energy harbor

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December 14, 2021
L-21-270

10 CFR 72.30(c)

ATTN: Document Control Desk
Director, Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Beaver Valley Power Station, Unit Nos. 1 and 2 ISFSI
Docket No. 72-1043
Davis-Besse Nuclear Power Station, Unit No. 1 ISFSI
Docket No. 72-14
Perry Nuclear Power Plant, Unit No. 1 ISFSI
Docket No. 72-69
Triennial ISFSI Decommissioning Funding Plans

Pursuant to the requirements of 10 CFR 72.30(c), Energy Harbor Nuclear Corp. (EHNC) is submitting the triennial Decommissioning Funding Plans for the Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS) Independent Spent Fuel Storage Installation (ISFSI); the Davis-Besse Nuclear Power Station, Unit No. 1 (DBNPS) ISFSI; and the Perry Nuclear Power Plant, Unit No. 1 (PNPP) ISFSI (Attachments 1 through 3, respectively). Enclosures A through C contain the ISFSI decommissioning cost estimates for BVPS, DBNPS, and PNPP, respectively.

There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Manager – Fleet Licensing, at (330) 696-7208.

Sincerely,

Darin M. Benyak

Attachments:
1. Decommissioning Funding Plan for Beaver Valley Power Station, Unit Nos. 1 and 2 Independent Spent Fuel Storage Installation
2. Decommissioning Funding Plan for Davis-Besse Nuclear Power Station, Unit No. 1 Independent Spent Fuel Storage Installation
3. Decommissioning Funding Plan for Perry Nuclear Power Plant, Unit No. 1 Independent Spent Fuel Storage Installation

Enclosures:
A. Beaver Valley Power Station, Unit Nos. 1 and 2 Independent Spent Fuel Storage Installation Decommissioning Cost Estimate
B. Davis-Besse Nuclear Power Station, Unit No. 1 Independent Spent Fuel Storage Installation Decommissioning Cost Estimate
C. Perry Nuclear Power Plant, Unit No. 1 Independent Spent Fuel Storage Installation Decommissioning Cost Estimate

cc: NRC Region I Administrator
NRC Region III Administrator
NRC Resident Inspector (BVPS)
NRC Resident Inspector (DBNPS)
NRC Resident Inspector (PNPP)
NRC Project Manager (EHNC Fleet)
Director BRP/DEP
Site BRP/DEP Representative
Utility Radiological Safety Board

Decommissioning Funding Plan for
Beaver Valley Power Station, Unit Nos. 1 and 2
Independent Spent Fuel Storage Installation

Pursuant to 10 CFR 72.30(c), each licensee of an independent spent fuel storage installation (ISFSI) is required to triennially submit a decommissioning funding plan for the ISFSI. Energy Harbor Nuclear Corp. (EHNC) hereby provides the updated decommissioning funding plan for the Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS) ISFSI.

The previous BVPS ISFSI funding plan was submitted to the Nuclear Regulatory Commission on December 17, 2018 (Accession No. ML18351A161).

1. Information on how reasonable assurance will be provided that funds will be available to decommission the ISFSI:

The response to Item 4 below provides the method of financial assurance pursuant to 10 CFR 72.30(e).

2. A detailed cost estimate for decommissioning:

In June 2021, TLG Services, Inc. (TLG) provided a detailed plant-specific decommissioning cost estimate for the BVPS ISFSI. For ease of review, the BVPS ISFSI decommissioning cost estimate is provided in Enclosure A. The cost estimate assumes that an independent contractor will perform the decommissioning activities, assumes a contingency factor of 25 percent, and includes the cost of meeting 10 CFR 20.1402 for license termination for unrestricted use. The total decommissioning cost with contingency is $11,203,000 (2020 dollars).

Changes in the responses to the four criteria listed in 10 CFR 72.30(c) for the period between the previous plan submittal and this submittal are as follows:

1. Spills of radioactive material producing additional residual radioactivity in onsite subsurface material: None

2. Facility modifications: None

3. Changes in authorized possession limits: None

4. Actual remediation costs that exceed the previous cost estimate: None

3. Identification of and justification for using the key assumptions contained in the decommissioning cost estimate:

The ISFSI decommissioning cost estimate key assumptions and justifications are provided in Enclosure A.

4. A description of the method of assuring funds for decommissioning from 10 CFR 72.30(e), including means for adjusting cost estimates and associated funding levels periodically over the life of the facility:

Energy Harbor Nuclear Generation LLC (EHNG) uses the prepayment method of assuring funds for ISFSI decommissioning. In 2016, a Provisional Trust was established with an initial funding amount of $10,000,000 to provide funding to decommission the EHNG ISFSIs. The exclusive purpose of the Provisional Trust is to accumulate and hold funds for the decommissioning of the ISFSIs. As of November 8, 2021, the value of the Provisional Trust was $12,062,262.

Financial assurance for the decommissioning of the BVPS ISFSI is provided through the Provisional Trust. It has been determined that a Provisional Trust value of $2,785,000 (2020 dollars), combined with growth in the Provisional Trust up to a 2 percent annual real rate of return until the time the ISFSI is decommissioned, is adequate to cover the ISFSI decommissioning cost with contingency of $11,203,000 that is identified in the response to Question 2, above. Note the growth in the Provisional Trust assumes 59 years' worth of earnings, based upon the ISFSI decommissioning expense being incurred in the last year of a 60-year SAFSTOR period.

5. The volume of onsite subsurface material containing residual radioactivity that will require remediation to meet the criteria for license termination:

BVPS currently uses the TransNuclear NUHOMS system for spent fuel storage. The NUHOMS system has been designed, fabricated, and tested to be leak tight. EHNC plans to change to the Holtec HI-STORM FW storage system at BVPS. This change is expected to commence in 2023 and EHNC assumes that all fuel packaged during decommissioning for storage will be in HI-STORM FW casks. The HI-STORM FW storage system is also designed to prevent release of radioactive materials to the environment. As a result, EHNC assumes the volume of onsite subsurface material containing residual radioactivity that will require remediation to meet the criteria for license termination to be zero.

6. A certification that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning:

The submission of this report in conjunction with the Provisional Trust (Accession No. ML16356A094) serves as certification that financial assurance has been provided in the amount of the cost estimate for ISFSI decommissioning.

Decommissioning Funding Plan for
Davis-Besse Nuclear Power Station, Unit No. 1
Independent Spent Fuel Storage Installation

Pursuant to 10 CFR 72.30(c), each licensee of an independent spent fuel storage installation (ISFSI) is required to triennially submit a decommissioning funding plan for the ISFSI. Energy Harbor Nuclear Corp. (EHNC) hereby provides the updated decommissioning funding plan for the Davis-Besse Nuclear Power Station, Unit No. 1 (DBNPS) ISFSI.

The previous DBNPS ISFSI funding plan was submitted to the Nuclear Regulatory Commission on December 17, 2018 (Accession No. ML18351A161).

1. Information on how reasonable assurance will be provided that funds will be available to decommission the ISFSI:

The response to Item 4 below provides the method of financial assurance pursuant to 10 CFR 72.30(e).

2. A detailed cost estimate for decommissioning:

In June 2021, TLG Services, Inc. (TLG) provided a detailed plant-specific decommissioning cost estimate for the DBNPS ISFSI. For ease of review, the DBNPS ISFSI decommissioning cost estimate is provided in Enclosure B. The cost estimate assumes that an independent contractor will perform the decommissioning activities, assumes a contingency factor of 25 percent, and includes the cost of meeting 10 CFR 20.1402 for license termination for unrestricted use. The total decommissioning cost with contingency is $7,753,000 (2020 dollars).

Changes in the responses to the four criteria listed in 10 CFR 72.30(c) for the period between the previous plan submittal and this submittal are as follows:

1. Spills of radioactive material producing additional residual radioactivity in onsite subsurface material: None

2. Facility modifications: None

3. Changes in authorized possession limits: None

4. Actual remediation costs that exceed the previous cost estimate: None

3. Identification of and justification for using the key assumptions contained in the decommissioning cost estimate:

The ISFSI decommissioning cost estimate key assumptions and justifications are provided in Enclosure B.

4. A description of the method of assuring funds for decommissioning from 10 CFR 72.30(e), including means for adjusting cost estimates and associated funding levels periodically over the life of the facility:

Energy Harbor Nuclear Generation LLC (EHNG) uses the prepayment method of assuring funds for ISFSI decommissioning. In 2016, a Provisional Trust was established with an initial funding amount of $10,000,000 to provide funding to decommission the EHNG ISFSIs. The exclusive purpose of the Provisional Trust is to accumulate and hold funds for the decommissioning of the ISFSIs. As of November 8, 2021, the value of the Provisional Trust was $12,062,262.

Financial assurance for the decommissioning of the DBNPS ISFSI is provided through the Provisional Trust. It has been determined that a Provisional Trust value of $1,860,000 (2020 dollars), combined with growth in the Provisional Trust up to a 2 percent annual real rate of return until the time the ISFSI is decommissioned, is adequate to cover the ISFSI decommissioning cost with contingency of $7,753,000 that is identified in the response to Question 2, above. Note the growth in the Provisional Trust assumes 59 years' worth of earnings, based upon the ISFSI decommissioning expense being incurred in the last year of a 60-year SAFSTOR period.

5. The volume of onsite subsurface material containing residual radioactivity that will require remediation to meet the criteria for license termination:

DBNPS currently uses the TransNuclear NUHOMS system for spent fuel storage. The NUHOMS system has been designed to be a no effluent system. EHNC plans to change to the Holtec HI-STORM FW at DBNPS. This change is expected to commence in 2022 at DBNPS and EHNC assumes that all fuel packaged during decommissioning for storage will be in HI-STORM FW casks. The HI-STORM FW storage system is also designed to prevent release of radioactive materials to the environment. As a result, EHNC assumes the volume of onsite subsurface material containing residual radioactivity that will require remediation to meet the criteria for license termination to be zero.

6. A certification that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning:

The submission of this report in conjunction with the Provisional Trust (Accession No. ML16356A094) serves as certification that financial assurance has been provided in the amount of the cost estimate for ISFSI decommissioning.

Decommissioning Funding Plan for
Perry Nuclear Power Plant, Unit No. 1
Independent Spent Fuel Storage Installation

Pursuant to 10 CFR 72.30(c), each licensee of an independent spent fuel storage installation (ISFSI) is required to triennially submit a decommissioning funding plan for the ISFSI. Energy Harbor Nuclear Corp. (EHNC) hereby provides the updated decommissioning funding plan for the Perry Nuclear Power Plant, Unit No. 1 (PNPP) ISFSI.

The previous PNPP ISFSI funding plan was submitted to the Nuclear Regulatory Commission on December 17, 2018 (Accession No. ML18351A161).

1. Information on how reasonable assurance will be provided that funds will be available to decommission the ISFSI:

The response to Item 4 below provides the method of financial assurance pursuant to 10 CFR 72.30(e).

2. A detailed cost estimate for decommissioning:

In June 2021, TLG Services, Inc. (TLG) provided a detailed plant-specific decommissioning cost estimate for the PNPP ISFSI. For ease of review, the PNPP ISFSI decommissioning cost estimate is provided in Enclosure C. The cost estimate assumes that an independent contractor will perform the decommissioning activities, assumes a contingency factor of 25 percent, and includes the cost of meeting 10 CFR 20.1402 for license termination for unrestricted use. The total decommissioning cost with contingency is $9,860,000 (2020 dollars).

Changes in the responses to the four criteria listed in 10 CFR 72.30(c) for the period between the previous plan submittal and this submittal are as follows:

1. Spills of radioactive material producing additional residual radioactivity in onsite subsurface material: None

2. Facility modifications: None

3. Changes in authorized possession limits: None

4. Actual remediation costs that exceed the previous cost estimate: None

3. Identification of and justification for using the key assumptions contained in the decommissioning cost estimate:

The ISFSI decommissioning cost estimate key assumptions and justifications are provided in Enclosure C.

4. A description of the method of assuring funds for decommissioning from 10 CFR 72.30(e), including means for adjusting cost estimates and associated funding levels periodically over the life of the facility:

Energy Harbor Nuclear Generation LLC (EHNG) uses the prepayment method of assuring funds for ISFSI decommissioning. In 2016, a Provisional Trust was established with an initial funding amount of $10,000,000 to provide funding to decommission the EHNG ISFSIs. The exclusive purpose of the Provisional Trust is to accumulate and hold funds for the decommissioning of the ISFSIs. As of November 8, 2021, the value of the Provisional Trust was $12,062,262.

Financial assurance for the decommissioning of the PNPP ISFSI is provided through the Provisional Trust. It has been determined that a Provisional Trust value of $2,867,500 (2020 dollars), combined with growth in the Provisional Trust up to a 2 percent annual real rate of return until the time the ISFSI is decommissioned, is adequate to cover the ISFSI decommissioning cost with contingency of $9,860,000 that is identified in the response to Question 2, above. Note the growth in the Provisional Trust assumes 59 years' worth of earnings, based upon the ISFSI decommissioning expense being incurred in the last year of a 60-year SAFSTOR period.

5. The volume of onsite subsurface material containing residual radioactivity that will require remediation to meet the criteria for license termination:

The dry fuel storage system at PNPP consists of a Holtec International HI-STORM 100S system and the HI-STORM FW-BWR storage system. The HI-STORM 100S cask has been designed to assure that there is no release of radioactive materials to the environment. EHNC plans to commence loading HI-STORM FW-BWR casks at PNPP in 2022. The HI-STORM FW cask is also designed to prevent release of radioactive materials to the environment. As a result, EHNC assumes the volume of onsite subsurface material containing residual radioactivity that will require remediation to meet the criteria for license termination to be zero.

6. A certification that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning:

The submission of this report in conjunction with the Provisional Trust (Accession No. ML16356A094) serves as certification that financial assurance has been provided in the amount of the cost estimate for ISFSI decommissioning.

Enclosure A
L-21-270

Beaver Valley Power Station, Unit Nos. 1 and 2 Independent Spent Fuel Storage Installation Decommissioning Cost Estimate
(Seven Pages Follow)

10 CFR 72.30 ISFSI Decommissioning Cost Estimate

1. Background and Introduction

The Nuclear Regulatory Commission (NRC) issued its final rule on Decommissioning Planning on June 17, 2011,[1] with the rule becoming effective on December 17, 2012. Subpart 72.30, "Financial assurance and recordkeeping for decommissioning," requires that each holder of, or applicant for, a license under this part must submit for NRC review and approval a decommissioning funding plan that contains information on how reasonable assurance will be provided that funds will be available to decommission the Independent Spent Fuel Storage Installation (ISFSI).

In accordance with the rule, this letter provides a detailed cost estimate for decommissioning the ISFSI at Beaver Valley Power Station (Beaver Valley) in an amount reflecting:

1. The work is performed by an independent contractor;
2. An adequate contingency factor; and
3. Release of the facility and dry storage systems for unrestricted use, as specified in 10 CFR Part 20.1402

This letter also provides:

1. Identification of the key assumptions contained in the cost estimate; and
2. The volume of onsite subsurface material containing residual radioactivity, if any, that will require remediation to meet the criteria for license termination.

2. Spent Fuel Management Strategy

Beaver Valley's operating licenses were renewed effective November 5, 2009. The scheduled license termination dates for Beaver Valley Units 1 and 2 are January 29, 2036 and May 27, 2047, respectfully. As of Unit 2 final shutdown, 4,991 spent fuel assemblies are projected to be discharged over the operating life of the units. For the purpose of this analysis, all of the 4,991 assemblies would be placed in dry storage at an on-site ISFSI. The ISFSI would operate (under a Part 50 General License in accordance with 10 CFR 72 Subpart K) until the transfer of spent fuel to the DOE is completed. At that time, the ISFSI could be decommissioned.

Completion of the ISFSI decommissioning process is dependent upon the DOE's ability to remove spent fuel from the site. DOE's repository program assumes that spent fuel

[1] U.S. Code of Federal Regulations, Title 10, Parts 20, 30, 40, 50, 70 and 72 "Decommissioning Planning," Nuclear Regulatory Commission, Federal Register Volume 76, Number 117 (p 35512 et seq.), June 17, 2011.

allocations will be accepted for disposal from the nation's commercial nuclear plants, with limited exceptions, in the order (the "queue") in which it was discharged from the reactor.[2] Energy Harbor Nuclear Corporation (EHNC) is the licensed operator for Beaver Valley. As such, EHNC's current spent fuel management plan is based in general upon completion of spent fuel receipt by the DOE in the year 2081.

3. ISFSI Decommissioning Strategy

At the conclusion of the spent fuel transfer process the ISFSI can be decommissioned by removing and disposing of residual radioactivity and verifying that remaining materials satisfy NRC release criteria.

For purposes of providing an estimate for a funding plan, financial assurance is expected to be provided on the basis of a prompt ISFSI decommissioning scenario. In this estimate the ISFSI decommissioning is considered an independent project, regardless of the decommissioning alternative identified for the nuclear power plant.

4. ISFSI Description

The existing dry fuel storage system is a TransNuclear NUHOMS horizontal storage system. The system consists of a dry shielded canister (DSC) and a horizontal storage module (HSM). EHNC recently announced that the Beaver Valley site will be changing to the Holtec HI-STORM FW storage system, consisting of an MPC, and overpack, it is assumed that all fuel packaged during decommissioning for storage on the on-site ISFSI will be into HI-STORM FW casks.

The DSCs and MPCs are assumed to be transferred directly to the DOE and not returned to the station. Some of the Holtec overpacks are assumed to have residual radioactivity due to some minor level of neutron-induced activation as a result of the long-term storage of the spent fuel. The cost to dispose of residual radioactivity, and verify that the remaining facility and surrounding environs meet the NRC's radiological limits established for unrestricted use, form the basis of the ISFSI decommissioning estimate.

In addition to the spent fuel casks located on the ISFSI pad after shutdown there may be additional casks used for Greater-than-Class-C (GTCC) waste storage. The overpacks used to store the GTCC canisters (estimated quantity of six) are not expected to have any interior contamination or residual activation and can be reused or disposed of by conventional means after a final status survey.

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

Table 1 provides the significant quantities and physical dimensions used as the basis in developing the ISFSI decommissioning estimate.

5. Key Assumptions / Estimating Approach

The decommissioning estimate is based on the configuration of the ISFSI at the cessation of plant operations (operating until 2036 for Unit 1 and 2047 for Unit 2), and the assumptions associated with DOE's spent fuel acceptance, as previously described.

The expanded size of the ISFSI pad to store the projected amount of spent fuel is expected to be approximately 90 feet in width, and 420 feet in length.

To support an application for License Termination, the estimate assumes that a Final Status Survey will be performed; this will include a 100% survey of the concrete HSM and overpack surfaces, and a significant fraction of the ISFSI pad and the immediate area surrounding the pad, and the other ISFSI structures.

It is not expected that the overpacks will have any interior or exterior radioactive surface contamination (except as noted in Section 4 above regarding neutron activation of a limited number of overpacks). It is expected that this assumption would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. Any neutron activation of the steel and concrete is expected to be extremely small. To validate this assumption, the estimate accounts for further characterization of 10% of the overpacks; it is likely that some of this characterization will take place well before the last of the fuel is removed from the ISFSI in order to establish a more definitive decommissioning scope.

The decommissioning estimate conservatively assumes that 10 overpacks (equivalent to the number of casks to store the final full core offloads for both units) will contain low levels of neutron-induced residual radioactivity that would necessitate remediation at the time of decommissioning. For purposes of this estimate, these overpacks are designated for controlled disposal as low-level radioactive waste.

It is not expected that there will be any residual contamination left on the concrete ISFSI pad once the overpacks are removed, the cask transporter, or other facilities at the Beaver Valley ISFSI. It is expected that these assumptions would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. As such, only verification surveys are included for the other facilities in the decommissioning estimate.

The ISFSI was constructed upon part of the property that was released as a result of the decommissioning of the Shippingport Atomic Power Station by the U.S. Department of Energy in 1989. The pad area was excavated down approximately 15 feet, and backfilled with clean engineered fill. The surrounding ISFSI areas were not disturbed, and remain as left by the DOE, other than a topcoat of gravel. As such, the decommissioning estimate

assumes that no soil remediation is required [3], to meet the unrestricted use criteria of 10 CFR 20.1402.

Decommissioning is assumed to be performed by an independent contractor. As such, essentially all labor, equipment, and material costs are based on national averages, i.e., costs from national publications such as RSMeans Building Construction Cost Data (adjusted for regional variations), and laboratory service costs are based on vendor price lists. Those craft labor positions are expected to be provided locally. Energy Harbor Nuclear Generation, LLC. as licensee, will oversee the site activities; the estimate includes EHNC labor and overhead costs.

Low-level radioactive waste packaging and transport costs are based on industry data. Disposal costs are based on EHNC existing contracted disposal rates.

Costs are reported in 2020 dollars. Contingency has been added at an overall rate of 25%. This is consistent with the contingency evaluation criteria referenced by the NRC in NUREG-1757.[4]

The estimate is limited to costs necessary to terminate the ISFSI's NRC license and meet the §20.1402 criteria for unrestricted use. Disposition of released material and structures is outside the scope of the estimate.

The effects, if any, since the last submittal of the ISFSI decommissioning funding plan of the following events listed in 10 CFR 72.30 (c) (1)- (4) have been specifically considered in the decommissioning cost estimate:

(1) Spills of radioactive material producing additional residual radioactivity in onsite subsurface material: There have been no spills at the ISFSI.

(2) Facility modifications: There have been no facility modifications in the past three years that affect the decommissioning cost estimate. As noted in this report, Energy Harbor plans to change cask systems from NUHOMS to HI-STORM. The Engineering Change Process for this transition is expected to commence in 2023.

(3) Changes in authorized possession limits: There are no changes in authorized possession limits that affect the decommissioning cost estimate.

(4) Actual remediation costs that exceed the previous cost estimate: No actual remediation costs have been incurred, so no actual remediation costs exceed the previous cost estimate.

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3 Email John Saunders to Matt Minniti, May 11, 2020.

4 "Consolidated Decommissioning Guidance, Financial Assurance, Recordkeeping, and Timeliness," U.S. Nuclear Regulatory Commission's Office of Nuclear Material Safety and Safeguards, NUREG-1757, Volume 3, Revision 1, February 2012.

6. Cost Estimate

The estimated cost to decommission the ISFSI and release the facility for unrestricted use is provided in Table 2. The cost has been organized into three phases, including:

- An initial planning phase - empty HSMs and overpacks are characterized and the specifications and work procedures for the decontamination (including steel liner removal if applicable) developed.
- The remediation phase - residual radioactivity is removed, packaged in certified waste containers, transported to the low-level waste site, and disposed of as low-level waste.
- The final phase - license termination surveys, independent surveys are completed, and an application for license termination submitted.

In addition to the direct costs associated with a contractor providing the decommissioning services, the estimate also contains costs for the NRC (and NRC contractor), EHNC oversight staff, site security (industrial), and other site operating costs.

For estimating purposes, it should be conservatively assumed that all expenditures would be incurred in the year 2082, the year following the last of the spent fuel removal.

Table 1
Significant Quantities and Physical Dimensions

ISFSI Pad

Item	Length (ft)	Width (ft)	Residual Radioactivity
ISFSI Pad (dimensions are for current pad)	300	90	No
ISFSI Pad Expansion (dimensions are for expansion)	120	90	No

ISFSI Storage Overpack

Item	Value	Notes (all dimensions are nominal)
Overall Height (inches)	217.3	Dimensions based upon Holtec HI-STORM FW design
Outside Diameter (inches)	139.0	
Inside Diameter (inches)	81.0	
Inner Liner Thickness (inches)	0.75	
HI-STORM FW storage systems (quantity)	96	90 spent fuel + 6 GTCC
HSM storage systems (quantity)	10	
Quantity (total)	106	
Quantity (with residual radioactivity)	10	Equivalent to the number of Overpacks needed to store each units last core offload from Beaver Valley
Total Surface Area of Overpack Liner with Residual Radioactivity (square feet)	3,042	
Low-Level Radioactive Waste (cubic feet)	61,974	
Low-Level Radioactive Waste (packaged density)	53	Average weight density

Other Potentially Impacted Items

Item	Value	Notes
Cask Transporter	1	No residual radioactivity
Transfer Cask	1	Controlled disposal
ISFSI Equipment Storage Building	1	No residual radioactivity
Number of Overpacks used for GTCC storage	6	No residual radioactivity

Table 2
ISFSI Decommissioning Costs[1] and Waste Volumes

	(Thousands, 2020 dollars)							Person-Hours	
	Removal	Packaging	Transport	Disposal	Other	Total	Waste Volume (ft3)	Craft	Oversight and Contractor
Decommissioning Contractor									
Planning (characterization, specs and procedures)					370	370			2,072
Decontamination (activated disposition)	252	259	1,771	2,745		5,026	61,974	2,644	
License Termination (radiological surveys)					1,665	1,665		11,762	
Subtotal	**252**	**259**	**1,771**	**2,745**	**2,035**	**7,061**	**61,974**	**14,406**	**2,072**
Supporting Costs									
NRC and NRC Contractor Fees and Costs					506	506			1,257
Insurance					26	26			
Property taxes					665	665			
Plant energy budget					46	46			
Corporate A&G Cost					126	126			
Security Staff Cost					260	260			4,999
Utility Staff Cost					273	273			3,792
Subtotal					**1,901**	**1,901**			**10,048**
Total (w/o contingency)	**252**	**259**	**1,771**	**2,745**	**3,936**	**8,962**	**61,974**	**14,406**	**12,120**
Total (w/25% contingency)	**315**	**323**	**2,214**	**3,431**	**4,920**	**11,203**			

Note 1: For funding planning purposes decommissioning costs can be assumed to be incurred in year 2082

Enclosure B
L-21-270

Davis-Besse Nuclear Power Station, Unit No. 1 Independent Spent Fuel Storage Installation Decommissioning Cost Estimate
(Seven Pages Follow)

10 CFR 72.30 ISFSI Decommissioning Cost Estimate

1. Background and Introduction

The Nuclear Regulatory Commission (NRC) issued its final rule on Decommissioning Planning on June 17, 2011,[1] with the rule becoming effective on December 17, 2012. Subpart 72.30, "Financial assurance and recordkeeping for decommissioning," requires that each holder of, or applicant for, a license under this part must submit for NRC review and approval a decommissioning funding plan that contains information on how reasonable assurance will be provided that funds will be available to decommission the Independent Spent Fuel Storage Installation (ISFSI).

In accordance with the rule, this letter provides a detailed cost estimate for decommissioning the ISFSI at Davis-Besse Nuclear Power Station (Davis-Besse) in an amount reflecting:

1. The work is performed by an independent contractor;
2. An adequate contingency factor; and
3. Release of the facility and dry storage systems for unrestricted use, as specified in 10 CFR Part 20.1402

This letter also provides:

1. Identification of the key assumptions contained in the cost estimate; and
2. The volume of onsite subsurface material containing residual radioactivity, if any, that will require remediation to meet the criteria for license termination.

2. Spent Fuel Management Strategy

Davis-Besse's operating license was renewed effective December 8, 2015. The scheduled license termination date for Davis-Besse is April 22, 2037. As of that date, 2,253 spent fuel assemblies are projected to be discharged over the operating life of the unit. For the purpose of this analysis, all of the 2,253 assemblies would be placed in dry storage at an on-site ISFSI. The ISFSI would operate (under a Part 50 General License in accordance with 10 CFR 72 Subpart K) until the transfer of spent fuel to the DOE is completed. At that time, the ISFSI could be decommissioned.

Completion of the ISFSI decommissioning process is dependent upon the DOE's ability to remove spent fuel from the site. DOE's repository program assumes that spent fuel allocations will be accepted for disposal from the nation's commercial nuclear plants,

[1] U.S. Code of Federal Regulations, Title 10, Parts 20, 30, 40, 50, 70 and 72 "Decommissioning Planning," Nuclear Regulatory Commission, Federal Register Volume 76, Number 117 (p 35512 et seq.), June 17, 2011.

with limited exceptions, in the order (the "queue") in which it was discharged from the reactor.[2] Energy Harbor Nuclear Corporation (EHNC) is the licensed operator for Davis-Besse. As such, EHNC's current spent fuel management plan is based in general upon completion of spent fuel receipt by the DOE in the year 2075.

3. ISFSI Decommissioning Strategy

At the conclusion of the spent fuel transfer process, the ISFSI can be decommissioned by removing and disposing of residual radioactivity and verifying that remaining materials satisfy NRC release criteria.

For purposes of providing an estimate for a funding plan, financial assurance is expected to be provided on the basis of a prompt ISFSI decommissioning scenario. In this estimate, the ISFSI decommissioning is considered an independent project, regardless of the decommissioning alternative identified for the nuclear power plant.

4. ISFSI Description

The existing dry fuel storage system is a TransNuclear NUHOMS horizontal storage system. The system consists of a dry shielded canister (DSC) and a horizontal storage module (HSM). EHNC recently announced that the Davis-Besse site will be changing to the Holtec HI-STORM FW storage system, consisting of a multi-purpose (storage and transport) canister (MPC), and a concrete shield (overpack), It is assumed that all fuel packaged during decommissioning for storage on the on-site ISFSI will be into HI-STORM FW casks.

The DSCs and MPCs are assumed to be transferred directly to the DOE and not returned to the station. Some of the Holtec overpacks are assumed to have residual radioactivity due to some minor level of neutron-induced activation because of the long-term storage of the spent fuel. The cost to dispose of residual radioactivity, and verify that the remaining facility and surrounding environs meet the NRC's radiological limits established for unrestricted use, form the basis of the ISFSI decommissioning estimate.

In addition to the spent fuel casks located on the ISFSI pad after shutdown, there may be additional casks used for Greater-than-Class-C (GTCC) waste storage. The overpacks used to store the GTCC canisters (estimated quantity of four) are not expected to have any interior contamination or residual activation and can be reused or disposed of by conventional means after a final status survey.

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

Table 1 provides the significant quantities and physical dimensions used as the basis for developing the ISFSI decommissioning estimate.

5. Key Assumptions / Estimating Approach

The decommissioning estimate is based on the configuration of the ISFSI at the cessation of plant operations (operating until April 22, 2037), and the assumptions associated with DOE's spent fuel acceptance, as previously described.

The expanded size of the ISFSI pad to store the projected amount of spent fuel is expected to be approximately 88 feet in width, and 376 feet in length.

To support an application for License Termination, the estimate assumes that a Final Status Survey will be performed; this will include a 100% survey of the concrete overpack surfaces, and a significant fraction of the ISFSI pad and the immediate area surrounding the pad, and the other ISFSI structures.

It is not expected that the overpacks will have any interior or exterior radioactive surface contamination (except as noted in Section 4 above regarding neutron activation of a limited number of overpacks). It is expected that this assumption would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. Any neutron activation of the steel and concrete is expected to be extremely small. To validate this assumption, the estimate accounts for further characterization of 10% of the overpacks; it is likely that some of this characterization will take place well before the last of the fuel is removed from the ISFSI in order to establish a more definitive decommissioning scope.

The decommissioning estimate conservatively assumes that five overpacks (equivalent to the number of casks to store the final full core offload of 177 assemblies) will contain low levels of neutron-induced residual radioactivity that would necessitate remediation at the time of decommissioning. For purposes of this estimate, these overpacks are designated for controlled disposal as low-level radioactive waste.

It is not expected that there will be any residual contamination left on the concrete ISFSI pad once the overpacks are removed, the cask transporter, or other facilities at the Davis-Besse ISFSI. It is expected that these assumptions would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. As such, only verification surveys are included for the other facilities in the decommissioning estimate.

A review of drawing and pictures taken during the pad construction identified no piping running under the pad. A duct bank going East-West under the pad can be identified. The area of the pad plus five feet on each side was excavated down to undisturbed soil and then refilled with an engineered backfill prior to pouring the pad. At this time there is no reason to believe the soil under the pad has been contaminated. As such, the

decommissioning estimate assumes that no soil remediation is required [3], to meet the unrestricted use criteria of 10 CFR 20.1402.

Decommissioning is assumed to be performed by an independent contractor. As such, essentially all labor, equipment, and material costs are based on national averages, i.e., costs from national publications such as RSMeans Building Construction Cost Data (adjusted for regional variations), and laboratory service costs are based on vendor price lists. Those craft labor positions are expected to be provided locally. Energy Harbor Nuclear Generation, LLC as licensee, will oversee the site activities; the estimate includes EHNC labor and overhead costs.

Low-level radioactive waste packaging and transport costs are based on industry data. Disposal costs are based on EHNC existing contracted disposal rates.

Costs are reported in 2020 dollars. Contingency has been added at an overall rate of 25%. This is consistent with the contingency evaluation criteria referenced by the NRC in NUREG-1757.[4]

The estimate is limited to costs necessary to terminate the ISFSI's NRC license and meet the §20.1402 criteria for unrestricted use. Disposition of released material and structures is outside the scope of the estimate.

The effects, if any, since the last submittal of the ISFSI decommissioning funding plan of the following events listed in 10 CFR 72.30 (c) (1)- (4) have been specifically considered in the decommissioning cost estimate:

(1) Spills of radioactive material producing additional residual radioactivity in onsite subsurface material: There have been no spills at the ISFSI.

(2) Facility modifications: There have been no facility modifications in the past three years that affect the decommissioning cost estimate. As noted in this report, Energy Harbor plans to change cask systems from NUHOMS to HI-STORM. The Engineering Change Process for this transition is expected to commence in 2022.

(3) Changes in authorized possession limits: There are no changes in authorized possession limits that affect the decommissioning cost estimate.

(4) Actual remediation costs that exceed the previous cost estimate: No actual remediation costs have been incurred, so no actual remediation costs exceed the previous cost estimate.

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3 Email Gil Nordlund to Matt Minniti, May 28, 2020.

4 "Consolidated Decommissioning Guidance, Financial Assurance, Recordkeeping, and Timeliness," U.S. Nuclear Regulatory Commission's Office of Nuclear Material Safety and Safeguards, NUREG-1757, Volume 3, Revision 1, February 2012.

6. Cost Estimate

The estimated cost to decommission the ISFSI and release the facility for unrestricted use is provided in Table 2. The cost has been organized into three phases, including:

- An initial planning phase - empty overpacks are characterized and the specifications and work procedures for the decontamination (steel liner removal) developed.
- The remediation phase - residual radioactivity is removed, packaged in certified waste containers, transported to the low-level waste site, and disposed of as low-level waste.
- The final phase - license termination surveys, independent surveys are completed, and an application for license termination submitted.

In addition to the direct costs associated with a contractor providing the decommissioning services, the estimate also contains costs for the NRC (and NRC contractor), EHNC oversight staff, site security (industrial), and other site operating costs.

For estimating purposes, it should be conservatively assumed that all expenditures will be incurred in the year 2076, the year following the last of the spent fuel removal.

Table 1
Significant Quantities and Physical Dimensions

ISFSI Pad

Item	Length (ft)	Width (ft)	Residual Radioactivity
ISFSI Pad (dimensions are for current pad)	229	88	No
ISFSI Pad Expansion (dimensions are for expansion)	147	88	No

ISFSI Storage Overpack

Item	Value	Notes (all dimensions are nominal)
Overall Height (inches)	217.3	
Outside Diameter (inches)	139.0	
Inside Diameter (inches)	81.0	
Inner Liner Thickness (inches)	0.75	
HI-STORM FW storage systems	52	48 spent fuel + 4 GTCC
HSM storage systems	16	
Quantity (total)	68	
Quantity (with residual radioactivity)	5	Equivalent to the number of Overpacks needed to store the last core offload from Davis-Besse
Total Surface Area of Overpack Liner with Residual Radioactivity (square feet)	1,521	
Low-Level Radioactive Waste (cubic feet)	31,408	
Low-Level Radioactive Waste (packaged density)	55	Average weight density

Other Potentially Impacted Items

Item	Value	Notes
Cask Transporter	1	No residual radioactivity
Transfer Cask	1	Controlled disposal
ISFSI Equipment Storage Building	1	No residual radioactivity
Number of Overpacks used for GTCC storage	4	No residual radioactivity

Table 2
ISFSI Decommissioning Costs[1] and Waste Volumes

	(Thousands, 2020 dollars)							Person-Hours	
	Removal	Packaging	Transport	Disposal	Other	Total	Waste Volume (ft3)	Craft	Oversight and Contractor
Decommissioning Contractor									
Planning (characterization, specs and procedures)					283	283			1,976
Decontamination (activated disposition)	121	128	857	1,554		2,661	31,408	1,338	
License Termination (radiological surveys)					1,376	1,376		10,033	
Subtotal	**121**	**128**	**857**	**1,554**	**1,658**	**4,319**	**31,408**	**11,371**	**1,976**
Supporting Costs									
NRC and NRC Contractor Fees and Costs					743	743			2,306
Insurance					86	86			
Property taxes					332	332			
Plant energy budget					8	8			
Corporate A&G Cost					26	26			
Security Staff Cost					413	413			4,999
Utility Staff Cost					274	274			3,792
Subtotal					**1,884**	**1,844**			**11,098**
Total (w/o contingency)	**121**	**128**	**857**	**1,554**	**3,542**	**6,203**	**31,408**	**11,371**	**13,074**
Total (w/25% contingency)	**151**	**161**	**1,071**	**1,943**	**4,428**	**7,753**			

Note 1: For funding planning purposes decommissioning costs can be assumed to be incurred in year 2076

Enclosure C
L-21-270

Perry Nuclear Power Plant, Unit No. 1 Independent Spent Fuel Storage Installation
Decommissioning Cost Estimate
(Seven Pages Follow)

10 CFR 72.30 ISFSI Decommissioning Cost Estimate

1. Background and Introduction

The Nuclear Regulatory Commission (NRC) issued its final rule on Decommissioning Planning on June 17, 2011,[1] with the rule becoming effective on December 17, 2012. Subpart 72.30, "Financial assurance and recordkeeping for decommissioning," requires that each holder of, or applicant for, a license under this part must submit for NRC review and approval a decommissioning funding plan that contains information on how reasonable assurance will be provided that funds will be available to decommission the Independent Spent Fuel Storage Installation (ISFSI).

In accordance with the rule, this letter provides a detailed cost estimate for decommissioning the ISFSI at Perry Nuclear Power Plant (Perry) in an amount reflecting:

1. The work is performed by an independent contractor;
2. An adequate contingency factor; and
3. Release of the facility and dry storage systems for unrestricted use, as specified in 10 CFR Part 20.1402

This letter also provides:

1. Identification of the key assumptions contained in the cost estimate; and
2. The volume of onsite subsurface material containing residual radioactivity, if any, that will require remediation to meet the criteria for license termination.

2. Spent Fuel Management Strategy

The scheduled license termination date for Perry is November 7, 2026. As of that date, 6,257 spent fuel assemblies are projected to be discharged over the operating life of the unit. For the purpose of this analysis, all of the 6,257 assemblies would be placed in dry storage at an on-site ISFSI. The ISFSI would operate (under a Part 50 General License in accordance with 10 CFR 72 Subpart K) until the transfer of spent fuel to the DOE is completed. At that time, the ISFSI could be decommissioned.

Completion of the ISFSI decommissioning process is dependent upon the DOE's ability to remove spent fuel from the site. DOE's repository program assumes that spent fuel allocations will be accepted for disposal from the nation's commercial nuclear plants, with limited exceptions, in the order (the "queue") in which it was discharged from the

[1] U.S. Code of Federal Regulations, Title 10, Parts 20, 30, 40, 50, 70 and 72 "Decommissioning Planning," Nuclear Regulatory Commission, Federal Register Volume 76, Number 117 (p 35512 et seq.), June 17, 2011.

reactor.[2] Energy Harbor Nuclear Corporation (EHNC) is the licensed operator for Perry. As such, EHNC's current spent fuel management plan is based in general upon completion of spent fuel receipt by the DOE in the year 2066.

3. ISFSI Decommissioning Strategy

At the conclusion of the spent fuel transfer process the ISFSI can be decommissioned by removing and disposing of residual radioactivity and verifying that remaining materials satisfy NRC release criteria.

For purposes of providing an estimate for a funding plan, the financial assurance model is based on a prompt ISFSI decommissioning scenario. In this estimate the ISFSI decommissioning is considered an independent project, regardless of the decommissioning alternative identified for the nuclear power plant.

4. ISFSI Description

The dry fuel storage system consists of a Holtec International HI-STORM 100S System (with a 68-fuel assembly capacity multi-purpose (storage and transport) canister (MPC) and the HI-STORM FW-BWR storage system with an 89 fuel assembly canister. The systems also include a concrete shield (overpack). The MPCs are assumed to be transferred directly to the DOE and not returned to the station. Some of the remaining concrete overpacks are assumed to have residual radioactivity due to some minor level of neutron-induced activation as a result of the long-term storage of the spent fuel. The cost to dispose of residual radioactivity, and verify that the remaining facility and surrounding environs meet the NRC's radiological limits established for unrestricted use, form the basis of the ISFSI decommissioning estimate.

In addition to the spent fuel casks located on the ISFSI pad after shutdown there may be additional casks used for Greater-than-Class-C (GTCC) waste storage. The overpacks used to store the GTCC canisters (estimated quantity of 4) are not expected to have any interior contamination or residual activation and can be reused or disposed of by conventional means after a final status survey.

Table 1 provides the significant quantities and physical dimensions used as the basis in developing the ISFSI decommissioning estimate.

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

5. Key Assumptions / Estimating Approach

The decommissioning estimate is based on the configuration of the ISFSI at the cessation of plant operations (operating until November 7, 2026), and the assumptions associated with DOE's spent fuel acceptance, as previously described.

The size of the ISFSI pad to store the projected amount of spent fuel is expected to be approximately 75 feet in width, and 347 feet in length.

To support an application for License Termination, the estimate assumes that a Final Status Survey will be performed; this will include a 100% survey of the concrete overpack surfaces, and a significant fraction of the ISFSI pad and the immediate area surrounding the pad, and the other ISFSI structures.

It is not expected that the overpacks will have any interior or exterior radioactive surface contamination (except as noted in Section 4 above regarding neutron activation of a limited number of overpacks). It is expected that this assumption would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. Any neutron activation of the steel and concrete is expected to be extremely small. To validate this assumption, the estimate accounts for further characterization of 10% of the overpacks; it is likely that some of this characterization will take place well before the last of the fuel is removed from the ISFSI in order to establish a more definitive decommissioning scope.

The decommissioning estimate conservatively assumes that 9 overpacks (equivalent to the number of casks to store the final full core offload of 748 assemblies) will contain low levels of neutron-induced residual radioactivity that would necessitate remediation at the time of decommissioning. For purposes of this estimate, these overpacks are designated for controlled disposal as low-level radioactive waste.

It is not expected that there will be any residual contamination left on the concrete ISFSI pad once the overpacks are removed, on the cask transporter, or on other facilities at the Perry ISFSI. It is expected that these assumptions would be confirmed as a result of good radiological practice of surveying potentially impacted areas after each spent fuel transfer campaign. As such, only verification surveys are included for the other facilities in the decommissioning estimate.

Energy Harbor Nuclear Corp. Chemistry reviewed the 10 CFR 50.75g files that it maintains and found no mention of any contaminated soil found as a result of building the ISFSI pad. As such, the decommissioning estimate assumes that no soil remediation is required [3] to meet the unrestricted use criteria of 10 CFR 20.1402.

Decommissioning is assumed to be performed by an independent contractor. As such, essentially all labor, equipment, and material costs are based on national averages, i.e.,

[3] Email Douglas Schult to Matt Minniti, May 11, 2020.

costs from national publications such as RSMeans Building Construction Cost Data (adjusted for regional variations), and laboratory service costs are based on vendor price lists. Craft labor positions are expected to be provided locally. Energy Harbor Nuclear Generation LLC as licensee, will oversee the site activities; the estimate includes EHNC labor and overhead costs.

Low-level radioactive waste packaging and transport costs are based on industry data. Disposal costs are based on EHNC existing contracted disposal rates.

Costs are reported in 2020 dollars. Contingency has been added at an overall rate of 25%. This is consistent with the contingency evaluation criteria referenced by the NRC in NUREG-1757.[4]

The estimate is limited to costs necessary to terminate the ISFSI's NRC license and meet the §20.1402 criteria for unrestricted use. Disposition of released material and structures is outside the scope of the estimate.

The effects, if any, since the last submittal of the ISFSI decommissioning funding plan of the following events listed in 10 CFR 72.30 (c) (1)- (4) have been specifically considered in the decommissioning cost estimate:

(1) Spills of radioactive material producing additional residual radioactivity in onsite subsurface material: There have been no spills at the ISFSI.

(2) Facility modifications: There have been no facility modifications in the past three years that affect the decommissioning cost estimate.

(3) Changes in authorized possession limits: There are no changes in authorized possession limits that affect the decommissioning cost estimate.

(4) Actual remediation costs that exceed the previous cost estimate: No actual remediation costs have been incurred, so no actual remediation costs exceed the previous cost estimate.

4 "Consolidated Decommissioning Guidance, Financial Assurance, Recordkeeping, and Timeliness," U.S. Nuclear Regulatory Commission's Office of Nuclear Material Safety and Safeguards, NUREG-1757, Volume 3, Revision 1, February 2012.

6. Cost Estimate

The estimated cost to decommission the ISFSI and release the facility for unrestricted use is provided in Table 2. The cost has been organized into three phases, including:

- An initial planning phase - empty overpacks are characterized and the specifications and work procedures for the decontamination (steel liner removal) developed.
- The remediation phase - residual radioactivity is removed, packaged in certified waste containers, transported to the low-level waste site, and disposed of as low-level waste.
- The final phase - license termination surveys, independent surveys are completed, and an application for license termination submitted and approved.

In addition to the direct costs associated with a contractor providing the decommissioning services, the estimate also contains costs for the NRC (and NRC contractor), EHNC oversight staff, site security (industrial), and other site operating costs.

For estimating purposes, it should be conservatively assumed that all expenditures will be incurred in the year 2067, the year following the last of the spent fuel removal.

Table 1
Significant Quantities and Physical Dimensions

ISFSI Pad

Item	Length (ft)	Width (ft)	Residual Radioactivity
ISFSI Pad (dimensions are for current pad)	347	75	No

ISFSI Storage Overpack (HI-STORM FW)

Item	Value	Notes (all dimensions are nominal)
Overall Height (inches)	199.3	
Outside Diameter (inches)	139.0	
Inside Diameter (inches)	81.0	
Inner Liner Thickness (inches)	0.75	
Quantity (total, including HI-STORM 100S)	81	77 spent fuel + 4 GTCC
Quantity (with residual radioactivity)	9	Equivalent to the number of Overpacks needed to store the last core offload from Perry
Total Surface Area of Overpack Liner with Residual Radioactivity (square feet)	2,883	
Low-Level Radioactive Waste (cubic feet)	55,194	
Low-Level Radioactive Waste (packaged density)	53	Average weight density

Other Potentially Impacted Items

Item	Value	Notes
Cask Transporter	1	No residual radioactivity
Transfer Cask	1	Controlled disposal
ISFSI Equipment Storage Building	1	No residual radioactivity
Number of Overpacks used for GTCC storage	4	No residual radioactivity

Table 2
ISFSI Decommissioning Costs[1] and Waste Volumes

	(Thousands, 2020 dollars)							Person-Hours	
	Removal	Packaging	Transport	Disposal	Other	Total	Waste Volume (ft3)	Craft	Oversight and Contractor
Decommissioning Contractor									
Planning (characterization, specs and procedures)					312	312			1,096
Decontamination (activated disposition)	216	219	1,525	2,619		4,578	55,194	2,375	
License Termination (radiological surveys)					1,424	1,424		10,034	
Subtotal	**216**	**219**	**1,525**	**2,619**	**1,736**	**6,314**	**55,194**	**12,409**	**1,096**
Supporting Costs									
NRC and NRC Contractor Fees and Costs					479	479			1,153
Insurance					87	87			
Property taxes					332	332			
Plant energy budget					10	10			
Corporate A&G Cost					46	46			
Security Staff Cost					343	343			4,999
Utility Staff Cost					277	277			3,792
Subtotal					**1,574**	**1,574**			**9,945**
Total (w/o contingency)	**216**	**219**	**1,525**	**2,619**	**3,310**	**7,888**	**55,194**	**12,409**	**11,041**
Total (w/25% contingency)	**271**	**273**	**1,906**	**3,273**	**4,138**	**9,860**			

Note 1: For funding planning purposes decommissioning costs can be assumed to be incurred in year 2067