



10 CFR 50.82

March 31, 2023

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

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

Pilgrim Nuclear Power Station
Renewed Facility License No. DPR-35
NRC Docket Nos. 50-293 and 72-1004

Indian Point Nuclear Generating Stations 1, 2, & 3
Provisional Operating License No. DPR-5
Renewed Facility Operating License Nos. DPR-26 and DPR-64
Docket Nos. 50-3, 50-247, 50-286 and 72-051

Palisades Nuclear Plant
Docket No. 50-255 and 72-007
Renewed Facility Operating License No. DPR-20

Big Rock Point
NRC Docket No. 50-155
License No. DPR-6

SUBJECT: Report on Status of Decommissioning Funding for Reactors and
Independent Spent Fuel Storage Installations – Holtec
Decommissioning International, LLC (HDI)

In accordance with the requirements of Title 10 of the Code of Federal Regulations (CFR), Part 50 Section 82, *Termination of License*, (10 CFR 50.82), Holtec Decommissioning International, LLC (HDI), on behalf of Oyster Creek Nuclear Generating Station (Oyster Creek), Pilgrim Nuclear Power Station (Pilgrim), Indian Point Nuclear Generating Station Units 1, 2 and 3 (IPEC), Palisades Nuclear Plant (PNP), and Big Rock Point (BRP), hereby submits the annual report on the status of decommissioning funding, the financial assurance report, and the status of funding for managing irradiated fuel for the period ending December 31, 2022.

The reports provided in Enclosures 1 through 5, for the licensed facilities addressed by this filing, provide the Annual Decommissioning Funding, Financial Assurance Report, and

Irradiated Fuel Management Status for Oyster Creek, Pilgrim, IPEC, PNP, and BRP respectively.

Enclosure 6 to this letter provides the methodology used to calculate the formula cost amount per 10 CFR 50.75(c). Enclosure 7 to this letter provides the decommissioning milestone summary.

The estimates provided in Enclosures 1 through 5 using the December 31, 2022 trust fund balances, indicate that Oyster Creek, Pilgrim, IPEC, PNP, and BRP sites have met the NRC's funding requirements. Funding margins are lower than HDI's year-end 2021 report due to the combined effect of poor market performance and higher than usual inflation during 2022. These economic factors are not unique to HDI. The lower market value of trust fund investments in 2022, compounded over the life of the project in the cash flow reporting format, account for the considerable majority of the reduced funding margins. HDI is taking steps to mitigate the long term effect of current market conditions by (1) deferring withdrawals of 2022 costs to avoid locking in market losses, and (2) flattening the schedule for some projects, where prudent, to defer costs until broader economic conditions return to historical norms. After accounting for higher than usual inflation over the past year, the estimates in this year's report are consistent with prior years' estimates (i.e., apart from economy-wide cost drivers, project costs have not materially changed). Even with current market conditions, HDI continues to maintain sufficient funds to cover the remaining costs on each project. Accordingly, HDI concludes that no further action is required at this time to demonstrate adequate funding assurance for decommissioning the plants included in this submittal.

In Reference 1, HDI submitted the Report on the Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations (ISFSI) for Oyster Creek, Pilgrim and IPEC for the period ending December 31, 2021. In Reference 2, Entergy Nuclear Operations, Inc. (Entergy) submitted the Decommissioning Funding Status report for PNP and BRP for the period ending December 31, 2021.

On December 23, 2020, HDI submitted the Post-Shutdown Decommissioning Activities Report (PSDAR) including Site-Specific Decommissioning Cost Estimates (DCE) for PNP (Reference 5). On June 28, 2022, the indirect transfer of control of Renewed Facility Operating License No. DPR-20 for Palisades and the general license for the Palisades Independent Spent Fuel Storage Installation (ISFSI) and Facility Operating License No. DPR-6 for Big Rock Point and the general license for the Big Rock Point ISFSI was transferred to Holtec Palisades, LLC (Holtec Palisades); and the transfer of authority to conduct licensed activities at PNP to HDI (Reference 3 and 4).

There are no regulatory commitments contained within this letter. Should you have any questions or require any further information, please contact me at (856) 797-0900 x 3578.

Sincerely,

Jean A. Fleming
Vice President, Licensing, Regulatory Affairs and PSA
Holtec International

References:

- 1) Letter, Holtec Decommissioning International, LLC (HDI) to US Nuclear Regulatory Commission (US NRC), "Report on Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations – Holtec Decommissioning International, LLC (HDI)," March 25, 2022 (ML22084A059)
- 2) Letter from Entergy Nuclear Operations, Inc. (Entergy) to US NRC, "Decommissioning Funding Status Report per 10 CFR 50.75(f)(1) and 10 CRF 50.82(a)(8)(v) – Entergy Nuclear Operations, Inc.," March 28, 2022 (ML22087A500)
- 3) Letter from Entergy to US NRC, "Application for Order Consenting to Transfers of Control of Licenses and Approving Conforming License Amendments," December 23, 2020 (ML20358A075)
- 4) Letter from US NRC to Entergy, "Palisades Nuclear Plant and Big Rock Point Plant – Order Approving Transfer of Licenses and Draft Conforming Administrative License Amendments (EPID L-2020-LLM-0003)," December 13, 2021 (ML21292A145)
- 5) Letter from HDI to US NRC, "Post Shutdown Decommissioning Activities Report including Site-Specific Decommissioning Cost Estimate for Palisades Nuclear Plant," December 20, 2020 (ML20358A232)



Enclosures:

- 1) Oyster Creek Nuclear Generating Station Annual Decommissioning Funding and Spent Fuel Management Status and Financial Assurance Report
- 2) Pilgrim Nuclear Power Station Annual Decommissioning Funding and Spent Fuel Management Status and Financial Assurance Report
- 3) Indian Point Nuclear Generating Station Units 1, 2, and 3 Annual Decommissioning Funding and Spent Fuel Management Status and Financial Assurance Report
- 4) Palisades Nuclear Plant Annual Decommissioning Funding and Spent Fuel Management Status and Financial Assurance Report
- 5) Big Rock Point Annual Decommissioning Funding and Spent Fuel Management Status and Financial Assurance Report
- 6) Methodology Used to Calculate the Formula Cost Amount per 10 CFR 50.75(c)
- 7) Annual Decommissioning Funding and Spent Fuel Management Status and Financial Assurance Report Milestone Summary

cc:

USNRC Regional Administrator, Region 1
USNRC Regional Administrator, Region 3
USNRC Senior Project Manager, NMSS - Oyster Creek
USNRC Senior Project Manager, NMSS – Pilgrim Nuclear Power Station
USNRC Senior Project Manager, NMSS – Indian Point Units 1, 2 & 3
USNRC Senior Project Manager, NMSS – Palisades and BRP
NRC Region 1 Lead Inspector – Oyster Creek
NRC Region 1 Lead Inspector – Pilgrim Nuclear Power Station
NRC Region 1 Lead Inspector, Indian Point Units 1, 2 & 3
NRC Region 3 Lead Inspector – Palisades Nuclear Site and BRP
New York State Department of Public Service
New York State Liaison Officer Designee, NYSERDA
New Jersey DEP - Assistant Commissioner, Air Quality, Energy and Sustainability
New Jersey Bureau of Nuclear Engineering, Assistant Director Radiation Protection Element
Commonwealth of Massachusetts, Executive Office of Environmental Affairs
Commonwealth of Massachusetts, Department of Public Health
Commonwealth of Massachusetts, Department of Environmental Protection
Commonwealth of Massachusetts, Director, Massachusetts Emergency Management Agency



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Enclosure 1

Holtec Decommissioning International

**Oyster Creek Nuclear Generating Station
Annual Decommissioning Funding and Spent Fuel Management
Status and Financial Assurance Report
As of December 31, 2022**

**Holtec Decommissioning International
Oyster Creek Nuclear Generating Station
Annual Decommissioning Funding and Spent Fuel
Management Status and Financial Assurance Report
As of December 31, 2022**

As required by 10 CFR 50.82(a)(7), and 50.82(a)(8), Holtec Decommissioning International, LLC (HDI) reports the following information for Oyster Creek Nuclear Generating Station (Oyster Creek):

A. Decommissioning Cost Estimate [10 CFR 50.82(a)(8)(v)(B), 50.82(a)(8)(vii)(B)]

The required minimum funding assurance amount for Oyster Creek as of December 31, 2022 is based on the site-specific Decommissioning Cost Estimate (DCE) developed in accordance with 10 CFR 50.82(a) and included in the HDI revised Post-Shutdown Decommissioning Activities Report (Reference 1) and amended in the annual report for the Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations submitted for 2021 (Reference 2).

Table 1 of this Enclosure provides additional reporting requirements and includes the HDI revised total estimate required by 10 CFR 50.82 based on the DECON method of decommissioning. The revised total estimate to complete decommissioning for the Oyster Creek site is \$362M (in 2022 dollars). Of that total cost estimate, the revised estimate for license termination expenses is \$172M, the current separate estimate of spent fuel management costs is \$161M and the current separate estimate for site restoration costs is \$30M.

B. Decommissioning Fund Balance [10 CFR 50.82(a)(8)(v)(A), 50.82(a)(8)(vii)(A)]

The Oyster Creek Nuclear Decommissioning Trust (NDT) fund balance as of December 31, 2022 was \$395M. This amount represents the market value of the NDT fund as of December 31, 2022 net any material current income tax liability on realized gains, interest, dividends, and other income of the trust. The trust fund amount is the total available for decommissioning including costs of license termination, spent fuel management, and site restoration activities. The total is provided because HDI received an exemption from 10 CFR 50.82(a)(8)(i)(A) to allow the Oyster Creek trust fund to be used for site irradiated fuel management and site restoration costs (Reference 3).

C. Assumptions Used Regarding Rates of Escalation for Decommissioning Costs, Earnings on Funds, and Other Factors Used in Funding Projections [10 CFR 50.82(a)(8)(v)(B)]

In accordance with 10 CFR 50.75(e)(1)(i), HDI has assumed a 2% real rate of return.

The estimates in the 2018 HDI Oyster Creek Revised PSDAR/Decommissioning Cost Estimate (DCE) (Reference 1) were provided in 2018 dollars. The estimates provided in Table 1 of this Enclosure have been inflated to 2022 dollars. The Bureau of Labor Statistics (BLS) data provided the basis for the decommissioning cost estimate inflation rate forecast. Decommissioning costs are inflated using a weighted average of BLS indices for labor, energy, consumer price index, materials, and equipment. HDI utilized NUREG-1307, Revision 19, issued February 2023, for the burial inflation factor. HDI has used a factor of 1.08 to calculate the inflation to 2022 dollars.

D. ISFSI Decommissioning Cost [10 CFR 50.82(a)(8)(v)(ii)(B)]

The current detailed site-specific Independent Spent Fuel Storage Installation (ISFSI) decommissioning cost estimate is \$4.42M (2022 dollars). The ISFSI estimated costs are based on the estimated costs provided in the HDI revised PSDAR/DCE (Reference 1) and amended in the report on the Status of Decommissioning Funding for Independent Spent Fuel Storage Installations (Reference 4) which were inflated using published inflation indices as discussed in Item (C).

E. Decommissioning Financial Assurance [10 CFR 50.82(a)(8)(v)(A), 50.82(a)(8)(v)(D)]

Financial assurance for decommissioning is provided by the prepayment method, coupled with an external trust fund, in accordance with 10 CFR 50.75(e)(1)(i) and 10 CFR 72.30(e)(1) as approved by the NRC in the approval of the license transfer to Oyster Creek Environmental Protection (OCEP) and HDI. There have been no changes to the method of providing financial assurance since the last submitted report (Reference 2).

F. Material Changes to the Decommissioning Trust Agreement [10 CFR 50.82(a)(8)(v)(D)]

There have been no changes to the Oyster Creek Master Decommissioning Trust Agreement.

G. Material Changes to the Decommissioning Milestone Schedules or Project Cost [10 CFR 50.82(a)(7)]

Milestone Schedule Update:

In accordance with 10 CFR 50.82(a)(7), HDI is notifying the US NRC that HDI is planning to delay the start of activities associated with the Reactor Pressure Vessel (RPV) segmentation and the partial site release milestone dates provided in the Oyster Creek revised PSDAR (Reference 1) and updated in the report on Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations (Reference 2). There is no impact to the scheduled license termination date. The milestone extensions are due to the following factors:

- Optimizing market conditions, including the effects of escalated inflation and labor, and preserving NDT fund growth by flattening the schedule and cost curves.
- Ongoing site-specific characterization in support of potential free release of materials and waste minimization, specifically in the reactor and turbine buildings. The RPV segmentation activities are aligned to coincide with the demolition of the reactor building. The movement of RPV segmentation activities maximizes efficiencies associated with waste management, reactor building characterization efforts, and contractor resource allocation for efficiency.
- Thorough equipment and material processing to increase the reuse and recycling of materials and components.
- Additional evaluation of RPV segmentation options based on industry lessons learned and innovative technologies.

Enclosure 7 provides the major decommissioning project milestones and their updated scheduled completion dates. HDI has confirmed that the changes to the schedule remain bounded by the environmental evaluation included in the Oyster Creek Revised PSDAR (Reference 1).

Enclosure 1

DCE Update:

The Oyster Creek DCE has been updated to reflect a 2030 Department of Energy (DOE) start date for spent fuel pick up. In the revised PSDAR (Reference 1), HDI assumed that DOE would begin removal of industry spent fuel in 2025, based on then-current information regarding DOE's plans for meeting its obligations, and that the DOE would complete removal of Oyster Creek's fuel by 2035. HDI has since reevaluated and updated its projected schedule for DOE's removal of Oyster Creek fuel. The most recent DOE planning document remains the 2013 "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste" (Reference 5). The 2013 study contemplated an interim storage facility capable of storing at least 20,000 MTUs would begin accepting fuel from shutdown facilities beginning in 2025, with a larger repository following shortly thereafter. While DOE has not progressed in lockstep with the 2013 strategy document, there are ongoing corporate and legislative initiatives aimed at providing interim storage options. Given this information, HDI believes it is reasonable to assume that a facility will be available to begin accepting industry fuel beginning in 2030.

Moreover, based on program cost and logistics and DOE's latest planning documents, it is reasonable to assume that DOE will prioritize removal of fuel from shut-down reactors like Oyster Creek and will do so in one mobilization campaign rather than multiple mobilization efforts extending over several years. Oyster Creek was the 18th commercial reactor to shut down in the U.S., placing about 6,800 MTUs of spent fuel from other shutdown plants ahead of Oyster Creek. Oyster Creek has about 800 MTUs of fuel—meaning its fuel will be removed under a shutdown paradigm when the program is capable of receiving 7,600 MTUs of fuel (6,800 + 800). At the commonly accepted transfer rate required by the Standard Contract (based on DOE's 1987 Annual Capacity Report), the program would reach a level capable of receiving 8,000 MTUs of cumulative industry fuel by 2035. Accordingly, under a shutdown first paradigm, it is reasonable to expect that DOE would be capable of completing all fuel pickup at Oyster Creek by 2035.

Tables 1 and 2 of this Enclosure provide additional required reporting data. Table 1 provides a summary of information as of December 31, 2022 in accordance with the requirements of 10 CFR 50.82(a)(8)(v)-(vii). Table 2 provides a cash flow analysis using the revised decommissioning cost estimates developed by HDI.

The information provided in this enclosure demonstrates that the Oyster Creek decommissioning trust fund is sufficiently funded to cover costs as estimated for the license termination, spent fuel management and site restoration activities necessary to complete safe and compliant decommissioning of the site.

References:

- 1) Letter, Holtec Decommissioning International, LLC to US NRC, "Notification of Revised Post-Shutdown Decommissioning Activities Report and Revised Site-Specific Decommissioning Cost Estimate for Oyster Creek Nuclear Generating Station," September 28, 2018 (ML18275A116)
- 2) Letter, Holtec Decommissioning International, LLC to US NRC, "Report on Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations – Holtec Decommissioning International, LLC (HDI)," March 25, 2022 (ML22084A059)
- 3) Letter from US NRC to Exelon Generation Company, LLC, "Oyster Creek Nuclear Power Station—Issuance of Exemptions from 10 CFR 50.82(a)(8)(i)(A) and 10 CFR 50.75(h)(1)(iv)" dated June 20, 2019 (ML19113A204)
- 4) Letter, HDI to US NRC, "Report on Status of Decommissioning Funding Independent Spent Fuel Storage Installations," December 17, 2021 (ML21350A264)
- 5) "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," U.S. DOE, January 11, 2013.

Table 1

**Holtec Decommissioning International
Oyster Creek Nuclear Generating Station
Annual Decommissioning Financial Assurance and
Spent Fuel Management Report**

Enclosure 1

ENCLOSURE 1					
Table 1					
Holtec Decommissioning International, LLC					
Oyster Creek Nuclear Generating Station					
Summary Information as of December 31, 2022					
Decommissioning Trust Fund Balance - 10 CFR 50.82(a)(8)(v)(A), 10 CFR 50.82(a)(8)(vii)(A)					
Year	Type of Trust	Fund Balance (2022 \$)			Comments
2022	Decommissioning Trust	\$395M			As of 12/31/2022; net of tax liabilities
Other Financial Assurance Methods Being Relied Upon - 10 CFR 50.82(a)(8)(v)(B)					
NONE					
HDI Decommissioning Expenditures Since License Transfer - 10 CFR 50.82(a)(8)(v)(A)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total ¹	Comments
2019	\$54M	\$8M	\$0M	\$62M	2019 Costs in as-Spent Dollars
2020	\$105M	\$79M	\$8M	\$192M	2020 Costs in as-Spent Dollars
2021	\$115M	\$125M	\$3M	\$242M	2021 Costs in as-Spent Dollars
2022	\$63M	\$31M	\$1M	\$95M ²	2022 Costs in as-Spent Dollars
Total to Date	\$336M	\$243M	\$12M	\$591M	As-Spent Dollars
Prior Year Expenditures Variance to Total HDI Estimated Cost - 10 CFR 50.82(a)(8)(v)(B)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2022 Estimated	\$81M	\$39M	\$6M	\$125M	Estimate in 2021 Dollars (Reference 2)
2022 Actuals	\$63M	\$31M	\$1.4M	\$95M	Variance due to Project Timing and Optimization
Remaining Decommissioning Estimated Cost - 10 CFR 50.82(a)(8)(v)(B); 50.82(a)(8)(vii)(B)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total ¹	Comments
2023	\$172M	\$161M	\$30M	\$362M	Estimated in 2022 Dollars (Table 2)
Decommissioning Criteria Upon Which the Estimate is Based - 10 CFR 50.82(a)(8)(v)(B)					
DECON					
Any Modification to Method of Providing Financial Assurance - 10 CFR 50.82(a)(8)(v)(A) and 50.82(a)(8)(v)(C)					
NONE					
Any Material Changes to Trust Agreement Since Previous Report - 10 CFR 50.82(a)(8)(v)(D)					
See item (F) in Enclosure 1					
Need for Additional Financial Assurance - 10 CFR 50.82(a)(8)(v)(C) and 50.82(a)(8)(vii)(C)					
NONE					

¹ Columns may not add due to rounding.

² \$61.7M of the \$95M incurred in 2022 have not been reimbursed to date.

Table 2

**Holtec Decommissioning International
Oyster Creek Nuclear Generating Station
Annual Decommissioning Cash Flow Analysis**

ENCLOSURE 1

Table 2

Oyster Creek Nuclear Generating Station - DECON Method
Annual Cash Flow in Millions (2022 Dollars)

Year	License Termination Cost	Spent Fuel Management Cost	Site Restoration Cost	Total Costs	Beginning of Year NDT Balance	Withdrawal ³	NDT Earnings ¹	Year Ending NDT Balance
2023	25.6	13.4	4.8	43.8	395.3 ²	-43.8	7	358.6
2024	7.6	12.3	0	19.9	358.6	-19.9	6.7	345.4
2025	7.9	12.0	0	19.9	345.4	-19.9	6.5	332.0
2026	7.0	11.5	0	18.5	332	-18.5	6.3	319.8
2027	24	5.9	5.2	35.1	319.8	-35.1	5.7	290.4
2028	37.9	5.6	9.0	52.5	290.4	-83.4	4.1	211.1
2029	48.8	5.5	10.2	64.5	211.1	-95.3	2.3	118.1
2030	0	16.5	0	16.5	118.1	-16.5	2.0	103.7
2031	0	16.5	0	16.5	103.7	-16.5	1.7	89.0
2032	0	17.1	0	17.1	89	-17.1	1.4	73.3
2033	9.7	17.1	0	26.8	73.3	-26.8	0.9	47.5
2034	1.9	17.1	0	19.0	47.5	-19.0	0.6	29.0
2035	1.6	9.9	.8	12.4	29	-12.4	0.3	17.0
Total⁴	172	161	30	362		-424	46	

¹ NDT earnings reflect an assumed 2% Real Rate of Return (RRR). Variance in 2022 market value of trust assets is -\$49.2M relative to 12/31/21 baseline.

² 2023 Beginning of Year NDT Balance is based on 12/31/22 market value of trust investments, net of realized tax liabilities.

³ The NDT Withdrawal Amount includes \$61.7M for the reimbursement of HDI's 2022 expenses not reimbursed in 2022.

⁴ Columns may not add due to rounding. Totals do not include 2022 actuals.



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Enclosure 2

Holtec Decommissioning International

**Pilgrim Nuclear Power Station
Annual Decommissioning Funding and Spent Fuel Management
Status and Financial Assurance Report
As of December 31, 2022**

**Holtec Decommissioning International
Pilgrim Nuclear Power Station
Annual Decommissioning Funding and Spent Fuel
Management Status and Financial Assurance Report
As of December 31, 2022**

As required by 10 CFR 50.82(a)(7), and 50.82(a)(8), Holtec Decommissioning International, LLC (HDI) reports the following information for Pilgrim Nuclear Power Station (Pilgrim):

A. Decommissioning Cost Estimate [10 CFR 50.82(a)(8)(v)(B), 50.82(a)(8)(vii)(B)]

The required minimum funding assurance amount for Pilgrim as of December 31, 2022 is based on the site-specific Decommissioning Cost Estimate (DCE) developed in accordance with 10 CFR 50.82(a) and included in the HDI Revised Post-Shutdown Decommissioning Activities Report (Reference 1) and amended in the annual report for the Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations submitted for 2021 (Reference 2).

Table 1 of this Enclosure provides additional reporting requirements and includes the HDI revised total estimate required by 10 CFR 50.82 based on the DECON method of decommissioning. The revised total estimate to complete decommissioning for the Pilgrim site is \$586M (in 2022 dollars). Of that total cost estimate, the revised estimate for license termination expenses is \$238M, the current separate estimate of spent fuel management costs is \$328M and the current separate estimate for site restoration costs is \$20M.

B. Decommissioning Fund Balance [10 CFR 50.82(a)(8)(v)(A), 50.82(a)(8)(vii)(A)]

The Pilgrim Nuclear Decommissioning Trust (NDT) fund balance as of December 31, 2022 was \$518M. This amount represents the market value of the NDT fund as of December 31, 2022 net any material current income tax liability on realized gains, interest, dividends, and other income of the trust. The trust fund amount is the total available for decommissioning including costs of license termination, spent fuel management, and site restoration activities. The total is provided because HDI received an exemption from 10 CFR 50.82(a)(8)(i)(A) to allow the Pilgrim trust fund to be used for site irradiated fuel management and site restoration costs (Reference 3).

C. Assumptions Regarding Rates of Escalation for Decommissioning Costs, Rates of Earnings on Funds, and Other Factors Used in Funding Projections [10 CFR 50.82(a)(8)(v)(B)]

In accordance with 10 CFR 50.75(e)(1)(i), HDI has assumed a 2% real rate of return.

The estimates in the 2018 HDI Pilgrim Revised PSDAR/Decommissioning Cost Estimate (DCE) (Reference 1) were provided in 2018 dollars. The estimates provided in Table 1 of this Enclosure have been inflated to 2022 dollars. The Bureau of Labor Statistics (BLS) data provided the basis for the decommissioning cost estimate inflation rate forecast. Decommissioning costs are inflated using a weighted average of BLS indices for labor, energy, consumer price index, materials, and equipment. HDI utilized NUREG-1307, Revision 19, issued February 2023, for the burial inflation factor. HDI has used a factor of 1.04 to calculate the inflation to 2022 dollars.

D. ISFSI Decommissioning Cost [10 CFR 50.82(a)(8)(v)(ii)(B)]

The current detailed site-specific Independent Spent Fuel Storage Installation (ISFSI) decommissioning cost estimate is \$4.39M (2022 dollars). The ISFSI estimated costs are based on the estimated costs provided in the HDI revised PSDAR/DCE (Reference 1) and amended in the report on the Status of Decommissioning Funding for Independent Spent Fuel Storage Installations (Reference 5) which were inflated using published inflation indices as discussed in Item (C).

E. Decommissioning Financial Assurance [10 CFR 50.82(a)(8)(v)(A), 50.82(a)(8)(v)(D)]

Financial assurance for decommissioning is provided by the prepayment method, coupled with an external trust fund, in accordance with 10 CFR 50.75(e)(1)(i) and 10 CFR 72.30(e)(1) as approved by the NRC in the approval of the license transfer to Holtec Pilgrim, LLC and HDI. There have been no changes to the method of providing financial assurance since the last submitted report (Reference 2).

F. Material Changes to the Decommissioning Trust Agreement [10 CFR 50.82(a)(8)(v)(D)]

By letter dated November 8, 2022 (Reference 4), HDI provided notification to the NRC of anticipated changes to the Holtec Pilgrim Master Decommissioning Trust Agreement. In accordance with Pilgrim License Condition 3.J.(5)(b) and 10 CFR 50.75(h)(1)(iii) written notification of any material changes to the decommissioning trust agreement is to be provided to the Director of the Office of Nuclear Reactor Regulation (NRR) or Nuclear Material Safety and Safeguards (NMSS) at least 30 working days before the proposed effective date of the amendment. The proposed changes to the Holtec Pilgrim, LLC Nuclear Master Decommissioning Trust Agreement took effect on December 23, 2022.

Compliance with the requirements of 10 CFR 50.75(h) remained intact and the proposed changes to the trust agreement included:

- Standardizing compliance language to address the Pilgrim operating license conditions and the requirements of 50.75(h)(1)(iii) that are applicable to the other HDI operated facilities.

G. Material Changes to the Decommissioning Milestone Schedules or Project Cost [10 CFR 50.82(a)(7)]

In accordance with 10 CFR 50.82(a)(7), HDI is notifying the NRC that HDI is planning to delay the start of activities associated with the Reactor Pressure Vessel (RPV) segmentation and partial site release milestone dates provided in the Pilgrim revised PSDAR (Reference 1) and updated in the report on the Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations (Reference 2). There is no impact to the scheduled license termination date. The milestone extensions are due to the following factors:

- Optimizing market conditions, including the effects of escalated inflation and labor, and preserving NDT fund growth by flattening the schedule and cost curves.
- Ongoing site-specific characterization in support of potential free release of materials and waste minimization, specifically in the reactor and turbine buildings. The RPV segmentation activities are aligned to coincide with the demolition of the reactor building. The movement of RPV segmentation activities maximizes efficiencies associated with waste management, reactor building characterization efforts, and contractor resource allocation.
- Uncertainty associated with the projected timeline of the Pilgrim NPDES permit modification process.
- Additional evaluation of Reactor Pressure Vessel (RPV) segmentation options based on industry lessons learned and innovative technologies.

Enclosure 2

Enclosure 7 provides the major decommissioning project milestones and their updated scheduled completion dates. HDI has confirmed that the changes to the schedule remain bounded by the environmental evaluation included in the HDI Revised PSDAR(Reference 1).

Tables 1 and 2 of this Enclosure provide additional required reporting data. Table 1 provides a summary of information as of December 31, 2022 in accordance with the requirements of 10 CFR 50.82(a)(8)(v)-(vii). Table 2 provides a cash flow analysis using the revised decommissioning cost estimates developed by HDI.

The information provided in this enclosure demonstrates that the Pilgrim decommissioning trust fund is sufficiently funded to cover costs as estimated for the license termination, spent fuel management and site restoration activities necessary to complete safe and compliant decommissioning of the site.

References:

- 1) Letter, Holtec Decommissioning International, LLC to US NRC, "Notification of Revised Post-Shutdown Decommissioning Activities Report and Revised Site-Specific Decommissioning Cost Estimate for Pilgrim Nuclear Power Station," November 16, 2018 (ML18320A040)
- 2) Letter, Holtec Decommissioning International, LLC to US NRC, "Report on Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations – Holtec Decommissioning International, LLC (HDI)," March 25, 2022 (ML22084A059)
- 3) Letter from US NRC to Entergy Nuclear Operations, Inc., "Pilgrim Nuclear Power Station— Request for Exemption from 10 CFR 50.82(a)(8)(i)(A) for Holtec Decommissioning International, LLC" August 22, 2019 (ML19192A083)
- 4) Letter from HDI to NRC, "Holtec Pilgrim, LLC Nuclear Decommissioning Trust Fund Agreement" November 8, 2022 (ML ML22312A410)
- 5) Letter, HDI to US NRC, "Report on Status of Decommissioning Funding Independent Spent Fuel Storage Installations," December 17, 2021 (ML21350A264)

Table 1

Holtec Decommissioning International

**Pilgrim Nuclear Power Station
Annual Decommissioning Financial Assurance and
Spent Fuel Management Report**

Enclosure 2

ENCLOSURE 2

Table 1

Holtec Decommissioning International, LLC
Pilgrim Nuclear Power Station

Summary Information as of December 31, 2022



Decommissioning Trust Fund Balance - 10 CFR 50.82(a)(8)(v)(A), 10 CFR 50.82(a)(8)(vii)(A)

Year	Type of Trust	Fund Balance (2022 \$)	Comments
2022	Decommissioning Trust	\$518M	As of 12/31/2022; net of tax liabilities

Other Financial Assurance Methods Being Relied Upon - 10 CFR 50.82(a)(8)(v)(B)

NONE

HDI Decommissioning Expenditures Since License Transfer - 10 CFR 50.82(a)(8)(v)(A)

Year	License Termination	Spent Fuel Mgmt ¹	Site Restoration	Total ¹	Comments
2019	\$45M	\$56M	\$0M	\$101M	2019 Costs in as-Spent Dollars
2020	\$106M	\$67M	\$3M	\$175M	2020 Costs in as-Spent Dollars
2021	\$105M	\$113M	\$2M	\$221M	2021 Costs in as-Spent Dollars
2022	\$64M	\$28M	\$7M	\$99M ²	2022 Costs in as-Spent Dollars
Total Spent to Date	\$320M	\$265M	\$12M	\$596M	

Prior Year Expenditures Variance to Total HDI Estimated Cost - 10 CFR 50.82(a)(8)(v)(B)

Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2022 Estimated	\$91M	\$29M	\$7M	\$127M	Estimate in 2021 Dollars
2022 Actuals	\$64M	\$28M	\$7M	\$99M	Variance due to project timing and optimization

Remaining Decommissioning Estimated Cost - 10 CFR 50.82(a)(8)(v)(B); 50.82(a)(8)(vii)(B)

Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2023	\$238M	\$328M	\$20M	\$586M	Estimated in 2022 Dollars

Decommissioning Criteria Upon Which the Estimate is Based - 10 CFR 50.82(a)(8)(v)(B)

DECON

Any Modification to Method of Providing Financial Assurance - 10 CFR 50.82(a)(8)(v)(A) and 50.82(a)(8)(v)(C)

NONE

Any Material Changes to Trust Agreement Since Previous Report - 10 CFR 50.82(a)(8)(v)(D)

See item (F) in Enclosure 2

Need for Additional Financial Assurance - 10 CFR 50.82(a)(8)(v)(C) and 50.82(a)(8)(vii)(C)

NONE

¹ Columns may not add due to rounding.

² \$45.6M of the \$99M incurred in 2022 have not been reimbursed to date.

Table 2

Holtec Decommissioning International

**Pilgrim Nuclear Power Station
Annual Decommissioning Cash Flow Analysis**

ENCLOSURE 2

Table 2

Pilgrim Nuclear Power Station - DECON Method
Annual Cash Flow in Millions (2022 Dollars)

Year	License Termination Cost	Spent Fuel Management Cost	Site Restoration Cost	Total Costs	Beginning of Year NDT Balance	Withdrawal ³	NDT Earnings ¹	Year Ending NDT Balance
2023	44	13	5	63	518 ²	-63	9	464
2024	9	10	0	19	464	-19	9	455
2025	9	10	0	19	455	-19	9	444
2026	8	10	0	18	444	-18	9	435
2027	25	8	0	33	435	-33	8	410
2028	25	7	7	38	410	-38	7	379
2029	38	7	3	48	379	-48	7	337
2030	37	8	2	48	337	-48	6	295
2031	27	9	2	38	295	-38	5	263
2032	0	8	0	8	263	-31	5	237
2033	0	8	0	8	237	-31	4	210
2034	0	8	0	8	210	-8	4	206
2035	0	8	0	8	206	-8	4	202
2036	0	8	0	8	202	-8	4	198
2037	0	8	0	8	198	-8	4	194
2038	0	8	0	8	194	-8	4	190
2039	0	8	0	8	190	-8	4	186
2040	0	8	0	8	186	-8	4	182
2041	0	8	0	8	182	-8	3	177
2042	0	8	0	8	177	-8	3	173
2043	0	8	0	8	173	-8	3	168
2044	0	8	0	8	168	-8	3	164
2045	0	8	0	8	164	-8	3	159
2046	0	8	0	8	159	-8	3	154
2047	0	8	0	8	154	-8	3	149
2048	0	8	0	8	149	-8	3	144
2049	0	8	0	8	144	-8	3	139
2050	0	8	0	8	139	-8	3	134
2051	0	8	0	8	134	-8	3	129
2052	0	8	0	8	129	-8	2	123
2053	0	8	0	8	123	-8	2	118
2054	0	8	0	8	118	-8	2	112
2055	0	8	0	8	112	-8	2	106
2056	0	8	0	8	106	-8	2	100
2057	0	8	0	8	100	-8	2	94
2058	0	8	0	8	94	-8	2	88
2059	0	8	0	8	88	-8	2	82
2060	5	8	0	13	82	-13	1	71
2061	5	8	0	13	71	-13	1	60
2062	5	8	0	13	60	-13	1	48
2063	1	3	1	4	48	-4	1	44
Total⁴	238	328	20	586		-639	146	

¹ NDT earnings reflect an assumed 2% Real Rate of Return (RRR). Variance in 2022 market value of trust assets is -\$49.2M relative to 12/31/21 baseline.

² 2023 Beginning of Year NDT Balance is based on 12/31/22 market value of trust investments, net of realized tax liabilities

³ The NDT Withdrawal Amount includes \$61.7M for the reimbursement of HDI's 2022 expenses not reimbursed in 2022.

⁴ Columns may not add due to rounding. Totals do not include 2022 actuals.



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Enclosure 3

Holtec Decommissioning International

**Indian Point Units 1, 2 and 3
Annual Decommissioning Funding and Spent Fuel Management
Status and Financial Assurance Report
As of December 31, 2022**

**Holtec Decommissioning International
Indian Point Units 1, 2 & 3
Annual Decommissioning Funding and Spent Fuel
Management Status and Financial Assurance Report
As of December 31, 2022**

As required by 10 CFR 50.82(a)(7), and 50.82(a)(8), Holtec Decommissioning International, LLC (HDI) reports the following information for Indian Points Units 1, 2 and 3 (IP1, IP2, and IP3), collectively referred to as Indian Point Energy Center (IPEC):

A. Decommissioning Cost Estimate [10 CFR 50.82(a)(8)(v)(B), 50.82(a)(8)(vii)(B)]

The required minimum funding assurance amounts for IPEC, as of December 31, 2022, is based on the site-specific Decommissioning Cost Estimate (DCE) developed in accordance with 10 CFR 50.82(a) and included in the HDI Post-Shutdown Decommissioning Activities Report (PSDAR) (Reference 1) and amended in the annual report on the Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations submitted for 2021 (Reference 2).

Tables 1A through 1C of this Enclosure provide additional reporting requirements and includes HDI's revised total estimate information as required by 10 CFR 50.82 based on the DECON method of decommissioning.

IP1 - The revised total estimate to complete decommissioning is \$629M (in 2022 dollars) as shown in Table 1A. Of that total cost estimate, the revised estimate for license termination expenses is \$462M, the current separate estimate of spent fuel management costs is \$123M and the current separate estimate for site restoration costs is \$43M.

IP2 - The revised total estimate to complete decommissioning for is \$635M (in 2022 dollars) as shown in Table 1B. Of that total cost estimate, the revised estimate for license termination expenses is \$380M, the current separate estimate of spent fuel management costs is \$210M and the current separate estimate for site restoration costs is \$45M.

IP3 - The revised total estimate to complete decommissioning for is \$770M (in 2022 dollars) as shown in Table 1C. Of that total cost estimate, the revised estimate for license termination expenses is \$450M, the current separate estimate of spent fuel management costs is \$272M and the current separate estimate for site restoration costs is \$48M.

B. Decommissioning Fund Balance [10 CFR 50.82(a)(8)(v)(A), 50.82(a)(8)(vii)(A)]

The IPEC Nuclear Decommissioning Trust (NDT) fund balances as of December 31, 2022, are listed in the table below:

Unit	NDT Fund Balance (as of December 31, 2022)	Comment
IP1	\$558M	Rounded to the nearest million
IP2	\$619M	
IP3	\$742M	

These amounts represent the market value of the NDT fund as of December 31, 2022, net of any material current income tax liability on realized gains, interest, dividends, and other income of the trust. The trust fund amount is the total available for decommissioning including costs of license termination decommissioning, spent fuel management, and site restoration activities. The total is provided because HDI received an exemption from 10 CFR 50.82(a)(8)(i)(A) to allow each of the respective Indian Point Trust funds to be used for site irradiated fuel management and site restoration costs (Reference 3).

C. Assumptions Used Regarding Rates of Escalation for Decommissioning Costs, Earnings on Funds, and Other Factors Used in Funding Projections [10 CFR

50.82(a)(8)(v)(B)]

In accordance with 10 CFR 50.75(e)(1)(i), HDI has assumed a 2% real rate of return.

The estimates in the 2019 HDI IPEC PSDAR/Decommissioning Cost Estimate (DCE) (Reference 1) were provided in 2019 dollars. The estimates provided in Table 1A-1C of this Enclosure have been inflated to 2022 dollars. The Bureau of Labor Statistics (BLS) data provided the basis for the decommissioning cost estimate inflation rate forecast. Decommissioning costs are inflated using a weighted average of BLS indices for labor, energy, consumer price index, materials, and equipment. HDI utilized NUREG-1307, Revision 19, issued February 2023, for the burial inflation factor. HDI has used a factor of 1.06 for IP1, 1.05 for IP2, and 1.06 for IP3 to calculate the inflation to 2022 dollars.

D. ISFSI Decommissioning Cost [10 CFR 50.82(a)(8)(v)(ii)(B)]

The current detailed site-specific Independent Spent Fuel Storage Installation (ISFSI) decommissioning cost estimate is \$7.6M (2022 dollars). The ISFSI estimated costs are based on the estimated costs provided in the HDI revised PSDAR/DCE (Reference 1) and amended in the report on the Status of Decommissioning Funding for Independent Spent Fuel Storage Installations (Reference 5) which were inflated using published inflation indices as discussed in Item (C).

E. Decommissioning Financial Assurance [10 CFR 50.82(a)(8)(v)(A), 50.82(a)(8)(v)(D)]

Financial assurance for decommissioning is provided by the prepayment method, coupled with an external trust fund, in accordance with 10 CFR 50.75(e)(1)(i) and 10 CFR 72.30(e)(1) as approved by the NRC in the approval of the license transfer to Holtec Indian Point and HDI. There have been no changes to the method of providing financial assurance since the last submitted report (Reference 2).

F. Material Changes to the Decommissioning Trust Agreement [10 CFR 50.82(a)(8)(v)(D)] By letter dated November 17, 2022 (Reference 4) HDI provided notification to the NRC of anticipated changes to the Nuclear Decommissioning Master Trust Agreement for Indian Point Units 1 and 2 and Indian Point 3. In accordance with 10 CFR 50.75(h)(iii), written notification of any material changes to the decommissioning trust agreement is to be provided to the Director of the Office of Nuclear Reactor Regulation (NRR) or Director of the Office of Nuclear Material Safety and Safeguards (NMSS) at least 30 working days before the proposed effective date of the amendment. The proposed changes to the IPEC Nuclear Decommissioning Master Trust Agreement took effect on December 14, 2022. Compliance with the requirements of 10 CFR 50.75(h) remained intact and the proposed changes to the trust agreement included:

- Change of Trustee to Northern Trust
- Trust Agreements will reflect trustee's updated standard terms and conditions

G. Material Changes to the Decommissioning Milestone Schedules or Project Cost [10 CFR 50.82(a)(7)]

In accordance with 10 CFR 50.82(a)(7), HDI is notifying the US NRC that HDI is planning to delay the start of activities associated with the reactor pressure vessel (RPV) and reactor vessel internals (RVI) segmentation milestone dates provided in the IPEC PSDAR (Reference 1) and updated in the report on Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations (Reference 2). There is no impact to the milestones for partial site release or overall scheduled license termination date. The milestone extension of segmentation activities are due to the following factors:

- Optimizing market conditions, including the effects of escalated inflation and labor, and preserving NDT fund growth by flattening the schedule and cost curves.
- RPV segmentation activities are aligned to be performed in series. The movement of RPV segmentation activities maximizes efficiencies associated with waste management, reactor building characterization efforts, and contractor resource allocations for efficiency.
- IP2 RPV segmentation activities are aligned to permit the segmentation of Steam Generators within the reactor cavity, if required.
- Additional evaluation of IP1 RPV segmentation options based on industry lessons learned and innovative technologies.

Enclosure 7 provides the major decommissioning project milestones and their updated scheduled completion dates. HDI has confirmed that the changes to the schedule remain bounded by the environmental evaluation included in the HDI IPEC PSDAR(Reference 1).

Tables 1A through C and 2A through C of this Enclosure provide additional required reporting data for IP1, IP2 and IP3. Table 1A through 1C provides a summary of information as of December 31, 2022 in accordance with the requirements of 10 CFR 50.82(a)(8)(v)-(vii). Tables 2A through 2C provides a cash flow analysis using the revised decommissioning cost estimates developed by HDI.

The information provided in this enclosure demonstrates that the IPEC decommissioning trust fund is sufficiently funded to cover costs as estimated for the license termination, spent fuel management and site restoration activities necessary to complete safe and compliant decommissioning of the site.

References:

- 1) Letter, Holtec Decommissioning International, LLC to US NRC, "Post Shutdown Decommissioning Activities Report including Site-Specific Decommissioning Cost Estimate for Indian Point Nuclear Generating Units 1, 2, and 3," December 19, 2019 (ML19354A698)
- 2) Letter, Holtec Decommissioning International, LLC to US NRC, "Report on Status of Decommissioning Funding for Reactors and Independent Spent Fuel Storage Installations – Holtec Decommissioning International, LLC (HDI)," March 25, 2022)
- 3) Letter from US NRC to HDI, "Indian Point Nuclear Generating Station, Unit Nos. 1, 2 and 3 —Request for Exemption from 10 CFR 50.82(a)(8)(i)(A) and 10 CFR 50.75(h)(1)(iv) for Holtec Decommissioning International, LLC" November 23, 2020 (ML20309A781)
- 4) Letter from HDI to NRC, "Holtec Indian Point 2, LLC Master Decommissioning Trust Agreement for Indian Point Nuclear Generating Units 1 and 2 and Holtec Indian Point 3, LLC Master Decommissioning Trust Agreement for Indian Point Nuclear Generating Unit 3" November 17, 2022 (ML22321A286)
- 5) Letter, HDI to US NRC, "Report on Status of Decommissioning Funding Independent Spent Fuel Storage Installations," December 17, 2021 (ML21350A264)

Table 1A, 1B, and 1C

Holtec Decommissioning International

**Indian Point Units 1, 2 & 3
Annual Decommissioning Financial Assurance and
Spent Fuel Management Report**

Enclosure 3

ENCLOSURE 3					
Table 1A					
Holtec Decommissioning International, LLC					
Indian Point Unit 1					
Summary Information as of December 31, 2022					
Decommissioning Trust Fund Balance - 10 CFR 50.82(a)(8)(v)(A), 10 CFR 50.82(a)(8)(vii)(A)					
Year	Type of Trust	Fund Balance (2022 \$)			Comments
2022	Decommissioning Trust	\$558M			As of 12/31/2022; net of tax liabilities
Other Financial Assurance Methods Being Relied Upon - 10 CFR 50.75(f)(1) and 10 CFR 50.82(a)(8)(v)(B)					
NONE					
HDI Decommissioning Expenditures Since License Transfer - 10 CFR 50.82(a)(8)(v)(A)					
Year	License Termination ¹	Spent Fuel Mgmt	Site Restoration	Total ¹	Comments
2021	\$18M	\$2M	\$0M	\$20M	2021 Costs in as-Spent Dollars
2022	\$32M	\$-1M*	\$0.6M	\$32M ²	2022 Costs in as-Spent Dollars
Total to Date	\$51M	\$1M	\$0.6M	\$52M	As-Spent Dollars
Prior Year Expenditures Variance to Total HDI Estimated Cost - 10 CFR 50.82(a)(8)(v)(B)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2022 Estimated	\$52M	\$2M	\$1M	\$55M	Estimate in 2022 Dollars (Reference 2)
2022 Actuals	\$32M	\$-1M*	\$0.6M	\$32M	*2021 IP1 SFM accrual designated as IP1 costs should have been designated as IP2 and IP3 SFM costs. HDI identified this issue prior to withdrawal from the IP1 NDT. Reallocated IP1 accrual to IP2 and IP3 SFM in 2022.
Remaining Decommissioning Estimated Cost - 10 CFR 50.82(a)(8)(v)(B); 50.82(a)(8)(vii)(B)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2023	\$462M	\$123M	\$43M	\$629M	Estimated in 2022 Dollars (Table 2A)
Decommissioning Criteria Upon Which the Estimate is Based - 10 CFR 50.82(a)(8)(v)(B)					
DECON					
Any Modification to Method of Providing Financial Assurance - 10 CFR 50.82(a)(8)(v)(A) and 50.82(a)(8)(v)(C)					
NONE					
Any Material Changes to Trust Agreement Since Previous Report - 10 CFR 50.82(a)(8)(v)(D)					
See item (F) in Enclosure 3					
Need for Additional Financial Assurance - 10 CFR 50.82(a)(8)(v)(C) and 50.82(a)(8)(vii)(C)					
NONE					

¹ Columns may not add due to rounding.

² \$25.2M of the \$32M incurred in 2022 have not been reimbursed to date.

ENCLOSURE 3					
Table 1B					
Holtec Decommissioning International, LLC					
Indian Point Unit 2					
Summary Information as of December 31, 2022 10 CFR					
Decommissioning Trust Fund Balance - 10 CFR 50.82(a)(8)(v)(A), 10 CFR 50.82(a)(8)(vii)(A)					
Year	Type of Trust	Fund Balance (2022 \$)		Comments	
2022	Decommissioning Trust	\$619M		As of 12/31/2022; net of tax liabilities	
Other Financial Assurance Methods Being Relied Upon - 10 CFR 50.82(a)(8)(v)(B)					
NONE					
HDI Decommissioning Expenditures Since License Transfer - 10 CFR 50.82(a)(8)(v)(A)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2021	\$33M	\$20M	\$0M	\$53M	2021 Costs in as-Spent Dollars
2022	\$76M	\$73M	\$1M	\$150M ¹	2022 Costs in as-Spent Dollars
Total to Date	\$109M	\$93M	\$1M	\$203M	As-Spent Dollars
Prior Year Expenditures Variance to Total HDI Estimated Cost - 10 CFR 50.82(a)(8)(v)(B)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2022 Estimated	\$119M	\$78M	\$2M	\$199M	Estimate in 2021 Dollars (Reference 2)
2022 Actuals	\$76M	\$73M	\$1M	\$150M	Variance due to Project Timing and Optimization
Remaining Decommissioning Estimated Cost - 10 CFR 50.82(a)(8)(v)(B); 50.82(a)(8)(vii)(B)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2023	\$380M	\$210M	\$45M	\$635M	Estimated in 2022 Dollars (Table 2B)
Decommissioning Criteria Upon Which the Estimate is Based - 10 CFR 50.82(a)(8)(v)(B)					
DECON					
Any Modification to Method of Providing Financial Assurance - 10 CFR 50.82(a)(8)(v)(A) and 50.82(a)(8)(v)(C)					
NONE					
Any Material Changes to Trust Agreement Since Previous Report - 10 CFR 50.82(a)(8)(v)(D)					
See item (F) in Enclosure 3					
Need for Additional Financial Assurance - 10 CFR 50.82(a)(8)(v)(C) and 50.82(a)(8)(vii)(C)					
NONE					

¹ \$100M of the \$150M incurred in 2022 have not been reimbursed to date.

ENCLOSURE 3					
Table 1C					
Holtec Decommissioning International, LLC					
Indian Point Unit 3					
Summary Information as of December 31, 2022					
10 CFR 50.82(a)(8)(v)-(vii)					
Decommissioning Trust Fund Balance - 10 CFR 50.82(a)(8)(v)(A), 10 CFR 50.82(a)(8)(vii)(A)					
Year	Type of Trust	Fund Balance (2022 \$)		Comments	
2022	Decommissioning Trust	\$742M		As of 12/31/2022; net of tax liabilities	
Other Financial Assurance Methods Being Relied Upon - 10 CFR 50.82(a)(8)(v)(B)					
NONE					
HDI Decommissioning Expenditures Since License Transfer - 10 CFR 50.82(a)(8)(v)(A)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2021	\$38M	\$63M	\$0M	\$101M	2021 Costs in as-Spent Dollars
2022	\$103M	\$44M	\$1M	\$148M ¹	2022 Costs in as-Spent Dollars
Total to Date	\$141M	\$107M	\$1M	\$249M	As-Spent Dollars
Prior Year Expenditures Variance to Total HDI Estimated Cost - 10 CFR 50.82(a)(8)(v)(B)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2022 Estimated	\$155M	\$36M	\$3M	\$195M	Estimate in 2021 Dollars (Reference 2)
2022 Actuals	\$103M	\$44M	\$1M	\$148M	Variance due to Project Timing and Optimization
Remaining Decommissioning Estimated Cost - 10 CFR 50.82(a)(8)(v)(B); 50.82(a)(8)(vii)(B)					
Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2022	\$450M	\$272M	\$48M	\$770M	Estimated in 2022 Dollars (Table 2C)
Decommissioning Criteria Upon Which the Estimate is Based - 10 CFR 50.82(a)(8)(v)(B)					
DECON					
Any Modification to Method of Providing Financial Assurance - 10 CFR 50.82(a)(8)(v)(A) and 50.82(a)(8)(v)(C)					
NONE					
Any Material Changes to Trust Agreement Since Previous Report - 10 CFR 50.82(a)(8)(v)(D)					
See item (F) in Enclosure 3					
Need for Additional Financial Assurance - 10 CFR 50.82(a)(8)(v)(C) and 50.82(a)(8)(vii)(C)					
NONE					

¹ \$97M of the \$148M incurred in 2022 have not been reimbursed to date.

Table 2A, 2B, 2C

Holtec Decommissioning International

**Indian Point Units 1, 2 & 3
Annual Decommissioning Cash Flow Analysis**

Enclosure 3

ENCLOSURE 3

Table 2A

Indian Point Nuclear Generating Station Unit 1 - DECON Method
Annual Cash Flow in Millions (2022 Dollars)

Year	50.75 License Termination Cost	50.54(bb) Spent Fuel Management Cost	Site Restoration Cost	Total Costs	Beginning of Year NDT Balance	Withdrawal ³	NDT Earnings ¹	Year Ending NDT Balance
2023	28.5	3.2	3.8	35.6	557.6 ²	-35.6	10.4	532.5
2024	45.2	1.9	5.0	52.1	532.5	-52.1	9.6	489.9
2025	46.4	1.7	4.9	53.0	489.9	-53.1	8.7	445.6
2026	53.2	1.7	4.2	59.0	445.6	-59.0	7.7	394.3
2027	42.7	1.8	4.6	49.0	394.3	-49.0	6.9	352.2
2028	31.3	1.8	5.4	38.6	352.2	-38.6	6.3	319.9
2029	24.1	1.9	5.1	31.2	320.0	-31.2	5.8	294.5
2030	52.1	1.7	1.9	55.8	294.5	-55.8	4.8	243.5
2031	81.6	1.7	1.6	84.9	243.5	-84.9	3.2	161.8
2032	45.3	1.7	6.6	53.7	161.8	-53.7	2.1	110.3
2033	2.5	4.9	0	7.3	110.3	-7.3	2.1	105.0
2034	0	3.2	0	3.2	105.0	-3.2	2.0	103.8
2035	0	3.2	0	3.2	103.8	-3.2	2.0	102.6
2036	0	3.2	0	3.2	102.6	-3.2	2.0	101.4
2037	0	3.2	0	3.2	101.4	-3.2	2.0	100.1
2038	0	3.2	0	3.2	100.1	-3.2	1.9	98.9
2039	0	3.2	0	3.2	98.9	-3.2	1.9	97.5
2040	0	3.2	0	3.2	97.5	-3.2	1.9	96.2
2041	0	3.2	0	3.2	96.2	-3.2	1.9	94.8
2042	0	3.2	0	3.2	94.8	-3.2	1.8	93.5
2043	0	3.2	0	3.2	93.5	-3.2	1.8	92.0
2044	0	3.2	0	3.2	92.0	-3.2	1.8	90.6
2045	0	3.2	0	3.2	90.6	-3.2	1.7	89.1
2046	0	5.8	0	5.8	89.1	-5.8	1.7	85.0
2047	.16	5.6	0	5.8	85.0	-5.8	1.6	80.8
2048	.43	3.5	0	3.9	80.8	-3.9	1.5	78.4
2049	.43	3.5	0	3.9	78.4	-3.9	1.5	76.0
2050	.43	3.5	0	3.9	75.9	-3.9	1.4	73.4
2051	.43	3.5	0	3.9	73.4	-3.9	1.4	70.9
2052	.43	3.5	0	3.9	70.9	-3.9	1.3	68.3
2053	.43	3.5	0	3.9	68.3	-3.9	1.3	65.6
2054	.43	3.5	0	3.9	65.6	-3.9	1.2	63.0
2055	.8	3.5	0	4.3	62.9	-4.3	1.2	59.8
2056	.8	3.5	0	4.3	59.8	-4.3	1.1	56.6
2057	.8	3.5	0	4.3	56.6	-4.3	1.0	53.3
2058	.8	3.5	0	4.3	53.3	-4.3	1.0	50.0
2059	.8	3.5	0	4.3	50.0	-4.3	.9	46.6
2060	.8	3.5	0	4.3	46.6	-4.3	.9	43.2
2061	.8	3.5	0	4.3	43.2	-4.3	.8	39.6
2062	.3	0	.1	.4	39.6	-25.5	.3	14.4
2063	0	0	0	0	14.4			14.4
Total⁴	462	123	43	629		-654	110	

¹ NDT earnings reflect an assumed 2% Real Rate of Return (RRR). Variance in 2022 market value of trust assets is -\$78.5M relative to 12/31/21 baseline.

² 2023 Beginning of Year NDT Balance is based on 12/31/22 market value of trust investments, net of realized tax liabilities

³ The NDT Withdrawal Amount includes \$25M for the reimbursement of HDI's 2022 expenses not reimbursed in 2022.

⁴ Columns may not add due to rounding. Totals do not include 2022 actuals.

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ENCLOSURE 3

Table 2B

Indian Point Nuclear Generating Station Unit 2 - DECON Method
Annual Cash Flow in Millions (2022 Dollars)

Year	50.75 License Termination Cost	50.54(bb) Spent Fuel Management Cost	Site Restoration Cost	Total Costs	Beginning of Year NDT Balance	Withdrawal ³	NDT Earnings ¹	Year Ending NDT Balance
2023	64.6	32.9	2.8	100.3	618.8 ²	-100.3	10.4	528.9
2024	43.6	1.9	6.7	52.2	528.9	-53.9	9.5	484.5
2025	32.5	1.7	6.7	40.9	484.5	-42.6	8.8	450.7
2026	37.2	1.7	9.3	48.2	450.7	-49.9	8.0	408.9
2027	38.5	1.8	6.7	46.9	408.9	-48.6	7.2	367.5
2028	51.6	1.8	1.9	55.2	367.5	-56.8	6.2	316.8
2029	53.3	1.7	2	57.0	316.8	-58.7	5.2	263.3
2030	10.8	7.3	0	18.1	263.3	-19.8	4.9	248.3
2031	9.4	7.7	0	17.0	248.3	-18.7	4.6	234.3
2032	6.6	6.6	7.5	20.7	234.2	-22.3	4.2	216.2
2033	2.1	8.6	0	10.7	216.1	-12.4	4.1	207.8
2034	0	6.7	0	6.7	207.8	-8.3	4.0	203.5
2035	0	6.7	0	6.7	203.5	-8.4	3.9	199.0
2036	0	6.7	0	6.7	199.0	-8.4	3.8	194.5
2037	0	6.7	0	6.7	194.5	-8.4	3.7	189.8
2038	0	6.7	0	6.7	189.8	-8.3	3.6	185.1
2039	0	6.7	0	6.7	185.1	-8.4	3.5	180.3
2040	0	6.7	0	6.7	180.3	-8.4	3.4	175.4
2041	0	6.7	0	6.7	175.4	-8.4	3.3	170.4
2042	0	6.7	0	6.7	170.4	-8.4	3.2	165.2
2043	0	6.7	0	6.7	165.2	-8.4	3.1	160.0
2044	0	6.7	0	6.7	160.0	-8.4	3.0	154.7
2045	0	6.7	0	6.7	154.7	-8.3	2.9	149.3
2046	0	3.5	0	3.5	149.3	-5.2	2.9	147.0
2047	.2	3.7	0	3.9	147.0	-5.5	2.8	144.3
2048	.4	3.5	0	3.9	144.2	-5.6	2.8	138.6
2049	.4	3.5	0	3.9	141.4	-5.6	2.7	135.7
2050	.4	3.5	0	3.9	138.6	-5.6	2.7	132.7
2051	.4	3.5	0	3.9	136.7	-5.6	2.6	133.4
2052	.4	3.5	0	3.9	132.7	-5.6	2.5	130.4
2053	.4	3.5	0	3.9	129.6	-5.6	2.5	129.6
2054	.4	3.5	0	3.9	126.5	-3.9	2.5	126.5
2055	3.7	3.5	0	7.1	125.0	-7.1	2.4	125.0
2056	3.7	3.5	0	7.1	120.3	-7.2	2.3	115.4
2057	3.7	3.5	0	7.1	115.4	-7.1	2.2	110.4
2058	3.7	3.5	0	7.1	110.4	-7.1	2.1	105.3
2059	3.7	3.5	0	7.1	105.3	-7.1	2.0	101.2
2060	3.7	3.5	0	7.1	100.2	-7.2	1.9	94.9
2061	3.7	3.5	0	7.1	94.9	-7.1	1.8	89.5
2062	1.3	0	1.3	2.5	89.5	-52.5	.74	37.7
2063	0	0	0	0	37.7	0	0	37.7
Total⁴	380	210	45	635		-735	154	

¹ NDT earnings reflect an assumed 2% Real Rate of Return (RRR). Variance in 2022 market value of trust assets is -\$93.9M relative to 12/31/21 baseline.

² 2023 Beginning of Year NDT Balance is based on 12/31/22 market value of trust investments, net of realized tax liabilities

³ The NDT Withdrawal Amount includes \$100M for the reimbursement of HDI's 2022 expenses not reimbursed in 2022.

⁴ Columns may not add due to rounding. Totals do not include 2022 actuals.

Enclosure 3

ENCLOSURE 3

Table 2C

Indian Point Nuclear Generating Station Unit 3 - DECON Method
Annual Cash Flow in Millions (2022 Dollars)

Year	50.75 License Termination Cost	50.54(bb) Spent Fuel Management Cost	Site Restoration Cost	Total Costs	Beginning of Year NDT Balance	Withdrawal ³	NDT Earnings ¹	Year Ending NDT Balance
2023	77.5	102.4	4.3	184.2	741.7 ²	-184.2	11.2	568.7
2024	45.9	1.3	4.1	51.3	568.7	-52.9	10.3	526.1
2025	41.4	1.6	3.9	46.9	526.1	-48.6	9.6	487.1
2026	47.0	1.5	3.8	52.4	487.1	-54.0	8.7	441.7
2027	41.5	1.7	4.1	47.3	441.7	-49.0	7.9	400.6
2028	37.3	1.7	4.2	43.2	400.6	-44.8	7.1	362.9
2029	37.5	1.7	4.3	43.5	362.9	-45.2	6.4	324.0
2030	38.6	1.7	4.3	44.6	324.1	-46.2	5.6	283.4
2031	30.9	1.8	4.5	37.2	283.4	-38.8	4.9	249.5
2032	26.5	1.7	8.8	37.0	249.5	-38.6	4.2	215.1
2033	2.7	5.4	0	8.1	215.1	-9.7	4.1	209.5
2034	0	4.0	0	4.0	209.5	-5.7	4.1	207.9
2035	0	4.0	0	4.0	209.1	-5.7	4.0	206.3
2036	0	4.0	0	4.0	207.9	-5.7	4.0	204.7
2037	0	4.0	0	4.0	206.3	-5.7	4.0	203.0
2038	0	4.0	0	4.0	204.7	-5.7	3.9	201.3
2039	0	4.0	0	4.0	203.0	-5.7	3.9	199.5
2040	0	4.0	0	4.0	201.3	-5.7	3.9	197.8
2041	0	4.0	0	4.0	199.6	-5.7	3.8	196.0
2042	0	4.0	0	4.0	197.8	-5.7	3.8	194.1
2043	0	4.0	0	4.0	196.0	-5.7	3.8	192.2
2044	0	4.0	0	4.0	194.1	-5.7	3.7	190.3
2045	0	4.0	0	4.0	192.3	-5.7	3.7	188.3
2046	0	5.0	0	5.0	190.3	-6.6	3.6	185.4
2047	0	4.7	0	4.7	188.3	-6.3	3.6	182.7
2048	0	6.4	0	6.4	184.4	-8.0	3.5	178.2
2049	0	6.3	0	6.3	182.7	-8.0	3.4	173.6
2050	0	6.4	0	6.4	178.2	-8.0	3.3	168.9
2051	0	6.3	0	6.3	173.6	-8.0	3.2	164.2
2052	0	6.4	0	6.4	168.9	-8.0	3.1	159.3
2053	0	6.4	0	6.4	164.2	-8.0	3.0	154.4
2054	0	6.4	0	6.4	159.3	-6.4	3.0	151.0
2055	3.2	6.3	0	9.6	154.4	-9.6	2.8	144.3
2056	3.2	6.4	0	9.6	151.0	-9.6	2.7	137.3
2057	3.2	6.4	0	9.6	144.3	-9.6	2.6	130.3
2058	3.2	6.4	0	9.6	137.3	-9.6	2.4	123.1
2059	3.2	6.4	0	9.6	130.3	-9.6	2.3	115.8
2060	3.2	6.4	0	9.6	123.1	-9.6	2.1	108.3
2061	3.2	6.3	0	9.5	108.3	-9.6	2.0	100.7
2062	.87	2.8	1.1	4.7	100.7	-53.3	.95	48.4
2063	0	0	0	0	48.4		0	48.4
Total ⁴	450	272	48	770		-867	174	

¹ NDT earnings reflect an assumed 2% Real Rate of Return (RRR). Variance in 2022 market value of trust assets is -\$90.3M relative to 12/31/21 baseline.

² 2023 Beginning of Year NDT Balance is based on 12/31/22 market value of trust investments, net of realized tax liabilities.

³ The NDT Withdrawal Amount includes \$97M for the reimbursement of HDI's 2022 expenses not reimbursed in 2022.

⁴ Columns may not add due to rounding. Totals do not include 2022 actuals.



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Enclosure 4

Holtec Decommissioning International

**Palisades Nuclear Power Station
Annual Decommissioning Funding and Spent Fuel Management
Status and Financial Assurance Report
As of December 31, 2022**

Holtec Decommissioning International
Palisades Nuclear Plant
Annual Decommissioning Funding and Spent Fuel
Management Status and Financial Assurance Report
As of December 31, 2022

As required by 10 CFR 50.82(a)(8), Holtec Decommissioning International, LLC (HDI) reports the following information for Palisades Nuclear Plant (PNP):

A. Decommissioning Cost Estimate [10 CFR 50.82(a)(8)(v)(B), 50.82(a)(8)(vii)(B)]

The required minimum funding assurance amount for PNP as of December 31, 2022 is based on the site-specific Decommissioning Cost Estimate (DCE) developed in accordance with 10 CFR 50.82(a) and included in the HDI Post-Shutdown Decommissioning Activities Report (Reference 1).

Table 1 of this Enclosure provides additional reporting requirements and includes the HDI revised total estimate information as required by 10 CFR 50.82 based on the DECON method of decommissioning. The revised total estimate to complete decommissioning for the PNP site is \$633M (in 2022 dollars). Of that total cost estimate, the revised estimate for license termination expenses is \$447M, the current separate estimate of spent fuel management costs is \$146M and the current separate estimate for site restoration costs is \$39M.

B. Decommissioning Fund Balance [10 CFR 50.82(a)(8)(v)(A), 50.82(a)(8)(vii)(A)]

The Palisades Nuclear Decommissioning Trust (NDT) fund balance as of December 31, 2022 was \$547M. This amount represents the market value of the NDT fund as of December 31, 2022 net any material current income tax liability on realized gains, interest, dividends, and other income of the trust. The trust fund amount is the total available for decommissioning including costs of license termination, spent fuel management, and site restoration activities. The total is provided because HDI received an exemption from 10 CFR 50.82(a)(8)(i)(A) to allow the Palisades trust fund to be used for site irradiated fuel management and site restoration costs (Reference 2).

C. Assumptions Used Regarding Rates of Escalation for Decommissioning Costs, Earnings on Funds, and Other Factors Used in Funding Projections [10 CFR 50.82(a)(8)(v)(B)]

In accordance with 10 CFR 50.75(e)(1)(i), HDI has assumed a 2% real rate of return.

The estimates in the 2020 HDI Palisades PSDAR/Decommissioning Cost Estimate (DCE) (Reference 1) were provided in 2020 dollars. The estimates provided in Table 1 of this Enclosure have been inflated to 2022 dollars. The Bureau of Labor Statistics (BLS) data provided the basis for the decommissioning cost estimate inflation rate forecast. Decommissioning costs are inflated using a weighted average of BLS indices for labor, energy, consumer price index, materials, and equipment. HDI utilized NUREG-1307, Revision 19, issued February 2023, for the burial inflation factor. HDI has used a factor of 1.09 to calculate the inflation to 2022 dollars.

D. ISFSI Decommissioning Cost [10 CFR 50.82(a)(8)(v)(ii)(B)]

The current detailed site-specific Independent Spent Fuel Storage Installation (ISFSI) decommissioning cost estimate is \$10.1M (2022 dollars). The ISFSI estimated costs are

Enclosure 4

based on the estimated costs provided in the Entergy ISFSI Decommissioning Funding Plans (Reference 5) which have been inflated using published inflation indices as discussed in Item (C).

E. Decommissioning Financial Assurance [10 CFR 50.82(a)(8)(v)(A), 50.82(a)(8)(v)(D)]

Financial assurance for decommissioning is provided by the prepayment method, coupled with an external trust fund, in accordance with 10 CFR 50.75(e)(1)(i) and 10 CFR 72.30(e)(1) as approved by the NRC in their approval of the license transfer to Holtec Palisades, LLC and HDI. There have been no changes to the method of providing financial assurance since the indirect transfer of control of Renewed Facility Operating License No. DPR-20 for Palisades and the general license for the Palisades ISFSI was transferred to Holtec Palisades, LLC (Holtec Palisades) and the transfer of authority to conduct licensed activities at PNP to HDI was executed on June 28, 2022 (Reference 3).

F. Material Changes to the Decommissioning Trust Agreement [10 CFR 50.82(a)(8)(v)(D)]

By letter dated November 17, 2022 (Reference 4), HDI provided notification to the NRC of anticipated changes to the Master Decommissioning Trust Agreement for Palisades Nuclear Plant (PNP). In accordance with 10 CFR 50.75(h)(iii), written notification of any material changes to the decommissioning trust agreement is to be provided to the Director of the Office of Nuclear Reactor Regulation (NRR) or Director of the Office of Nuclear Material Safety and Safeguards (NMSS) at least 30 working days before the proposed effective date of the amendment. The proposed changes to the Palisades Master Decommissioning Trust Agreement took effect on December 14, 2022.

Compliance with the requirements of 10 CFR 50.75(h) remained intact and the proposed changes to the trust agreement included:

- Change of Trustee to Northern Trust
- Trust Agreement reflects new custodian language and investment standards.

G. Material Changes to the Decommissioning Milestone Schedules or Project Cost [10 CFR 50.82(a)(7)]

HDI has evaluated decommissioning activities, cost, and schedule against the Palisades PSDAR and determined that there are no activities inconsistent with, or scheduled impacts that constitute a significant change to, nor any financially significant cost increase from the description in the PSDAR.

Enclosure 7 provides the major decommissioning project milestones and their updated scheduled completion dates. HDI has confirmed that the changes to the schedule remain bounded by the environmental evaluation included in the HDI Palisades PSDAR (Reference 1).

Tables 1 and 2 of this Enclosure contain additional required reporting data. Table 1 provides a summary of information as of December 31, 2022 in accordance with the requirements of 10 CFR 50.82(a)(8)(v)-(vii). Table 2 provides a cash flow analysis using the revised decommissioning cost estimates developed by HDI.

The information provided in this enclosure demonstrates that the Palisades decommissioning trust fund is sufficiently funded to cover costs as estimated for the license termination, spent fuel management and site restoration activities necessary to complete safe and compliant decommissioning of the site.

References:

- 1) Letter, Holtec Decommissioning International, LLC (HDI) to US NRC, "Post Shutdown Decommissioning Activities Report including Site-Specific Decommissioning Cost Estimate for Palisade Nuclear Plant," December 23, 2020 (ML20358A232)
- 2) Letter from US NRC to HDI, "Palisades Nuclear Plant — Request for Exemption from 10 CFR 50.82(a)(8)(i)(A) and 10 CFR 50.75(h)(1)(iv) for Holtec Decommissioning International, LLC" December 13, 2021 (ML2186A294)
- 3) Letter from US NRC to Entergy, "Palisades Nuclear Plant and Big Rock Point Plant – Order Approving Transfer of Licenses and Draft Conforming Administrative License Amendments (EPID L-2020-LLM-0003)," December 13, 2021 (ML21292A145)
- 4) Letter from HDI to US NRC, "Amended and Restated Holtec Palisades, LLC Master Decommissioning Trust Agreement for Palisades Nuclear Plant" November 17, 2022 (ML22321A285)
- 5) Letter from Entergy Nuclear Operations, Inc (Entergy) to US NRC, "ISFSI Decommissioning Funding Plans (10 CFR 72.30)" December 15, 2021 (ML21349A374)

Table 1

Holtec Decommissioning International

**Palisades Nuclear Station
Annual Decommissioning Financial Assurance and
Spent Fuel Management Report**

Enclosure 4

ENCLOSURE 4

Table 1

Holtec Decommissioning International, LLC
Palisades Nuclear Power Station

Summary Information as of December 31, 2022



Decommissioning Trust Fund Balance - 10 CFR 50.82(a)(8)(v)(A), 10 CFR 50.82(a)(8)(vii)(A)

Year	Type of Trust	Fund Balance (2022 \$)	Comments		
2022	Decommissioning Trust	\$547M			As of 12/31/2022; net of tax liabilities

Other Financial Assurance Methods Being Relied Upon - 10 CFR 50.82(a)(8)(v)(B)

NONE

HDI Decommissioning Expenditures - 10 CFR 50.82(a)(8)(v)(A) Since License Transfer

Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2022	\$38M	\$6M	\$0M	\$44M ¹	2022 Costs in as-Spent Dollars
Total Spent to Date	\$38M	\$6M	\$0M	\$44M	As-Spent Dollars

Prior Year Expenditures Variance to Total HDI Estimated Cost - 10 CFR 50.82(a)(8)(v)(B)

Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2022 Estimates	\$37M	\$ 1M	\$0M	\$38M	Estimate in 2022 Dollars
2022 Actuals	\$38M	\$6M*	\$0M	\$44M	Variance due to early milestone payment for Spent Fuel Management Project (paid in 2022)

Remaining Decommissioning Estimated Cost - 10 CFR 50.82(a)(8)(v)(B); 50.82(a)(8)(vii)(B)

Year	License Termination	Spent Fuel Mgmt	Site Restoration	Total	Comments
2023	\$447M	\$146M	\$39M	\$633M	Estimated in 2022 Dollars

Decommissioning Criteria Upon Which the Estimate is Based - 10 CFR 50.82(a)(8)(v)(B)

DECON

Any Modification to Method of Providing Financial Assurance - 10 CFR 50.82(a)(8)(v)(A) and 50.82(a)(8)(v)(C)

NONE

Any Material Changes to Trust Agreement Since Previous Report - 10 CFR 50.82(a)(8)(v)(D)

See item (F) in Enclosure 4

Need for Additional Financial Assurance - 10 CFR 50.82(a)(8)(v)(C) and 50.82(a)(8)(vii)(C)

NONE

¹ \$44M of the \$44M incurred in 2022 have not been reimbursed to date.

Table 2

Holtec Decommissioning International

**Palisades Nuclear Power Station
Annual Decommissioning Cash Flow Analysis**

ENCLOSURE 4								
Table 2								
Palisades Nuclear Power Station - DECON Method								
Annual Cash Flow in Millions (2022 Dollars)								
Year	License Termination Cost	Spent Fuel Management Cost	Site Restoration Cost	Total Costs	Beginning of Year NDT Balance	Withdrawal ³	NDT Earnings ¹	Year Ending NDT Balance
2023	63.8	22.8	2.7	89.3	546.8 ²	-69.3	9.6	487.0
2024	27.1	18.9	0	46.0	487.1	-38.1	9.0	458.0
2025	25.0	24.4	0	49.4	458.0	-41.4	8.3	424.9
2026	2.7	4.2	0	6.9	424.9	-6.9	8.4	426.4
2027	5.1	1.9	0	7.0	426.4	-7.0	8.4	427.8
2028	5.2	1.9	0	7.0	427.8	-7.0	8.4	429.2
2029	5.0	1.9	0	6.8	429.2	-6.8	8.4	430.8
2030	5.4	8.1	0	13.5	430.8	-13.4	8.3	425.7
2031	4.8	7.0	0	11.9	425.7	-11.9	8.3	422.1
2032	4.8	7.0	0	11.9	422.1	-11.9	8.2	418.5
2033	4.8	7.0	0	11.9	418.5	-11.9	8.1	414.7
2034	4.8	7.0	0	11.9	414.7	-11.9	8.1	411.0
2035	9.6	6.7	.2	16.6	411.0	-16.6	7.9	402.3
2036	35.4	6.1	1.9	43.4	402.3	-43.4	7.2	366.0
2037	42.6	5.8	5.6	54.0	366.1	-54.0	6.2	318.3
2038	95.1	5.3	8.0	108.3	318.3	-108.3	4.2	214.1
2039	61.6	4.7	7.9	74.2	214.1	-74.2	2.8	142.9
2040	35.8	5.4	6.6	47.8	142.7	-65.8	1.5	78.4
2041	8.9	0	6.3	15.3	78.4	-77.3	.2	1.2
2042								
Total ³	447	146	39	633		-677	131	

¹ NDT earnings reflect an assumed 2% Real Rate of Return (RRR). Variance in 2022 market value of trust assets is -\$5.2M relative to 2020 DCE baseline.

² 2023 Beginning of Year NDT Balance is based on 12/31/22 market value of trust investments, net of realized tax liabilities.

³ The NDT Withdrawal Amount includes \$44M for the reimbursement of HDI's 2022 expenses not reimbursed in 2022.

⁴ Columns may not add due to rounding. Totals do not include 2022 actuals.



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Enclosure 5

**Holtec Decommissioning
International**

**Big Rock Point
Annual Decommissioning Funding and Spent Fuel
Management Status and Financial Assurance Report
As of December 31, 2022**

**Holtec Decommissioning
International
Big Rock Point
Annual Decommissioning Funding and Spent Fuel
Management Status and Financial Assurance Report
As of December 31, 2022**

As required by 10 CFR 50.82(a)(8), Holtec Decommissioning International, LLC (HDI) reports the following information for Big Rock Point (BRP):

Big Rock Point ISFSI Funding Overview:

BRP has been decommissioned and all portions of the site, other than the ISFSI and certain adjacent, non-impacted property, have been released. A cost estimate for the decommissioning of the BRP ISFSI and supporting information was provided in the Application for Order Consenting to Transfers of Control of Licenses and Approving Conforming License Amendments for Palisades and BRP (Reference 1). That cost estimate was based on Entergy Nuclear Operations, Inc.'s (ENOI) then-current 10 CFR 72.30(c) ISFSI decommissioning funding report, escalated to 2020 dollars. In December 2021, after submission of the Application but before transfer of the BRP license, ENOI filed an updated cost estimate of approximately \$2.8 million (2021 dollars) in the triennial update to its 10 CFR 72.30(c) report (Reference 4). HDI will file the next BRP triennial update in 2024. For purposes of this annual 50.82(a)(8)(v) report, HDI has escalated the prior ENOI estimate into 2022 dollars.

Financial assurance for ISFSI decommissioning is provided by an external trust fund in accordance with 10 CFR 50.75(e)(1)(i) and 10 CFR 72.30(e)(1), as approved by NRC in their approval of the license transfer to Holtec Palisades, LLC and HDI.

Additionally, in accordance with the conditions of the license transfer, Holtec has funded the BRP spent fuel management costs from a dedicated fund that continually contains one year's worth of estimated operating costs and a parent support agreement to continually maintain that fund (Reference 3).

While HDI has not credited any DOE recoveries for purposes of its BRP decommissioning or irradiated fuel management funding obligations, BRP ISFSI operations are in response to the DOE's failure to remove spent nuclear fuel from the site in a timely manner. The costs for management of the spent fuel are costs for which the DOE is responsible, according to the Standard Contract. It is therefore expected that, once the ISFSI is no longer needed, the cost to decommission the ISFSI would be a DOE-reimbursable expense. At the conclusion of the spent fuel transfer process the ISFSI will be promptly decommissioned.

The financial assurance requirements for the BRP ISFSI are satisfied through these two mechanisms: the external trust fund and the BRP spent fuel management fund backed by a parent support agreement.

Radiological Decommissioning [10 CFR 50.82(a)(8)(v)]

A. Amount spent on ISFSI decommissioning. [10 CFR 50.82(a)(8)(v)(A)]

Neither HDI nor prior BRP owners have spent any amounts for BRP ISFSI decommissioning. The BRP reactor and most of the formerly licensed site were decommissioning and released for unrestricted use in 2007. The only decommissioning activities that remain are those associated with decommissioning

the ISFSI, which is expected to occur after DOE removes all irradiated fuel.

B. Decommissioning Cost Estimate [10 CFR 50.82(a)(8)(v)(B)]

The estimated cost to complete is \$2.9M. This estimate is based on ENOI's 2021 10 CFR 72.30(c) report (Reference 4), escalated to 2022 dollars.

C. Decommissioning Fund Balance [10 CFR 50.82(a)(8)(v)(A)]

The BRP Nuclear Decommissioning Trust (NDT) fund balance as of December 31, 2022 was \$2.8M. This amount represents the market value of the NDT fund as of December 31, 2022 net any material current income tax liability on realized gains, interest, dividends, and other income of the trust.

D. Assumptions Used Regarding Rates of Escalation for Decommissioning Costs, Earnings on Funds, and Other Factors Used in Funding Projections [10 CFR 50.82(a)(8)(v)(B)]

In accordance with 10 CFR 50.82(a)(8)(vi), HDI has assumed a 2% real rate of return.

The estimates provided in Reference 4 has been inflated to 2022 dollars using the same methodology used to escalate HDI's reactor decommissioning cost estimates. The Bureau of Labor Statistics (BLS) data provided the basis for the decommissioning cost estimate inflation rate forecast. Reactor decommissioning costs are inflated using a weighted average of BLS indices for labor, energy, consumer price index, materials, and equipment. HDI has used a factor of 1.10 to calculate the inflation to 2022 dollars.

E. Decommissioning Financial Assurance [10 CFR 50.82(a)(8)(v)(A), 50.82(a)(8)(v)(D)]

Financial assurance for ISFSI decommissioning is provided by the funds held in the BRP decommissioning trust fund. In Reference 4, ENOI assumed BRP decommissioning would be completed in 2044, one year after DOE removal of fuel, which ENOI assumed to occur in 2043. With 2% real growth of the current trust fund balance relative to cost escalation, BRP's trust fund balance will exceed decommissioning costs by 2044. Even assuming a more expeditious DOE removal schedule, which HDI intends to pursue, the BRP trust value will be more than two times the estimated BRP ISFSI decommissioning costs by 2030—the year in which HDI believes it is reasonable to expect that a repository will be available to begin receiving industry spent fuel.

ISFSI operations at Big Rock Point are in response to the DOE's failure to remove spent nuclear fuel from the site in a timely manner. The costs for management of the spent fuel are costs for which the DOE is responsible, according to the Standard Contract. It is therefore expected that, once the ISFSI is no longer needed, the cost to decommission the ISFSI would be a DOE-reimbursable expense. Notwithstanding the expectation of DOE recoveries, HDI will fund decommissioning costs from the Decommissioning Trust Fund to terminate the ISFSI license and release the facility for unrestricted use.

F. Material Changes to the Decommissioning Trust Agreement [10 CFR 50.82(a)(8)(v)(D)]

On June 22, 2022, to satisfy the conditions to transfer the BRP license, Holtec International executed a Trust Agreement with Northern Trust to hold the funds for BRP ISFSI decommissioning and funded that trust in an amount of \$2.67M (Reference 3). Upon transfer of the BRP license and Holtec's acquisition of the entity now known as Holtec Palisades, LLC, Holtec International assigned the trust agreement to Holtec Palisades, LLC (the licensed owner of BRP) pursuant to the terms of the trust agreement.

Since the BRP license transfer and completion of these steps in June 2022, there have been no changes to the trust agreement.

G. Material Changes to the Decommissioning Milestone Schedules or Project Cost [10 CFR 50.82(a)(7)]
None

Irradiated Fuel Management [10 CFR 50.82(a)(8)(vii)]

A. Funds Accumulated to Cover the Cost of Managing Irradiated Fuel

In accordance with the conditions of the license transfer (Reference 2), on June 16, 2022 Holtec funded the Big Rock Point spent fuel management costs by establishing and funding a dedicated fund that will continually contain one year's worth of estimated operating costs (\$2.7M, in 2022) and a parent support agreement to continually maintain that fund.

B. Projected Cost of Managing Irradiated Fuel Until Title to the Fuel and Possession of the Fuel is Transferred to the Secretary of Energy

Total ISFSI operating costs in 2022 were approximately \$1.5M (which spanned ENOI's and HDI's period of responsibility). Based on ENOI's assumptions in Reference 4 that DOE will complete removal of BRP fuel in 2043, total irradiated fuel management costs expected to be incurred during that period are approximately \$61M in 2022 dollars. Pursuant to the Parent Support Agreement, Holtec International will continually supplement the operating fund to ensure that the operating account maintains the requisite funding amount. HDI believes it is reasonable to assume that DOE will remove BRP fuel earlier than this amount, but given the structure of the BRP funding mechanisms, the precise timing of DOE removal is irrelevant to the funding demonstration required for BRP.

C. Additional Funding Plan If Accumulated Funds do Not Cover Projected Cost

The Parent Support Agreement provides a continual source of funds to backstop BRP irradiated fuel management until DOE takes title to all fuel. While HDI does not rely on DOE recoveries to support its funding demonstration, in light of the fact that BRP's ongoing operational costs and eventual decommissioning costs are all a result of DOE's failure to fulfill its obligations under the Standard Contract, HDI expects to recover these costs from DOE.

The information provided in this enclosure demonstrates that decommissioning funding assurance at BRP is sufficient to cover costs as estimated for the ISFSI decommissioning and irradiated fuel management activities necessary to complete safe and compliant decommissioning of the site.

References:

- 1) Letter from Entergy Nuclear Operations, Inc (Entergy) to US NRC, "Application for Order Consenting to Transfers of Control of Licenses and Approving Conforming License Amendments" December 23, 2020 (ML30258A075)
- 2) Letter from US NRC to Entergy, "Palisades Nuclear Plant and Big Rock Point Plant - Order Approving Transfer of Licenses and Draft Conforming Administrative License Amendment (EPID L-2020-LLM-0003)" December 13, 2021 (ML21292A145)
- 3) Letter from HDI to US NRC, "Holtec Decommissioning International, LLC (HDI) satisfactory documentary evidence required before the planned closing date of the purchase and sale transaction of Palisades Nuclear Plant and Big Rock Point Plant" June 24, 2022 (ML22178A077)
- 4) Letter from Entergy Nuclear Operations, Inc (Entergy) to US NRC, "ISFSI Decommissioning Funding Plans (10 CFR 72.30)" December 15, 2021 (ML21349A37)



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Enclosure 6

Holtec Decommissioning International

Methodology Used to Calculate the Formula Cost Amounts per 10 CFR 50.75(c) Annual Decommissioning Funding and Spent Fuel Management Status and Financial Assurance Report

Holtec Decommissioning International

**Methodology Used to Calculate the Formula Cost Amount per
10 CFR 50.75(c)**

**Annual Decommissioning Funding and Spent Fuel Management
Status and Financial Assurance Report
As of December 31, 2022**

This Enclosure provides the methodology used to calculate the formula cost per 10 CFR 50.75(c). HDI does not use this calculation for any decommissioning cost estimates or evaluations.

The labor, energy and burial indexes used are consistent with those described in NUREG-1307, Revision 19, issued February 2023. The current labor cost indexes used are obtained from the Employment Cost Index published by the U.S. Department of Labor, Bureau of Labor Statistics (BLS). Specifically, HDI used the Employment Cost Index for total compensation for private industry workers in the northeast and midwest regions. The labor adjustment factors were calculated according to Section 3.2 of NUREG-1307, Revision 19 using fourth quarter 2022 data. Table 1 shows the data used for this calculation.

Table 1: Labor Adjustment Factors

Applicable Site	Series ID	4Q2022 Index Number	Labor Adjustment Factor (Lx)
Oyster Creek	CIU2010000000210I	157.0	3.39
Pilgrim	CIU2010000000210I	157.0	3.39
IPEC	CIU2010000000210I	157.0	3.39
Palisades	CIU2010000000230I	152.8	3.18
Big Rock Point	CIU2010000000230I	152.8	3.18

The current energy cost indexes used are obtained from Producer Price Indexes (PPI) – Commodities, published by the U.S. Department of Labor, BLS. Specifically, HDI used the PPI for industrialelectric power (WPU0543) and light fuel oils (WPU0573). The energy adjustment factors were calculated according to Section 3.3 of NUREG-1307, Revision 19, using December 2022 data. Table 2 shows the data used for this calculation.

Table 2: Energy Adjustment Factor

WPU0543 – January 1986 (base value)	114.2
WPU0573 – January 1986 (base value)	82.0
WPU0543 – December 2022 (preliminary value)	279.934
WPU0573 – December 2022 (preliminary value)	394.700
Industrial Electric Power Adjustment Factor – (PX)	2.451
Light Fuel oil Adjustment Factor – (FX)	4.813
Energy Adjustment Factor – (BWR)	3.538
Energy Adjustment Factor – (PWR)	3.443

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The waste burial adjustment factors are taken from Table 2-1 of NUREG-1307, Revision 19, based on 2022 data. The adjustment factors HDI used assume non-compact waste disposal facilities. Although Oyster Creek is located in New Jersey, which is a member of the Atlantic Compact, HDI has selected and is under contract to use the WCS Texas facility. HDI has not forecasted waste disposal to the Atlantic Compact since 2021. Table 3 shows the data used for this calculation.

Table 3: Waste Burial Adjustment Factor

LLW Burial Site	Reactor Type	Decommissioning Site	Combination of Compact-Affiliated and Non-Compact Disposal Facilities Waste Adjustment Factor – (Bx)	Generators Located in Unaffiliated States – (Bx)
Generic LLW	BWR	Oyster Creek	N/A	12.296
Generic LLW	BWR	Pilgrim	N/A	12.296
Generic LLW	PWR	IPEC	N/A	13.711
Generic LLW	PWR	Palisades	N/A	13.711
Generic LLW	BWR	Big Rock Point	N/A	12.296

The calculation methodology used for all adjustment factors and displayed in Table 4 is consistent with NUREG-1307, Revision 19.

Table 4: Escalation Factors and Calculated Adjustments for HDI Sites

Site	Escalation Factors - (Lx), (Ex), (Bx)		Escalation Factor Formula 10 CFR 50.75(c)(2)	Escalation Factor	1986 Base Year \$ Escalated
Oyster Creek	(Lx)	3.39	0.65(L)+0.13(E)+0.22(B)	5.369	\$651,635,530
	(Ex)	3.538			
	(Bx)	12.296			
Pilgrim	(Lx)	3.39	0.65(L)+0.13(E)+0.22(B)	5.369	\$656,370,988
	(Ex)	3.538			
	(Bx)	12.296			
IPEC	(Lx)	3.39	0.65(L)+0.13(E)+0.22(B)	5.668	Unit 1 - \$484,954,080
	(Ex)	3.443			Unit 2 - \$585,510,068
	(Bx)	13.711			Unit 3 - \$585,510,068
Palisades	(Lx)	3.18	0.65(L)+0.13(E)+0.22(B)	5.530	\$539,595,280
	(Ex)	3.443			
	(Bx)	13.711			
Big Rock Point	(Lx)	3.18	0.65(L)+0.13(E)+0.22(B)	5.231	\$600,518,800
	(Ex)	3.538			
	(Bx)	12.296			



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Enclosure 7

Holtec Decommissioning International

**Milestone Summary
Annual Decommissioning Funding and Spent Fuel Management
Status and Financial Assurance Report
As of December 31, 2022**

Holtec Decommissioning International

Milestone Summary Annual Decommissioning Funding and Spent Fuel Management Status and Financial Assurance Report

Project / Milestone	PSDAR/DCE/LTA (per project below)	DCE Annual Updates (2021)	DCE Annual Updates (2022)	Notes
Oyster Creek (PSDAR/DCE/LTA issued on 09/28/2018)				
License Transfer	07/01/2019	07/01/2019	07/01/2019	Complete
Zirc Fire Elimination	09/17/2019	06/29/2019	06/29/2019	Complete
Fuel on Pad	06/23/2023	05/23/2021	05/23/2021	Complete
Segmentation Reactor Vessel Internals (RVI):	02/03/2022	05/13/2022	01/27/2023	Complete
Segmentation Reactor Pressure Vessel (RPV):	09/19/2022	08/19/2024	08/19/2028*	*See Enclosure 1 Item (G)
Partial Site Release	10/24/2025	11/03/2025	11/03/2029*	*See Enclosure 1 Item (G)
Fuel Shipment Begins	01/03/2025	01/03/2025	01/03/2030*	*See Enclosure 1 Item (G)
Fuel Shipment Ends	03/28/2035	03/28/2035	03/28/2035	
License Termination	12/01/2035	12/03/2035	12/03/2035	

Pilgrim (PSDAR/DCE/LTA issued on 11/16/2018)				
License Transfer	07/31/2019	08/26/2019	08/26/2019	Complete
Zirc Fire Elimination	03/30/2020	03/31/2020	03/31/2020	Complete
Fuel on Pad	11/26/2021	12/13/2021	12/13/2021	Complete
Segmentation RVI	10/12/2020	10/26/2022	05/25/2023*	*See Enclosure 2 Item (G)
Segmentation RPV	09/18/2022	12/31/2024	12/31/2028*	*See Enclosure 2 Item (G)
Partial Site Release	01/28/2025 [09/24/2027] *	09/24/2027	09/24/2031**	*2021 Schedule change noticed in 2019 Annual Decommissioning Funding and Spent Fuel Management Report (ML20091M858) **See Enclosure 2 Item (G)
Fuel Shipment Begins	01/02/2030	01/02/2030	01/02/2030	
Fuel Shipment Ends	12/31/2062	12/31/2062	12/31/2062	
License Termination	09/07/2063	09/07/2063	09/07/2063	

Project / Milestone	PSDAR/DCE/LTA (per project below)	DCE Annual Updates (2021)	DCE Annual Updates (2022)	Notes
Indian Point (PSDAR/DCE/LTA issued on 12/19/2019)				
License Transfer	05/31/2021	05/28/2021	05/28/2021	Complete
Zirc Fire Elimination (IP3)	09/15/2022	08/01/2022	08/01/2022	Complete
Fuel on Pad:				
IP1	12/11/2008	-	12/11/2008	Complete
IP2	03/31/2023	03/31/2023	02/01/2023	Complete
IP3	04/04/2024	10/31/2023	10/31/2023	
Segmentation RVI:				
IP1*	-	-	-	*IP1 RVI will be removed with the reactor vessel during RPV segmentation
IP2	12/21/2022	05/28/2024	07/18/2025*	*See Enclosure 3 Item (G)
IP3	12/21/2021	11/30/2023	03/07/2024*	*See Enclosure 3 Item (G)
Segmentation RPV:				
IP1	04/13/2024	11/20/2025	11/20/2027*	*See Enclosure 3 Item (G)
IP2	06/30/2023	11/26/2024	04/29/2026*	*See Enclosure 3 Item (G)
IP3	06/30/2022	05/37/2024	12/17/2024	
Partial Site Release	07/09/2033	07/09/2033	07/09/2033	
Fuel Shipment Begins:				
IP1	05/29/2046	05/29/2046	05/29/2046	
IP2	01/02/2030	01/02/2030	01/02/2030	
IP3	08/26/2047	08/26/2047	08/26/2047	
Fuel Shipment Ends:				
IP1	08/23/2047	08/23/2047	08/23/2047	
IP2	05/25/2046	05/25/2046	05/25/2046	
IP3	12/30/2061	12/30/2061	12/30/2061	
License Termination	09/06/2062	09/06/2062	09/06/2062	

Enclosure 7

Project / Milestone	PSDAR/DCE/LTA (per project below)	DCE Annual Updates (2021)	DCE Annual Updates (2022)	Notes
Palisades (PSDAR/DCE/LTA issued on 12/23/2021)				
License Transfer	06/28/2022	-	06/28/2022	Complete
Zirc Fire Elimination	09/20/2023	-	05/31/2023	
Fuel on Pad	07/02/2025	-	07/02/2025	
Dormancy Period (10 Years)	11/30/2035		11/30/2035	
Segmentation RVI	12/31/2037	-	12/31/2037	
Segmentation RPV	12/31/2038	-	12/31/2038	
Fuel Shipment Begins	01/01/2030		01/01/2030	
Fuel Shipment Ends	12/30/2040	-	12/30/2040	
Partial Site Release & License Termination	09/06/2041	-	09/06/2041	

Big Rock Point (PSDAR/DCE/LTA issued on 12/23/2021)				
Fuel Shipment Begins	01/01/2030		01/01/2030	
Fuel Shipment Ends	12/31/2043	-	12/31/2043	
License Termination	12/31/2044	-	12/31/2044	