# **MAINE YANKEE** 321 Old Ferry Road, Wiscasset, Maine 04578

December 12, 2019 OMY-19-019 10 CFR 50.82(a)(7)

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

> Maine Yankee Atomic Power Company Maine Yankee Independent Spent Fuel Storage Installation NRC License No. DPR-36 (NRC Docket No. 50-309) 71-030

Notification of Changes in accordance with 10 CFR 50.82(a)(7)Subject:

Maine Yankee Atomic Power Company (Maine Yankee) is notifying the U.S. Nuclear Regulatory Commission (NRC) of significant changes to the decommissioning schedule in accordance with 10 CFR 50.82(a)(7) prior to incorporating these changes into the Maine Yankee Post-Shutdown Decommissioning Activities Report (PSDAR). This schedule change reflects a new decommissioning cost estimate that includes a cost estimate for management of irradiated fuel and Greater than Class C (GTCC) waste that was accepted for submittal by the Federal Energy Regulatory Commission on November 7, 2019 (Reference 1) with an effective date of December 1, 2019. The decommissioning cost estimate was previously provided to the NRC via a letter dated December 10, 2018 (Reference 2).

Currently, the Maine Yankee PSDAR provides a schedule and cost estimate for the management of irradiated fuel and GTCC waste and decommissioning of the ISFSI for the time period of 2016 through 2036. This time period will be extended through 2039. The attachment to this letter provides a mark-up of the Maine Yankee PSDAR that establishes the applicable changes regarding the decommissioning schedule and the cost estimate. Maine Yankee will update the Maine Yankee PSDAR to reflect this new schedule and cost estimate in December 2019.

In addition, Maine Yankee is sending a copy of this letter to the State of Maine as required by 10 CFR 50.82(a)(7).

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This letter contains no regulatory commitments. 

Sincerely,

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References: 1) Letter from K. Logan (FERC) to K. Jaffe (Alston & Bird, LLP), Maine Yankee Atomic Power Company Decommissioning Cost Estimate and Sunset Provision, dated November 7, 2019.

2) Letter from C. Pizzella (Maine Yankee) to Document Control Desk (NRC), Three-Year Update to the Independent Spent Fuel Storage Installation Decommissioning Funding Plan, dated December 10, 2018 (OMY-18-030)

Attachment: Mark-up of Revision 4 of the Maine Yankee Atomic Power Station Post-Shutdown Decommissioning Activities Report

cc: D. Lew, NRC Region I Administrator
A. Dimitriadis, Chief, Decommissioning Branch, NRC, Region 1
J. Nguyen, NRC Project Manager
Mr. J. Hyland, State of Maine

Attachment to OMY-19-019

Mark-up of Revision 4 to the Maine Yankee Atomic Power Station Post-Shutdown Decommissioning Activities Report MAINE YANKEE ATOMIC POWER STATION

POST-SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT

REVISION 4-5 – FEBRUARY 2017 DECEMBER 2019

# I. INTRODUCTION

Under the provisions of 10CFR50.82 (a)(4)(i), this Post Shutdown Decommissioning Activities Report (PSDAR) is submitted to describe Maine Yankee's planned decommissioning activities and schedule, provide an estimate of expected costs, and discuss the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities are bounded by the appropriate previously issued environmental impact statements (EIS), specifically NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities" (Reference 1) and Maine Yankee's Site Specific EIS (Reference 2).

The reactor was shut down on December 6, 1996 and has not been operated since. On June 20, 1997 transfer of all fuel assemblies from the reactor vessel into the Spent Fuel Pool for temporary storage was completed. On August 6, 1997 the Maine Yankee Board of Directors voted to permanently cease further operation of the plant. Certification to the Nuclear Regulatory Commission of the permanent cessation of operation and permanent removal of fuel from the reactor vessel, in accordance with 10CFR50.82 (a)(1)(i) & (ii), was filed on August 7, 1997 (Reference 3).

On July 30, 2002 and September 30, 2005 (References 7 and 8), the NRC issued Amendment Nos. 167 and 172, respectively, to Facility Operating License No. DPR-36 for the Maine Yankee Atomic Power Station that resulted in the release of all of the land from the Maine Yankee 10 CFR 50 License, with the exception of the land where the Independent Spent Fuel Storage Installation (ISFSI) is located and an adjacent parcel of land. The total area that remains under the control of the 10 CFR 50 License is approximately 12 acres. Thus, the decommissioning of the Maine Yankee plant is complete. The only remaining decommissioning activities are those associated with the ISFSI and applicable areas.

#### II. OVERVIEW OF THE PSDAR

The goal of Maine Yankee is to decommission the plant and ISFSI safely and in a cost effective manner. Prompt decommissioning satisfies both objectives. As of September 30, 2005, the decommissioning of the plant is complete, with the exception of the areas associated with the ISFSI. The ISFSI will be decommissioned following removal of the spent fuel and GTCC waste from the site. See Section V for a discussion of the cost estimate and Section VI for a review of environmental impacts.

Completion of the DECON schedule is contingent upon three key factors:

- Continued access to one or more federally licensed low level waste disposal sites, and
- Timely funding of the decommissioning activities.
- The removal of spent fuel and GTCC waste from the site by the Department of Energy.

# Site Restoration

Although not within the scope of NRC regulation, Maine Yankee is presently considering restoring the site to a condition comparable to a natural state. This would be done in the following manner:

- Components and materials meeting NRC release criteria may be removed from the site and disposed of as scrap, as salvage, or at regional land-fills.
- Decontaminated structures will be demolished and removed to an approximate depth of three feet below grade.
- The site will be back-filled with clean material, graded, and landscaped.

# IV. SCHEDULE FOR DECOMMISSIONING ACTIVITIES

Maine Yankee intends to pursue decommissioning by prompt dismantlement, with the exception of the Maine Yankee ISFSI and applicable areas. The schedule outlined below reflects this intention. The actual schedule may differ in response to the availability of waste disposal facilities, or unforeseen circumstances.

Period 1 - Preparation / Planning

- Activities include site characterizations, engineering evaluations and planning, development of detailed procedures for dismantlement and disposal, design and procurement of special tools, and site preparation activities. The site characterization activities for Maine Yankee Nuclear Plant are complete.
- Decontamination of some components and piping systems were performed to minimize worker exposure.

Period 2 - Decommissioning Operations and License Termination

- On July 30, 2002 and September 30, 2005 (References 7 and 8), the NRC issued Amendment Nos. 167 and 172, respectively, to Facility Operating License No. DPR-36 for the Maine Yankee Atomic Power Station that resulted in the release of all of the land from the Maine Yankee 10 CFR 50 License, with the exception of the land where ISFSI is located and an adjacent parcel of land. The total area that remains under the control of the 10 CFR 50 License is approximately 12 acres. Thus, the decommissioning of the Maine Yankee plant is complete. The only remaining decommissioning activities are those associated with the ISFSI and applicable areas.
- Final site survey and license termination, as discussed above under the heading "Final Site Survey and Termination of License."

Period 3 - Site Restoration

- Demolition of the ISFSI storage pads, Vertical Concrete Casks, and remaining buildings and other structures will be performed using conventional demolition techniques. Site Areas affected by the dismantling activities will be cleaned and the ISFSI area graded as required to prevent ponding and inhibit the refloating of subsurface materials.
- The Maine Yankee ISFSI is expected to be operated until 20342037, when the spent fuel and GTCC waste is expected to be removed from the site. Using this assumption, the Maine Yankee license will be terminated after the ISFSI is decommissioned. This is scheduled to occur in 20362039.

# V. DECOMISSIONING COST ESTIMATE

The current decommissioning cost estimate –and cost estimate for management of spent fuel and GTCC waste (Docket # ER16-2726-000ER19-2854-000) was filed with the Federal Energy Regulatory Commission (FERC) on September 30, 201623, 2019 and approved-accepted for filing by FERC on November 15, 20167, 2019, with an effective date of December 1, 2019. with no objections from the State agencies that were party to the April 30, 2013 Stipulation and Settlement Agreement including the Connecticut Public Utilities Regulatory Authority, the Connecticut Office of Consumer Counsel, the Maine Public Utilities, and the Attorney General of Massachusetts.

This cost estimate includes the cost associated with the projected ISFSI decommissioning costs and a funding assumption of 15 years of operations costs to manage spent fuel and GTCC waste. A funding mechanism provides that damage awards and settlement proceeds that MYAPCO receives in future phases of its litigation with the Department of Energy (DOE) will be applied to maintain the adequacy of the Nuclear Decommissioning Trust (NDT) to cover 15 years of ISFSI operations (as well as all other projected decommissioning costs). In addition, MYAPCO has the right to resume collection of decommissioning charges from its customers subject to the submittal of a proposal under section 205 of the Federal Power Act, if needed.

MYAPCO has an account within its NDT entitled, "ISFSI Radiological Decom," that segregates the funds for radiological decommissioning of the ISFSI from the larger balance of funds for ongoing management of spent fuel and GTCC waste held in the NDT.

ISFSI operations will continue until DOE removes the spent fuel and GTCC waste, allowing for the decommissioning of the ISFSI. MYAPCO expects that the ISFSI operating costs will continue to cover a number of categories, including but not limited to, regulatory fees, and costs for insurance, labor, security, materials and supplies, miscellaneous expenses, outside services, property taxes, regulatory fees, rentals, leases and utilities.

The total un-escalated cost estimate, including contingency, accepted by FERC for managing the storage of spent fuel and GTCC waste, decommissioning the ISFSI, license termination, and site

restoration for the time period of 2019 through 2039 is approximately \$237.7 million in 2019 dollars. This represents:

Time Period	Activities	Cost Estimate (2019 Dollars)
2019 - 2037	Management of Spent Fuel and GTCC waste	\$210.6 million
2038	Management of Spent Fuel and GTCC waste and ISFSI Decommissioning	\$19.9 million
2039	License Termination and Site Restoration	\$7.2 million

The total cost estimate provided for 2038 in the FERC cost estimate includes the current decommissioning cost estimate that The assumptions of the current decommissioning cost estimate that The assumptions of the current decommissioning cost estimate are is discussed in the Decommissioning Funding Plan submitted to the NRC on December 16, 201510, 2018 in accordance with 10 CFR 72.30(c) (Reference 9). The decommissioning cost estimate incorporates the most recent assumptions with respect to the remaining decommissioning activities and related costs (i.e., those associated with the Maine Yankee ISFSI). As shown in Reference 9, the The total un-escalated cost estimate for decommissioning the ISFSI, including contingency is approximately \$28.125.1 million in 2016 2018 dollars. This includes approximately \$22.1 million for radiological removal and approximately \$6.03.1 million for non-radiological removal in 2016 2018 dollars. An escalation rate of 2.5% would be utilized to establish the current year estimate.

ISFSI operations will continue until DOE removes the spent fuel and GTCC waste, allowing for the decommissioning of the ISFSI. MYAPCO expects that the ISFSI operating costs will continue to cover a number of categories, including costs for insurance, labor, security, materials and supplies, miscellaneous expenses, outside services, property taxes, regulatory fees, rentals and leases and utilities. The un-escalated cost estimate for the management of spent fuel and GTCC waste from 2016 through 2036, including contingency, is \$198.6 million in 2016 dollars.

The total un-escalated cost estimate is approximately \$226.7 million in 2016 dollars for decommissioning the ISFSI and managing the storage of spent fuel and GTCC waste for the time period of 2016 through 2036.

MYAPCO will continue to inform the NRC regarding the status of this funding by complying with the obligations defined in: 1) 10 CFR 50.75(f)(1) and (2) to submit an annual Decommissioning Funding Status Report; 2) 10 CFR 50.82(a)(8)(v) to submit an annual financial assurance status report regarding decommissioning funding; 3) 10 CFR 72.30(c) to resubmit the decommissioning funding plan at intervals not to exceed three years; and 4) 10 CFR 50.82(a)(8)(vii) to submit an annual report regarding the status of the funding for managing irradiated fuel.

#### VI. ENVIRONMENTAL IMPACTS

10 CFR 50.82 (a)(4)(i) describes the Post-Shutdown Decommissioning Activities Report

#### Occupational Radiation Exposure

Maine Yankee has estimated that a total of 9.46 person-Sv (946 person-rem) would be incurred during the decommissioning of Maine Yankee, with the exception of those associated with the decommissioning of the ISFSI. This total includes the exposure from decontamination and dismantlement activities and the exposure during transportation of the low-level wastes. Given the low levels of activation expected on the Vertical Concrete Casks and the ISFSI storage pads, the total radiation exposure for decommissioning the ISFSI is expected to be insignificant.

NUREG-0586 [Reference 1], Table 4.3-2, estimates a total dose of 12.15 person-Sv (1215 person-rem) for the DECON alternative for the reference plant. While the Maine Yankee decommissioning will delay the decontamination and dismantlement of the ISFSI and applicable areas until the DOE takes possession of and removes the spent fuel and GTCC waste, the plan closely resembles the DECON alternative of NUREG-0586. The 9.46 person-Sv (946 person rem) total dose for the Maine Yankee decommissioning is below the 12.15 person-Sv (1215 person-rem) total dose that was found acceptable for decommissioning the reference PWR in the "Final Generic Environmental Impact Statement on decommissioning of nuclear facilities," NUREG-0586 [Reference-3].

#### Low-Level Radioactive Waste Burial Volume

Maine Yankee estimated the low-level waste burial volume for immediate dismantlement as 209,000 cubic feet (or 5,920 cubic meters). The GEIS estimates the volume as 18,340 cubic meters. The Maine Yankee estimate assumed the use of present-day volume reduction techniques not credited in the GEIS. For high level waste requiring deep geological burial (greater than class C waste), Maine Yankee estimates 227 cubic feet (or 6.5 cubic meters). The GEIS estimates the volume of high–level waste as 88 cubic meters.

A significant portion of the LLRW that was shipped offsite contained very low levels of radioactivity (DOT exempt) and was created as a result of remediation activities to satisfy the State of Maine radiological release criteria or to more efficiently decommission the facility.

The decommissioning cost estimate assumes that all of the material associated with the Vertical Concrete Casks and the ISFSI storage pads will be shipped offsite as LLRW. This assumption was made to maximize the cost of disposal of radioactive materials in the decommissioning cost estimate. Maine Yankee does not anticipate that this material would be required to be disposed of to satisfy the NRC's 25 mRem/year release criteria.

These estimates thus support the conclusion that the previously issued environmental statements are bounding, since the disposal of waste will require fewer resources (i.e., less waste disposal facility area) than considered in the GEIS.

#### Non-Radiological Environmental Impacts

The non-radiological environmental impacts from the Maine Yankee decommissioning are temporary and not significant. The largest occupational risk associated with the decommissioning is the risk of industrial accidents. This will be addressed by adherence to work controls during

#### Conclusion

Based on the above, Maine Yankee concludes that the environmental impacts associated with the site-specific decommissioning activities (including the decommissioning of the ISFSI) will be bounded by appropriate previously issued environmental impact statements. Should unforeseen circumstances arise that may challenge a bounding environmental impact, Maine Yankee will seek prior NRC review and approval before proceeding.

#### VII. REFERENCES

- 1. NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," dated August, 1988
- 2. "Final Environmental Statement related to operation of Maine Yankee Atomic Power Station," dated July 1972
- 3. MN-97-89, MY Letter to NRC, "Certifications of Permanent Cessation of Power Operation and Permanent Removal of Fuel From the Reactor," dated 8/7/97
- 4. Maine Yankee Atomic Power Station Environmental Report, Supplement One, dated April 19, 1974 (MY APC to AEC)
- 5. NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination"
- 6. AIF/NESP-036, "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates
- 7. Letter from (NRC) to (MYAPCO), Issuance of Amendment No. 167 to Facility Operating License No. DPR-36, dated July 30, 2002
- Letter from D. Gillen (NRC) to J. Niles (MYAPCO), Issuance of Amendment No. 172 to Facility Operating License No. DPR-36 – Maine Yankee Atomic Power Station (TAC No. M8000), dated September 30, 2005
- Letter from C. Pizzella (MYAPCO) to U.S. Nuclear Regulatory Commission, OMY-15-053OMY-18-030, "Three-Year Update to the Independent Spent Fuel Storage Installation Decommissioning Funding Plan," dated December 16, 201510, 2018
- Letter from Alston & Bird LLP to Federal Energy Regulatory Commission, "Maine Yankee Atomic Power Company Docket No. ER16ER19-\_\_\_," dated September 3023, 20162019