0	\$227	\$1,739
Undistributed	Subtotal	\$59,583	\$11,266	\$246	\$3,752	\$10,086	\$84,932
SAFSTOR Pd 1	Subtotal	\$81,398	\$18,282	\$56,872	\$3,752	\$31,617	\$191,919

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	\$19,045	\$0	\$0	\$0	\$2,476	\$21,520
1.02	Utility Staff HP Supplies	\$0	\$1,260	\$0	\$0	\$189	\$1,449
1.03	Security Guard Force	\$2,197	\$0	\$0	\$0	\$330	\$2,526
1.04	Insurance	\$0	\$0	\$0	\$1,053	\$158	\$1,210
1.05	Property Taxes	\$0	\$0	\$0	\$17	\$3	\$20
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,076	\$161	\$1,238
1.07	Materials and Services	\$0	\$6,149	\$0	\$0	\$922	\$7,072
1.08	DAW Disposal	\$0	\$0	\$115	\$0	\$17	\$132
1.09	Energy	\$0	\$0	\$0	\$948	\$142	\$1,090
1.10	Decommissioning General Contractor Staff	\$16,969	\$0	\$0	\$0	\$2,206	\$19,174

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	\$721	\$0	\$0	\$108	\$829
Undistributed Subtotal			\$38,211	\$8,130	\$115	\$3,094	\$6,712	\$56,260
SAFSTOR Pd 1 Subtotal			\$48,169	\$12,686	\$5,794	\$4,015	\$10,762	\$81,422

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		\$259,177	\$72,669	\$75,855	\$90,838	\$80,846	\$579,393
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	\$105
2.08	Energy	\$0	\$0	\$0	\$0	\$0	\$0
Undistributed	Subtotal	\$93	\$0	\$0	\$0	\$12	\$105
Dry Pd 1	Subtotal	\$1,096	\$15	\$0	\$0	\$144	\$1,256

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	\$2,050	\$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 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	\$684	\$0	\$0	\$0	\$89	\$773
2.05	Security Guard Force	\$662	\$0	\$0	\$0	\$99	\$761
2.08	Energy	\$0	\$0	\$0	\$5	\$1	\$5
2.09	Materials and Services	\$0	\$378	\$0	\$0	\$57	\$435
2.12	Decommissioning General Contractor Staff	\$348	\$0	\$0	\$0	\$52	\$400
Undistributed	Subtotal	\$1,694	\$378	\$0	\$5	\$298	\$2,374
Dry Pd 4	Subtotal	\$3,077	\$1,067	\$1,875	\$166	\$898	\$7,082

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	\$118,612	\$79,495	\$1,875	\$39,190	\$34,837	\$274,011
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							
17.00	Site Restoration						
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	\$402,453	\$161,116	\$79,273	\$130,599	\$121,250	\$894,702

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	Planning and Design of Site Characterization	\$311	\$3	\$0	\$0	\$41	\$356
1.05	Prepare Integrated Work Sequence and Schedule for Decommissioning	\$137	\$0	\$0	\$0	\$18	\$155
1.06	Prepare Decommissioning Activity Specifications	\$2,486	\$20	\$0	\$0	\$326	\$2,832
1.07	Prepare License Termination Plan	\$317	\$10	\$0	\$0	\$42	\$369
1.08	Prepare Detailed Work Procedures for Decommissioning	\$2,259	\$8	\$0	\$0	\$295	\$2,561
1.09	Preparation of Decommissioning License Documents	\$1,661	\$7	\$0	\$0	\$217	\$1,885
1.10	Planning and Design of Site Repowering	\$579	\$7	\$0	\$0	\$76	\$662
1.11	Administrative Activities	\$757	\$4	\$0	\$0	\$99	\$860
1.12	Design Containment Access Modifications	\$221	\$3	\$0	\$0	\$29	\$253
1.13	Planning and Design of Primary System Decontamination	\$202	\$2	\$0	\$0	\$26	\$230
1.14	Planning for Asbestos Abatement	\$132	\$2	\$0	\$0	\$17	\$152
1.15	Select Decommissioning General Contractor	\$251	\$4	\$0	\$0	\$33	\$289
Distributed	Subtotal	\$9,549	\$70	\$0	\$0	\$1,250	\$10,871
Undistributed							
1.01	Utility Staff	\$4,631	\$0	\$0	\$0	\$602	\$5,233
1.03	Security Guard Force	\$646	\$0	\$0	\$0	\$97	\$743
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$0	\$0	\$0
1.09	Energy	\$0	\$0	\$0	\$0	\$0	\$0
1.10	Decommissioning General Contractor Staff	\$4,211	\$0	\$0	\$0	\$547	\$4,758
Undistributed	Subtotal	\$9,488	\$0	\$0	\$0	\$1,246	\$10,734

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 1	Subtotal	\$19,037	\$70	\$0	\$0	\$2,496	\$21,605

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	Perform Baseline Radiation Survey	\$233	\$88	\$0	\$0	\$42	\$363
2.02	Primary System Decontamination	\$848	\$805	\$894	\$0	\$586	\$3,134
2.03	Flush and Drain Non-Essential Systems	\$35	\$6	\$596	\$0	\$146	\$783
2.04	Hot Spot Removal	\$545	\$176	\$894	\$0	\$372	\$1,987
2.05	Finalize Residual Radiation Inventory	\$37	\$41	\$0	\$0	\$10	\$88
2.06	Select Shipping Casks and Obtain Shipping Permits	\$29	\$0	\$0	\$0	\$4	\$33
2.07	Design, Specify, and Procure Special Items and Materials	\$782	\$5,300	\$0	\$0	\$791	\$6,873
2.08	Modify Containment Access	\$300	\$554	\$0	\$0	\$111	\$965
2.09	Construct New Change Rooms, Hot Laundry, In-Plant Laydown Areas	\$0	\$869	\$0	\$0	\$113	\$982
2.10	Repower Site	\$524	\$1,578	\$0	\$0	\$273	\$2,376
2.11	Test Special Cutting and Handling Equipment and Train Operators	\$882	\$145	\$0	\$0	\$134	\$1,161
2.12	Procure Non-Engineered Standard Equipment	\$0	\$4,444	\$0	\$0	\$578	\$5,022
2.13	Asbestos Abatement	\$145	\$57	\$196	\$0	\$92	\$490
Distributed	Subtotal	\$4,360	\$14,063	\$2,580	\$0	\$3,252	\$24,257
Undistributed							
1.01	Utility Staff	\$29,818	\$0	\$0	\$0	\$3,876	\$33,695
1.02	Utility Staff HP Supplies	\$0	\$1,028	\$0	\$0	\$154	\$1,182
1.03	Security Guard Force	\$2,281	\$0	\$0	\$0	\$342	\$2,623
1.04	Insurance	\$0	\$0	\$0	\$1,093	\$164	\$1,257
1.05	Property Taxes	\$0	\$0	\$0	\$18	\$3	\$20
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$679	\$102	\$780
1.07	Materials and Services	\$0	\$9,205	\$0	\$0	\$1,381	\$10,586
1.08	DAW Disposal	\$0	\$0	\$45	\$0	\$7	\$52
1.09	Energy	\$0	\$0	\$0	\$885	\$133	\$1,018

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
1.10	Decommissioning General Contractor Staff	\$18,644	\$0	\$0	\$0	\$2,424	\$21,067
1.11	DGC HP Supplies	\$0	\$878	\$0	\$0	\$132	\$1,010
Undistributed	Subtotal	\$50,743	\$11,111	\$45	\$2,675	\$8,718	\$73,290
Decon Pd 2	Subtotal	\$55,103	\$25,174	\$2,625	\$2,675	\$11,970	\$97,547

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		<i>License Status</i>	<i>Extension</i>	<i>Unit 1 Shut Down Date</i>	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	\$20,601	\$0	\$0	\$0	\$2,678	\$23,279

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	\$1,363	\$0	\$0	\$204	\$1,568
1.03	Security Guard Force	\$2,376	\$0	\$0	\$0	\$356	\$2,733
1.04	Insurance	\$0	\$0	\$0	\$1,139	\$171	\$1,309
1.05	Property Taxes	\$0	\$0	\$0	\$18	\$3	\$21
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$707	\$106	\$813
1.07	Materials and Services	\$0	\$6,652	\$0	\$0	\$998	\$7,650
1.08	DAW Disposal	\$0	\$0	\$160	\$0	\$24	\$184
1.09	Energy	\$0	\$0	\$0	\$968	\$145	\$1,113
1.10	Decommissioning General Contractor Staff	\$18,355	\$0	\$0	\$0	\$2,386	\$20,742
1.11	DGC HP Supplies	\$0	\$780	\$0	\$0	\$117	\$896
Undistributed	Subtotal	\$41,332	\$8,795	\$160	\$2,832	\$7,188	\$60,308
Decon Pd 4	Subtotal	\$54,704	\$14,691	\$13,740	\$3,753	\$14,882	\$101,773

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		\$245,253	\$65,438	\$88,791	\$12,602	\$70,664	\$482,746
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	\$105
2.08	Energy	\$0	\$0	\$0	\$0	\$0	\$0
Undistributed	Subtotal	\$93	\$0	\$0	\$0	\$12	\$105
Dry Pd 1	Subtotal	\$1,096	\$15	\$0	\$0	\$144	\$1,256

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	\$3,942	\$0	\$0	\$0	\$513	\$4,455
2.02	Utility Staff HP Supplies	\$0	\$308	\$0	\$0	\$46	\$354
2.04	Additional Staff for Spent Fuel Shipping	\$761	\$0	\$0	\$0	\$114	\$875
2.05	Security Guard Force	\$1,734	\$0	\$0	\$0	\$260	\$1,994
2.06	Insurance	\$0	\$0	\$0	\$618	\$93	\$711
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$1,454	\$218	\$1,672
2.08	Energy	\$0	\$0	\$0	\$11	\$2	\$12
2.09	Materials and Services	\$0	\$1,994	\$0	\$0	\$299	\$2,293
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$243	\$36	\$279
Undistributed	Subtotal	\$6,437	\$2,302	\$0	\$2,326	\$1,581	\$12,645
Dry Pd 3	Subtotal	\$6,437	\$2,302	\$0	\$2,326	\$1,581	\$12,645

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	\$29,475	\$0	\$0	\$0	\$3,832	\$33,306
2.02	Utility Staff HP Supplies	\$0	\$2,302	\$0	\$0	\$345	\$2,647
2.04	Additional Staff for Spent Fuel Shipping	\$5,691	\$0	\$0	\$0	\$854	\$6,545
2.05	Security Guard Force	\$12,962	\$0	\$0	\$0	\$1,944	\$14,906
2.06	Insurance	\$0	\$0	\$0	\$7,645	\$1,147	\$8,792
2.07	Spent Fuel Fees and Permits	\$0	\$0	\$0	\$10,869	\$1,630	\$12,500
2.08	Energy	\$0	\$0	\$0	\$949	\$142	\$1,091
2.09	Materials and Services	\$0	\$14,907	\$0	\$0	\$2,236	\$17,143
2.10	Spent Fuel Maintenance	\$0	\$0	\$0	\$1,815	\$272	\$2,087
2.11	Property Taxes	\$0	\$0	\$0	\$242	\$36	\$278
Undistributed	Subtotal	\$48,128	\$17,209	\$0	\$21,520	\$12,438	\$99,295
Dry Pd 4	Subtotal	\$48,128	\$17,209	\$0	\$21,520	\$12,438	\$99,295

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	\$349	\$0	\$0	\$0	\$52	\$401
Undistributed	Subtotal	\$1,698	\$379	\$0	\$172	\$323	\$2,571
Dry Pd 5	Subtotal	\$2,941	\$1,013	\$1,514	\$333	\$846	\$6,646

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	\$104,556	\$61,315	\$1,514	\$37,229	\$29,829	\$234,441
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	\$490	\$0	\$0	\$0	\$64	\$553
3.02	Security Guard Force	\$122	\$0	\$0	\$0	\$18	\$140
3.03	Decommissioning General Contractor Staff	\$880	\$0	\$0	\$0	\$114	\$994
3.04	Energy	\$0	\$0	\$0	\$2	\$0	\$2
3.05	Insurance	\$0	\$0	\$0	\$28	\$4	\$33
Undistributed	Subtotal	\$1,492	\$0	\$0	\$30	\$200	\$1,722
Grn Pd 2	Subtotal	\$1,879	\$384	\$0	\$30	\$338	\$2,632

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	\$24,258	\$8,994	\$1,543	\$415	\$5,498	\$40,710
Scenario No. 3	Total	\$374,067	\$135,747	\$91,848	\$50,246	\$105,991	\$757,897

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	\$4,631	\$0	\$0	\$0	\$602	\$5,233
1.03	Security Guard Force	\$646	\$0	\$0	\$0	\$97	\$743
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$0	\$0	\$0
1.09	Energy	\$0	\$0	\$0	\$0	\$0	\$0
1.10	Decommissioning General Contractor Staff	\$4,211	\$0	\$0	\$0	\$547	\$4,758
Undistributed	Subtotal	\$9,488	\$0	\$0	\$0	\$1,246	\$10,734
SAFSTOR Pd 1	Subtotal	\$16,136	\$67	\$0	\$0	\$2,119	\$18,324

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	\$13,115	\$0	\$0	\$0	\$1,705	\$14,819
1.02	Utility Staff HP Supplies	\$0	\$452	\$0	\$0	\$68	\$520
1.03	Security Guard Force	\$1,003	\$0	\$0	\$0	\$150	\$1,154
1.04	Insurance	\$0	\$0	\$0	\$481	\$72	\$553
1.05	Property Taxes	\$0	\$0	\$0	\$8	\$1	\$9
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$298	\$45	\$343
1.07	Materials and Services	\$0	\$4,048	\$0	\$0	\$607	\$4,656
1.08	DAW Disposal	\$0	\$0	\$28	\$0	\$4	\$32
1.09	Energy	\$0	\$0	\$0	\$389	\$58	\$448
1.10	Decommissioning General Contractor Staff	\$8,200	\$0	\$0	\$0	\$1,066	\$9,266
1.11	DGC HP Supplies	\$0	\$386	\$0	\$0	\$58	\$444
Undistributed	Subtotal	\$22,318	\$4,886	\$28	\$1,176	\$3,834	\$32,244

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	\$24,519	\$9,649	\$1,879	\$1,307	\$5,535	\$42,894

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	\$737	\$0	\$0	\$0	\$96	\$832
1.02	Utility Staff HP Supplies	\$0	\$113	\$0	\$0	\$17	\$130
1.03	Security Guard Force	\$452	\$0	\$0	\$0	\$68	\$520
1.04	Insurance	\$0	\$0	\$0	\$2,599	\$390	\$2,989
1.05	Property Taxes	\$0	\$0	\$0	\$42	\$6	\$49
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$883	\$132	\$1,015
1.07	Materials and Services	\$0	\$342	\$0	\$0	\$51	\$393
1.09	Energy	\$0	\$0	\$0	\$939	\$141	\$1,080
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$475	\$71	\$546
Undistributed	Subtotal	\$1,189	\$455	\$0	\$4,938	\$972	\$7,554
SAFSTOR Pd 3	Subtotal	\$1,189	\$455	\$0	\$4,938	\$972	\$7,554

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	\$2,246	\$0	\$0	\$0	\$292	\$2,538
1.02	Utility Staff HP Supplies	\$0	\$130	\$0	\$0	\$19	\$149
1.03	Security Guard Force	\$439	\$0	\$0	\$0	\$66	\$504
1.04	Insurance	\$0	\$0	\$0	\$504	\$76	\$580
1.05	Property Taxes	\$0	\$0	\$0	\$8	\$1	\$9
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$313	\$47	\$360
1.07	Materials and Services	\$0	\$737	\$0	\$0	\$110	\$847
1.08	DAW Disposal	\$0	\$0	\$5	\$0	\$1	\$5
1.09	Energy	\$0	\$0	\$0	\$315	\$47	\$362
1.11	DGC HP Supplies	\$0	\$95	\$0	\$0	\$14	\$109
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$92	\$14	\$106
Undistributed	Subtotal	\$2,685	\$962	\$5	\$1,232	\$687	\$5,569
SAFSTOR Pd 4	Subtotal	\$3,089	\$1,224	\$9,828	\$2,732	\$3,324	\$20,195

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	\$3,972	\$0	\$0	\$0	\$516	\$4,488
1.02	Utility Staff HP Supplies	\$0	\$497	\$0	\$0	\$75	\$572
1.03	Security Guard Force	\$9,968	\$0	\$0	\$0	\$1,495	\$11,464
1.04	Insurance	\$0	\$0	\$0	\$9,137	\$1,371	\$10,508
1.05	Property Taxes	\$0	\$0	\$0	\$186	\$28	\$214
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$3,894	\$584	\$4,478
1.07	Materials and Services	\$0	\$4,224	\$0	\$0	\$634	\$4,857
1.09	Energy	\$0	\$0	\$0	\$682	\$102	\$785
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$4,187	\$628	\$4,815
Undistributed	Subtotal	\$13,940	\$4,721	\$0	\$18,086	\$5,433	\$42,181
SAFSTOR Pd 6	Subtotal	\$14,199	\$4,810	\$38	\$18,086	\$5,491	\$42,625

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	\$3,962	\$0	\$0	\$0	\$515	\$4,477
1.02	Utility Staff HP Supplies	\$0	\$136	\$0	\$0	\$20	\$157
1.03	Security Guard Force	\$553	\$0	\$0	\$0	\$83	\$636
1.04	Insurance	\$0	\$0	\$0	\$1,059	\$159	\$1,218
1.05	Property Taxes	\$0	\$0	\$0	\$17	\$3	\$20
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$658	\$99	\$756
1.07	Materials and Services	\$0	\$1,241	\$0	\$0	\$186	\$1,427
1.09	Energy	\$0	\$0	\$0	\$63	\$9	\$73
1.10	Decommissioning General Contractor Staff	\$4,211	\$0	\$0	\$0	\$547	\$4,758
1.11	DGC HP Supplies	\$0	\$200	\$0	\$0	\$30	\$230
1.12	SAFSTOR Surveillance and Maintenance	\$0	\$0	\$0	\$387	\$58	\$445

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	\$8,726	\$1,577	\$0	\$2,184	\$1,709	\$14,197
SAFSTOR Pd 7	Subtotal	\$18,277	\$1,650	\$0	\$2,184	\$2,961	\$25,075

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	\$23,560	\$0	\$0	\$0	\$3,063	\$26,623
1.02	Utility Staff HP Supplies	\$0	\$812	\$0	\$0	\$122	\$934
1.03	Security Guard Force	\$1,802	\$0	\$0	\$0	\$270	\$2,073
1.04	Insurance	\$0	\$0	\$0	\$864	\$130	\$993
1.05	Property Taxes	\$0	\$0	\$0	\$14	\$2	\$16
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$883	\$132	\$1,016
1.07	Materials and Services	\$0	\$7,273	\$0	\$0	\$1,091	\$8,364
1.08	DAW Disposal	\$0	\$0	\$21	\$0	\$3	\$24
1.09	Energy	\$0	\$0	\$0	\$583	\$87	\$670
1.10	Decommissioning General Contractor Staff	\$14,731	\$0	\$0	\$0	\$1,915	\$16,646
1.11	DGC HP Supplies	\$0	\$694	\$0	\$0	\$104	\$798
Undistributed	Subtotal	\$40,093	\$8,779	\$21	\$2,344	\$6,919	\$58,157

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	\$42,356	\$20,220	\$21	\$30,301	\$12,336	\$105,235

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	\$28,783	\$0	\$0	\$0	\$3,742	\$32,525
1.02	Utility Staff HP Supplies	\$0	\$1,093	\$0	\$0	\$164	\$1,256
1.03	Security Guard Force	\$2,563	\$0	\$0	\$0	\$384	\$2,947
1.04	Insurance	\$0	\$0	\$0	\$1,228	\$184	\$1,412
1.05	Property Taxes	\$0	\$0	\$0	\$20	\$3	\$23
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$1,256	\$188	\$1,444
1.07	Materials and Services	\$0	\$8,661	\$0	\$0	\$1,299	\$9,960
1.08	DAW Disposal	\$0	\$0	\$246	\$0	\$37	\$282
1.09	Energy	\$0	\$0	\$0	\$1,104	\$166	\$1,270

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	\$28,237	\$0	\$0	\$0	\$3,671	\$31,908
1.11	DGC HP Supplies	\$0	\$1,512	\$0	\$0	\$227	\$1,739
Undistributed	Subtotal	\$59,583	\$11,266	\$246	\$3,608	\$10,065	\$84,766
SAFSTOR Pd 9	Subtotal	\$81,398	\$18,282	\$56,872	\$3,608	\$31,596	\$191,753

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	\$19,045	\$0	\$0	\$0	\$2,476	\$21,520
1.02	Utility Staff HP Supplies	\$0	\$1,260	\$0	\$0	\$189	\$1,449
1.03	Security Guard Force	\$2,197	\$0	\$0	\$0	\$330	\$2,526
1.04	Insurance	\$0	\$0	\$0	\$1,053	\$158	\$1,210
1.05	Property Taxes	\$0	\$0	\$0	\$17	\$3	\$20
1.06	NRC Decommissioning Fees	\$0	\$0	\$0	\$654	\$98	\$752
1.07	Materials and Services	\$0	\$6,149	\$0	\$0	\$922	\$7,072
1.08	DAW Disposal	\$0	\$0	\$115	\$0	\$17	\$132
1.09	Energy	\$0	\$0	\$0	\$816	\$122	\$939
1.10	Decommissioning General Contractor Staff	\$16,969	\$0	\$0	\$0	\$2,206	\$19,174

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	\$721	\$0	\$0	\$108	\$829
Undistributed	Subtotal	\$38,211	\$8,130	\$115	\$2,540	\$6,629	\$55,623
SAFSTOR Pd 1	Subtotal	\$48,169	\$12,686	\$5,794	\$3,461	\$10,679	\$80,785

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		\$257,437	\$72,134	\$74,470	\$94,036	\$80,715	\$578,794
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	\$105
2.08	Energy	\$0	\$0	\$0	\$0	\$0	\$0
Undistributed	Subtotal	\$93	\$0	\$0	\$0	\$12	\$105
Dry Pd 1	Subtotal	\$1,096	\$15	\$0	\$0	\$144	\$1,256

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	\$2,050	\$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 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	\$684	\$0	\$0	\$0	\$89	\$773
2.05	Security Guard Force	\$662	\$0	\$0	\$0	\$99	\$761
2.08	Energy	\$0	\$0	\$0	\$5	\$1	\$5
2.09	Materials and Services	\$0	\$378	\$0	\$0	\$57	\$435
2.12	Decommissioning General Contractor Staff	\$348	\$0	\$0	\$0	\$52	\$400
Undistributed	Subtotal	\$1,694	\$378	\$0	\$5	\$298	\$2,374
Dry Pd 4	Subtotal	\$2,937	\$1,012	\$1,514	\$166	\$821	\$6,449

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	\$104,557	\$61,315	\$1,514	\$33,913	\$29,334	\$230,632
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
15.08	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
15.14	Demolish Off-Gas Stack	\$85	\$45	\$18	\$0	\$24	\$172
15.16	Demolish Remaining Structures	\$1,524	\$2,042	\$496	\$0	\$732	\$4,794
Distributed	Subtotal	\$11,548	\$8,411	\$1,534	\$0	\$3,635	\$25,127
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
Undistributed	Subtotal	\$10,684	\$0	\$0	\$533	\$1,481	\$12,699

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 1	Subtotal	\$22,232	\$8,411	\$1,534	\$533	\$5,116	\$37,826

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	\$24,531	\$8,816	\$1,534	\$571	\$5,517	\$40,969
Scenario No. 4	Total	\$386,525	\$142,265	\$77,518	\$128,520	\$115,566	\$850,395

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	\$9,800	\$0	\$0	\$9,800
2013	\$11,275	\$1,256	\$0	\$12,531
2014	\$48,280	\$22,266	\$0	\$70,546
2015	\$55,907	\$25,928	\$0	\$81,835
2016	\$70,994	\$25,928	\$0	\$96,922
2017	\$70,994	\$25,928	\$0	\$96,922
2018	\$70,994	\$25,928	\$0	\$96,922
2019	\$56,954	\$7,094	\$0	\$64,048
2020	\$54,002	\$3,909	\$0	\$57,910
2021	\$1,166	\$3,909	\$32,937	\$38,011
2022	\$8,163	\$3,909	\$7,773	\$19,845
2023	\$13,138	\$3,909	\$0	\$17,046
2024	\$13,138	\$3,909	\$0	\$17,046
2025	\$10,895	\$3,949	\$0	\$14,844
2026	\$0	\$4,103	\$0	\$4,103
2027	\$0	\$4,103	\$0	\$4,103
2028	\$0	\$4,103	\$0	\$4,103
2029	\$0	\$4,103	\$0	\$4,103
2030	\$0	\$4,103	\$0	\$4,103
2031	\$0	\$4,103	\$0	\$4,103
2032	\$0	\$4,103	\$0	\$4,103
2033	\$0	\$4,103	\$0	\$4,103
2034	\$0	\$4,103	\$0	\$4,103
2035	\$0	\$4,103	\$0	\$4,103
2036	\$0	\$4,103	\$0	\$4,103
2037	\$0	\$4,103	\$0	\$4,103
2038	\$0	\$4,103	\$0	\$4,103
2039	\$0	\$4,103	\$0	\$4,103
2040	\$0	\$4,103	\$0	\$4,103
2041	\$0	\$4,103	\$0	\$4,103
2042	\$0	\$4,103	\$0	\$4,103
2043	\$0	\$4,103	\$0	\$4,103
2044	\$0	\$4,103	\$0	\$4,103
2045	\$0	\$4,103	\$0	\$4,103
2046	\$0	\$4,103	\$0	\$4,103
2047	\$0	\$4,103	\$0	\$4,103
2048	\$0	\$4,103	\$0	\$4,103
2049	\$0	\$4,103	\$0	\$4,103
2050	\$0	\$4,103	\$0	\$4,103
2051	\$0	\$4,103	\$0	\$4,103
2052	\$0	\$4,103	\$0	\$4,103
2053	\$0	\$4,880	\$0	\$4,880
2054	\$0	\$4,739	\$0	\$4,739
Total	\$495,699	\$278,233	\$40,710	\$814,642

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	\$7,908	\$0	\$0	\$7,908
2013	\$9,100	\$1,256	\$0	\$10,356
2014	\$42,672	\$22,237	\$0	\$64,909
2015	\$1,789	\$25,934	\$0	\$27,722
2016	\$1,789	\$25,934	\$0	\$27,722
2017	\$1,789	\$25,934	\$0	\$27,722
2018	\$1,789	\$25,934	\$0	\$27,722
2019	\$13,308	\$7,136	\$0	\$20,444
2020	\$3,794	\$3,949	\$0	\$7,742
2021	\$3,794	\$3,949	\$0	\$7,742
2022	\$3,794	\$3,949	\$0	\$7,742
2023	\$3,794	\$3,949	\$0	\$7,742
2024	\$3,794	\$3,949	\$0	\$7,742
2025	\$2,036	\$3,949	\$0	\$5,985
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	\$4,724	\$0	\$6,172
2054	\$2,184	\$4,616	\$0	\$6,800
2055	\$2,303	\$0	\$0	\$2,303
2056	\$2,303	\$0	\$0	\$2,303
2057	\$2,303	\$0	\$0	\$2,303
2058	\$2,303	\$0	\$0	\$2,303
2059	\$2,303	\$0	\$0	\$2,303
2060	\$2,303	\$0	\$0	\$2,303
2061	\$2,303	\$0	\$0	\$2,303
2062	\$2,303	\$0	\$0	\$2,303

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
2063	\$2,303	\$0	\$0	\$2,303
2064	\$2,303	\$0	\$0	\$2,303
2065	\$2,303	\$0	\$0	\$2,303
2066	\$9,354	\$0	\$0	\$9,354
2067	\$14,366	\$0	\$0	\$14,366
2068	\$63,862	\$0	\$0	\$63,862
2069	\$79,225	\$0	\$0	\$79,225
2070	\$96,091	\$0	\$0	\$96,091
2071	\$80,953	\$0	\$0	\$80,953
2072	\$47,681	\$0	\$0	\$47,681
2073	\$18,654	\$0	\$20,535	\$39,189
2074	\$0	\$0	\$20,763	\$20,763
Total	\$579,393	\$274,011	\$41,298	\$894,702

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	\$9,332	\$0	\$0	\$9,332
2033	\$10,729	\$1,256	\$0	\$11,985
2034	\$48,632	\$19,662	\$0	\$68,294
2035	\$57,080	\$22,910	\$0	\$79,990
2036	\$80,380	\$22,910	\$0	\$103,290
2037	\$80,380	\$22,910	\$0	\$103,290
2038	\$80,380	\$22,910	\$0	\$103,290
2039	\$59,555	\$6,645	\$0	\$66,201
2040	\$55,119	\$3,906	\$0	\$59,025
2041	\$1,160	\$3,906	\$32,955	\$38,021
2042	\$0	\$4,036	\$7,755	\$11,791
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	\$4,648	\$0	\$4,648
2067	\$0	\$4,352	\$0	\$4,352
Total	\$482,746	\$234,441	\$40,710	\$757,897

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	\$7,913	\$0	\$0	\$7,913
2033	\$9,100	\$1,256	\$0	\$10,356
2034	\$44,343	\$19,657	\$0	\$64,000
2035	\$1,790	\$22,910	\$0	\$24,700
2036	\$1,790	\$22,910	\$0	\$24,700
2037	\$1,790	\$22,910	\$0	\$24,700
2038	\$1,790	\$22,910	\$0	\$24,700
2039	\$20,514	\$6,688	\$0	\$27,202
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	\$4,492	\$0	\$6,084
2067	\$1,728	\$4,234	\$0	\$5,961
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

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
2083	\$2,291	\$0	\$0	\$2,291
2084	\$2,291	\$0	\$0	\$2,291
2085	\$2,291	\$0	\$0	\$2,291
2086	\$9,459	\$0	\$0	\$9,459
2087	\$14,542	\$0	\$0	\$14,542
2088	\$66,857	\$0	\$0	\$66,857
2089	\$84,866	\$0	\$0	\$84,866
2090	\$96,008	\$0	\$0	\$96,008
2091	\$73,393	\$0	\$0	\$73,393
2092	\$47,308	\$0	\$0	\$47,308
2093	\$11,373	\$0	\$25,401	\$36,774
2094	\$0	\$0	\$15,568	\$15,568
Total	\$578,794	\$230,632	\$40,969	\$850,395

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	\$8,428	\$34	\$0	\$205	\$8,668	\$1,132	\$9,800
2013	\$9,696	\$39	\$0	\$236	\$9,972	\$1,302	\$11,275
2014	\$28,037	\$12,906	\$188	\$1,327	\$42,460	\$5,821	\$48,280
2015	\$31,521	\$14,466	\$1,436	\$1,543	\$48,967	\$6,941	\$55,907
2016	\$35,802	\$7,868	\$14,603	\$1,895	\$60,169	\$10,826	\$70,994
2017	\$35,802	\$7,868	\$14,603	\$1,895	\$60,169	\$10,826	\$70,994
2018	\$35,802	\$7,868	\$14,603	\$1,895	\$60,169	\$10,826	\$70,994
2019	\$30,667	\$7,934	\$7,783	\$2,212	\$48,598	\$8,357	\$56,954
2020	\$29,583	\$7,945	\$6,357	\$2,277	\$46,165	\$7,839	\$54,002
2021	\$639	\$171	\$137	\$49	\$996	\$169	\$1,166
2022	\$242	\$197	\$5,586	\$680	\$6,705	\$1,458	\$8,163
2023	\$390	\$317	\$8,991	\$1,094	\$10,791	\$2,346	\$13,138
2024	\$390	\$317	\$8,991	\$1,094	\$10,791	\$2,346	\$13,138
2025	\$323	\$263	\$7,456	\$907	\$8,949	\$1,945	\$10,895
Account Total	\$247,323	\$68,196	\$90,735	\$17,309	\$423,570	\$72,134	\$495,699

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	\$1,256
2014	\$7,888	\$9,256	\$0	\$2,240	\$19,384	\$2,882	\$22,266
2015	\$9,185	\$10,778	\$0	\$2,608	\$22,572	\$3,356	\$25,928
2016	\$9,185	\$10,778	\$0	\$2,608	\$22,572	\$3,356	\$25,928
2017	\$9,185	\$10,778	\$0	\$2,608	\$22,572	\$3,356	\$25,928
2018	\$9,185	\$10,778	\$0	\$2,608	\$22,572	\$3,356	\$25,928
2019	\$3,032	\$2,166	\$0	\$993	\$6,191	\$903	\$7,094
2020	\$1,990	\$711	\$0	\$719	\$3,420	\$489	\$3,909
2021	\$1,990	\$711	\$0	\$719	\$3,420	\$489	\$3,909
2022	\$1,990	\$711	\$0	\$719	\$3,420	\$489	\$3,909
2023	\$1,990	\$711	\$0	\$719	\$3,420	\$489	\$3,909
2024	\$1,990	\$711	\$0	\$719	\$3,420	\$489	\$3,909
2025	\$1,993	\$713	\$0	\$749	\$3,455	\$494	\$3,949
2026	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2027	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2028	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2029	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2030	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2031	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2032	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2033	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2034	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2035	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2036	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2037	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2038	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103

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	\$3,589	\$514	\$4,103
2040	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2041	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2042	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2043	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2044	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2045	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2046	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2047	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2048	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2049	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2050	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2051	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2052	\$1,989	\$711	\$0	\$889	\$3,589	\$514	\$4,103
2053	\$2,209	\$778	\$653	\$624	\$4,265	\$615	\$4,880
2054	\$2,005	\$695	\$1,222	\$216	\$4,138	\$601	\$4,739
Account Total	\$118,612	\$79,495	\$1,875	\$42,861	\$242,845	\$35,388	\$278,233

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	\$19,357	\$7,447	\$1,335	\$333	\$28,474	\$4,463	\$32,937
2022	\$4,901	\$1,547	\$208	\$82	\$6,738	\$1,035	\$7,773
Account Total	\$24,258	\$8,994	\$1,543	\$415	\$35,212	\$5,498	\$40,710

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Unit Total	\$390,193	\$156,685	\$94,153	\$60,585	\$701,627	\$113,020	\$814,642
Scenario Total	\$390,193	\$156,685	\$94,153	\$60,585	\$701,627	\$113,020	\$814,642
Scenario No 2							
Unit No. Unit 1							
Cost Account A. License Termination							
2012	\$6,963	\$29	\$0	\$0	\$6,993	\$914	\$7,908
2013	\$8,013	\$33	\$0	\$0	\$8,047	\$1,052	\$9,100
2014	\$25,720	\$9,662	\$495	\$1,399	\$37,276	\$5,391	\$42,672
2015	\$282	\$108	\$0	\$1,169	\$1,558	\$230	\$1,789
2016	\$282	\$108	\$0	\$1,169	\$1,558	\$230	\$1,789
2017	\$282	\$108	\$0	\$1,169	\$1,558	\$230	\$1,789
2018	\$282	\$108	\$0	\$1,169	\$1,558	\$230	\$1,789
2019	\$3,352	\$1,376	\$3,646	\$2,941	\$11,316	\$1,992	\$13,308
2020	\$298	\$178	\$1,705	\$996	\$3,177	\$616	\$3,794
2021	\$298	\$178	\$1,705	\$996	\$3,177	\$616	\$3,794
2022	\$298	\$178	\$1,705	\$996	\$3,177	\$616	\$3,794
2023	\$298	\$178	\$1,705	\$996	\$3,177	\$616	\$3,794
2024	\$298	\$178	\$1,705	\$996	\$3,177	\$616	\$3,794
2025	\$293	\$128	\$427	\$895	\$1,743	\$294	\$2,036
2026	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2027	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2028	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2029	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2030	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2031	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2032	\$291	\$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	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2034	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2035	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2036	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2037	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2038	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2039	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2040	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2041	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2042	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2043	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2044	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2045	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2046	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2047	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2048	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2049	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2050	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2051	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2052	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2053	\$291	\$111	\$1	\$859	\$1,262	\$186	\$1,448
2054	\$702	\$240	\$3	\$958	\$1,903	\$281	\$2,184
2055	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303
2056	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303
2057	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303
2058	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303
2059	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
2060	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303
2061	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303
2062	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303
2063	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303
2064	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303
2065	\$770	\$261	\$3	\$972	\$2,006	\$297	\$2,303
2066	\$6,523	\$669	\$1	\$1,046	\$8,240	\$1,113	\$9,354
2067	\$10,616	\$958	\$0	\$1,096	\$12,672	\$1,694	\$14,366
2068	\$27,485	\$11,925	\$12	\$16,950	\$56,371	\$7,490	\$63,862
2069	\$33,425	\$12,241	\$8,888	\$13,958	\$68,513	\$10,713	\$79,225
2070	\$40,755	\$9,154	\$28,475	\$1,879	\$80,262	\$15,830	\$96,091
2071	\$36,861	\$8,625	\$20,592	\$2,032	\$68,110	\$12,845	\$80,953
2072	\$28,208	\$7,429	\$3,393	\$2,351	\$41,383	\$6,302	\$47,681
2073	\$11,036	\$2,906	\$1,327	\$920	\$16,190	\$2,466	\$18,654
Account Total	\$259,177	\$72,669	\$75,855	\$90,838	\$498,548	\$80,846	\$579,393

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	\$1,256
2014	\$7,877	\$9,244	\$0	\$2,237	\$19,359	\$2,879	\$22,237
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	\$3,034	\$2,169	\$0	\$1,024	\$6,227	\$909	\$7,136
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	\$2,209	\$778	\$653	\$489	\$4,129	\$595	\$4,724
2054	\$2,005	\$695	\$1,222	\$108	\$4,032	\$585	\$4,616
Account Total	\$118,612	\$79,495	\$1,875	\$39,190	\$239,174	\$34,837	\$274,011

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	\$12,037	\$4,600	\$830	\$287	\$17,755	\$2,780	\$20,535
2074	\$12,627	\$4,352	\$713	\$284	\$17,977	\$2,787	\$20,763
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	\$402,453	\$161,116	\$79,273	\$130,599	\$773,454	\$121,250	\$894,702
Scenario Total	\$402,453	\$161,116	\$79,273	\$130,599	\$773,454	\$121,250	\$894,702
Scenario No 3							
Unit No. Unit 1							
Cost Account A. License Termination							
2032	\$8,223	\$30	\$0	\$0	\$8,253	\$1,078	\$9,332
2033	\$9,454	\$35	\$0	\$0	\$9,489	\$1,240	\$10,729
2034	\$27,960	\$12,157	\$1,267	\$1,291	\$42,676	\$5,957	\$48,632
2035	\$31,447	\$13,667	\$3,189	\$1,540	\$49,844	\$7,237	\$57,080
2036	\$35,738	\$7,829	\$22,235	\$1,895	\$67,697	\$12,684	\$80,380
2037	\$35,738	\$7,829	\$22,235	\$1,895	\$67,697	\$12,684	\$80,380
2038	\$35,738	\$7,829	\$22,235	\$1,895	\$67,697	\$12,684	\$80,380
2039	\$30,705	\$7,937	\$10,032	\$2,009	\$50,686	\$8,871	\$59,555
2040	\$29,627	\$7,956	\$7,441	\$2,033	\$47,061	\$8,060	\$55,119
2041	\$623	\$167	\$157	\$43	\$990	\$170	\$1,160
Account Total	\$245,253	\$65,438	\$88,791	\$12,602	\$412,090	\$70,664	\$482,746

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	\$1,256
2034	\$7,885	\$6,996	\$0	\$2,239	\$17,120	\$2,543	\$19,662
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	\$3,027	\$1,782	\$0	\$991	\$5,801	\$845	\$6,645
2040	\$1,988	\$711	\$0	\$719	\$3,418	\$488	\$3,906
2041	\$1,988	\$711	\$0	\$719	\$3,418	\$488	\$3,906
2042	\$1,992	\$712	\$0	\$826	\$3,531	\$505	\$4,036
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	\$2,156	\$758	\$523	\$625	\$4,062	\$587	\$4,648
2067	\$1,926	\$663	\$991	\$218	\$3,800	\$554	\$4,352
Account Total	\$104,556	\$61,315	\$1,514	\$37,229	\$204,616	\$29,829	\$234,441

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Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Cost Account C. Greenfield							
2041	\$19,368	\$7,452	\$1,335	\$333	\$28,490	\$4,466	\$32,955
2042	\$4,890	\$1,542	\$208	\$82	\$6,722	\$1,032	\$7,755
Account Total	\$24,258	\$8,994	\$1,543	\$415	\$35,212	\$5,498	\$40,710

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Unit Total	\$374,067	\$135,747	\$91,848	\$50,246	\$651,918	\$105,991	\$757,897
Scenario Total	\$374,067	\$135,747	\$91,848	\$50,246	\$651,918	\$105,991	\$757,897
Scenario No 4							
Unit No. Unit 1							
Cost Account A. License Termination							
2032	\$6,968	\$29	\$0	\$0	\$6,998	\$915	\$7,913
2033	\$8,013	\$33	\$0	\$0	\$8,047	\$1,052	\$9,100
2034	\$25,696	\$9,662	\$1,879	\$1,397	\$38,635	\$5,704	\$44,343
2035	\$282	\$108	\$0	\$1,170	\$1,559	\$230	\$1,790
2036	\$282	\$108	\$0	\$1,170	\$1,559	\$230	\$1,790
2037	\$282	\$108	\$0	\$1,170	\$1,559	\$230	\$1,790
2038	\$282	\$108	\$0	\$1,170	\$1,559	\$230	\$1,790
2039	\$3,141	\$1,244	\$9,828	\$2,938	\$17,151	\$3,365	\$20,514
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

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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	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2069	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2070	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2071	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2072	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2073	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2074	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2075	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2076	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2077	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2078	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2079	\$763	\$259	\$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	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2081	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2082	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2083	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2084	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2085	\$763	\$259	\$2	\$972	\$1,996	\$295	\$2,291
2086	\$6,516	\$667	\$1	\$1,147	\$8,331	\$1,127	\$9,459
2087	\$10,600	\$957	\$0	\$1,267	\$12,824	\$1,717	\$14,542
2088	\$27,572	\$12,589	\$13	\$18,843	\$59,017	\$7,839	\$66,857
2089	\$35,136	\$12,003	\$13,193	\$12,472	\$72,804	\$12,062	\$84,866
2090	\$40,755	\$9,154	\$28,475	\$1,806	\$80,190	\$15,820	\$96,008
2091	\$34,952	\$8,361	\$16,797	\$1,912	\$62,023	\$11,373	\$73,393
2092	\$28,208	\$7,429	\$3,393	\$2,027	\$41,058	\$6,254	\$47,308
2093	\$6,781	\$1,786	\$816	\$487	\$9,871	\$1,503	\$11,373
Account Total	\$257,437	\$72,134	\$74,470	\$94,036	\$498,085	\$80,715	\$578,794

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	\$1,256
2034	\$7,883	\$6,994	\$0	\$2,238	\$17,115	\$2,542	\$19,657
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	\$3,030	\$1,784	\$0	\$1,023	\$5,837	\$850	\$6,688
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

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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	\$2,156	\$758	\$520	\$492	\$3,926	\$567	\$4,492
2067	\$1,928	\$664	\$994	\$109	\$3,696	\$539	\$4,234
Account Total	\$104,557	\$61,315	\$1,514	\$33,913	\$201,301	\$29,334	\$230,632

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2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Cost Account C. Greenfield							
2093	\$14,929	\$5,648	\$1,030	\$358	\$21,966	\$3,436	\$25,401
2094	\$9,602	\$3,168	\$504	\$213	\$13,486	\$2,081	\$15,568
Account Total	\$24,531	\$8,816	\$1,534	\$571	\$35,452	\$5,517	\$40,969

Duane Arnold Energy Center Detailed Annual Cost

2008 Dollars in Thousands

Year	Labor	Mat. & Equip.	Waste	Other	Subtotal	Contingency	Total
Unit Total	\$386,525	\$142,265	\$77,518	\$128,520	\$734,838	\$115,566	\$850,395
Scenario Total	\$386,525	\$142,265	\$77,518	\$128,520	\$734,838	\$115,566	\$850,395