

# YANKEE ATOMIC ELECTRIC COMPANY

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November 24, 2003

BYR 2003-080

P.C. No. 269

United States Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

References: (a) YNPS Possession Only License No. DPR-3 (Docket No. 50-29)

Subject: Submittal of Yankee Nuclear Power Station's License Termination Plan and Proposed Revision to Possession Only License

In accordance with 10CFR50.82(a)(9), Yankee Atomic Electric Company (YAEC) hereby submits the License Termination Plan for the Yankee Nuclear Power Station (YNPS). This License Termination Plan demonstrates that the remaining decommissioning activities will be performed in accordance with the requirements of Title 10 to the Code of Federal Regulations, will not be inimical to the common defense and security or to the health and safety of the public, and will not have a significant effect on the quality of the environment.

Accompanying the License Termination Plan, YAEC submits, pursuant to 10 CFR 50.90, an application to amend the YNPS Possession Only License (DPR-3). This proposed license amendment adds a license condition that provides criteria to determine the need for NRC approval of changes to the approved License Termination Plan.

Attachment 1 provides the background and reason for the proposed change, a description of the proposed change, a no significant hazards determination, and an environmental impact consideration determination. Attachment 2 provides a copy of the affected page to Facility Operating License No. DPR-3 with changes annotated. Attachment 3 provides the Yankee Nuclear Power Station License Termination Plan for NRC review and approval. In accordance with 10CFR50.82(a)(9)(i), the Yankee Nuclear Power Station License Termination Plan is being submitted as a supplement to the FSAR, and will be maintained accordingly.

This change does not involve a significant increase in the probability or consequences of an accident previously evaluated, create the possibility of a new or different kind of accident from any accident previously evaluated, or involve a significant reduction in the margin of safety.

The proposed amendment request has received an Independent Safety Review as well as a review by the Independent Review and Audit Committee and has been determined to be appropriate.

Draft copies of the Yankee Nuclear Power Station License Termination Plan have been provided to the Environmental Protection Agency, the Massachusetts Department of Environmental'

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Protection, the Massachusetts Department of Public Health, the Community Advisory Board, and the Franklin County Regional Council of Governments.

In accordance with 10CFR 50.91(b), YAEC is also providing the State of Massachusetts Department of Public Health with a copy of the proposed amendment request.

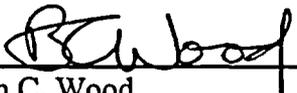
The proposed change has been reviewed in accordance with 10 CFR 50.92 and has been determined to not constitute a Significant Hazards Consideration (SHC). In addition, the proposed change has been reviewed in consideration of 10 CFR 51.22; and it has been determined that the proposed change meets the criteria for a categorical exclusion from requiring an environmental impact statement.

Note that the Historical Site Assessment (HSA) will be submitted under separate cover. The HSA provides the detailed historical and survey information that is discussed and summarized in Chapter 2 of the LTP. Following our April 15, 2003 meeting discussions on dose modeling, RESRAD dose model computer runs<sup>1</sup> in support of development of the site derived concentration guideline levels (DCGLs) for soil were submitted for preliminary review. Subsequent discussions with NRC Staff reviewers have suggested substantive modifications to these calculations. These modifications are in progress and, as previously discussed with the Staff, Chapter 6 of the LTP will be revised with the final dose modeling computer results and input parameters. Chapter 6 of the LTP will be submitted once our ongoing discussions and NRC review of these calculations have been completed. We also expect to submit the RESRAD BUILD dose modeling runs by the end of the year. Modeling for volumetric concrete DCGLs has also been initiated and will be submitted in early 2004.

Based on our discussions with the NRC staff, our current schedule for completion of the YNPS decommissioning, and conduct of final status surveys, we request that the LTP be approved by December 1, 2004. If the NRC staff should have any questions regarding this submittal, please contact Mr. G. P. van Noordennen, Regulatory Affairs Manager, at (860) 267-3938.

Sincerely,

YANKEE ATOMIC ELECTRIC COMPANY

  
\_\_\_\_\_  
Brian C. Wood  
Site Manager

Attachments

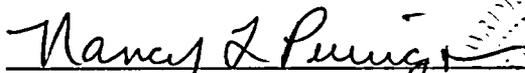
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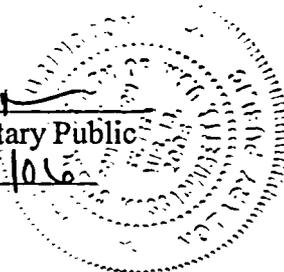
<sup>1</sup> YAEC Letter to USNRC, "Calculations for License Termination Plan (LTP) Development," dated June 20, 2003, BYR 2003-052.

cc: H.J. Miller, NRC Region I Administrator  
J.L. Hickman, NRC Senior Project Manager, NMSS  
R.R. Bellamy, Chief, Decommissioning and Laboratory Branch, NRC Region I  
J.T. Greeves, Director, NRC Division of Waste Management  
M. Rosenstein, Associate Director, Office of Ecosystems Protection,  
US EPA Region I  
D. Howland, Regional Engineer, Western Region, MA DEP  
R. Walker, Director, MA DPH  
J. Mucherheide, State Liaison Officer, MEMA

STATE OF MASSACHUSETTS  
FRANKLIN COUNTY

Then personally appeared before me, Brian C. Wood, who, duly sworn, did state that he is Yankee Nuclear Power Station Site Manager, that he is duly authorized to execute and file the foregoing document in the name and on behalf of Yankee Atomic Electric Company, and that the statements therein are true to the best of his knowledge and belief.

  
Nancy Purington Notary Public  
My Commission Expires 8/18/06



## **Attachment 1**

### **Background and Reason for Change**

On February 27, 1992, Yankee Atomic Electric Company (YAEC) notified the NRC of the permanent cessation of operations of the Yankee Nuclear Power Station (YNPS). All fuel assemblies were removed from the reactor vessel and placed in the Spent Fuel Pit during the October 1991 outage. After notifying the NRC, YAEC initiated decommissioning planning and other plant closure activities. On August 5, 1992, the NRC amended the YNPS Facility Operating License (DPR-3) to possession only status. This amendment combined with other amendments and program changes formed the basis of the Decommissioning Plan. The Decommissioning Plan, which was approved on February 14, 1995, later became part of the YNPS Final Safety Analysis Report (FSAR) and described all remaining decommissioning activities, but in considerably more detail than that required in a Post Shutdown Decommissioning Activities Report (PSDAR). In June 2001, pursuant to 10CFR50.82(a)(4)(i) and Regulatory Guide 1.185, YAEC elected to relocate pertinent information to a PSDAR that is contained within the YNPS FSAR.

In May 1997, Yankee submitted a License Termination Plan (LTP) for YNPS for NRC approval, pursuant to 10CFR50.82(a)(9). The YNPS LTP employed a survey methodology based upon the "Manual for Conducting Radiological Surveys in Support of License Termination," also referred to as the NUREG/CR-5849 methodology. Subsequently the NRC, jointly with the DOT, DOE, and EPA, approved an alternate survey methodology documented in MARSSIM ("Multi-Agency Radiation Survey and Site Investigation Manual" or NUREG-1575). In May 1999, Yankee advised the NRC that it intended to shift from the survey methodology in NUREG/CR-5849 to the MARSSIM methodology, and withdrew its previously submitted application. The current LTP, submitted herein, is written to reflect the MARSSIM methodology, as well as regulatory guidance made available since the previous LTP submittal.

Section 50.82(a)(9) to Title 10 of the Code of Federal Regulations requires that a licensee must submit an application for the termination of the site's Part 50 license. The application for termination of the License must be accompanied or preceded by a License Termination Plan to be submitted for NRC approval. The License Termination Plan is to be a supplement to the plant's FSAR or an equivalent document and is required to be submitted at least two years before the date of License termination. The proposed License change provided in this attachment is submitted to satisfy the requirements of 10 CFR 50.82(a)(10) for approval of the License Termination Plan by License amendment. YAEC is not, at this time, submitting its application for termination of License.

### **Description of Change**

YAEC proposes to amend its Possession Only License to include a provision to allow YAEC to make changes to the approved License Termination Plan without prior NRC approval, similar to the flexibility afforded to licensees in making changes to the facilities or procedures, as described in the FSAR.

The change method includes four change criteria elements. Thus, YAEC proposes to amend its License to incorporate a new license condition, License Condition C.11 as follows:

*(11) License Termination Plan (LTP)*

*The License Termination Plan dated November 2003 is approved by NRC License Amendment No. \_\_\_\_\_.*

*In addition to those criteria specified in 10CFR50.59 and 10CFR50.82(a)(6), a change to the LTP requires NRC approval prior to being implemented, if the change:*

- (a) Increases the probability of making a Type I decision error above the level stated in the LTP;*
- (b) Increases the radionuclide-specific derived concentration guideline levels (DCGL) and related minimum detectable concentrations;*
- (c) Increases the radioactivity level, relative to the applicable DCGL, at which investigation occurs;*
- (d) Changes the statistical test applied to one other than the Sign Test or Wilcoxon Rank Sum Test.*

*Re-classification of survey areas from a less to a more restrictive classification (e.g., from a Class 3 to a Class 2 area) may be done without prior NRC notification; however, re-classification to a less restrictive classification (e.g., Class 1 to a Class 2 area) will require NRC notification at least 14 days prior to implementation.*

**Significant Hazards Considerations**

YAEC has reviewed the proposed change to the YNPS Possession Only License in accordance with the requirements of 10 CFR 50.92, "Issuance of Amendment," and concluded that the change does not involve a significant hazards consideration. The proposed change does not involve an SHC because the change would not:

- 1. Involve a significant increase in the probability or consequences of an accident previously evaluated.*

Currently, the bounding airborne radioactivity event given in the YNPS FSAR is the materials handling event (FSAR Section 403.5). This event considered the non-mechanistic release of the contents of the dominant plant component that could have caused the highest offsite dose as a result of the release of airborne radioactivity during handling. The dominant component was the feed and bleed heat exchanger which has since been removed from the site. The bounding analysis resulted in an offsite dose at the Exclusion Area Boundary of about 0.320 rem,

significantly less than the EPA Protective Action Guidelines. Other airborne particulate radwaste or radioactive materials accidents considered in the FSAR but bounded by the materials handling event are as follows:

- fire in a sea-land container containing combustible radioactive material,
- dismantlement activities (i.e., cutting, segmentation) during decommissioning,
- a gas bottle explosion inside containment,
- an explosion of a propane tank stored onsite.

All spent fuel is located at the ISFSI and is stored within fifteen NAC Multi-Purpose Canisters and associated vertical concrete casks. A sixteenth cask contains Greater Than Class C material. The NAC-MPC FSAR addresses the various off-normal and accident events which were postulated in support of the licensing and certification of the system. In each case, there were no radiological consequences as a result of a postulated event.

The requested license amendment is consistent with plant activities described in the PSDAR and the YNPS FSAR. Accordingly, no systems, structures, or components that could initiate the previously evaluated accidents or are required to mitigate these accidents are adversely affected by this proposed change. Therefore, the proposed change does not involve an increase in the probability or consequences of any previously evaluated accident.

2. *Create the possibility of a new or different kind of accident from any accident previously evaluated.*

Accident analyses related to decommissioning activities are addressed in the FSAR. The requested license amendment is consistent with the plant activities described in the YNPS FSAR and the PSDAR. The proposed change does not affect plant systems, structures, or components in a way not previously evaluated. The changes do not affect any of the parameters or conditions that could contribute to the initiation of an accident. No new accident scenarios are created nor are any new failure mechanisms created by this activity. Therefore, the proposed activity does not create the possibility of a new or different kind of accident than those previously evaluated.

3. *Involve a significant reduction in a margin of safety.*

The LTP is a plan for demonstrating compliance with the radiological criteria for license termination as provided in 10CFR20.1402. The margin of safety defined in the statements of consideration for the final rule on the Radiological Criteria for License Termination is described as the margin between the 100 mrem/yr public dose limit established in 10CFR20.1301 for licensed operation and the 25 mrem/yr dose limit to the average member of the critical group at a site considered acceptable for unrestricted use (one of the criteria of 10CFR20.1402). This margin of safety accounts for the potential effect of multiple sources of radiation exposure to the critical group. Since the License Termination Plan was designed to comply with the radiological criteria for license termination for unrestricted use, the LTP supports this margin of safety.

In addition, the LTP provides the methodologies and criteria that will be used to perform remediation activities of residual radioactivity to demonstrate compliance with the ALARA criterion of 10CFR20.1402.

Also, as previously discussed, the bounding accident for decommissioning is the materials handling event. Since the bounding decommissioning accident results in more airborne radioactivity than can be released from other decommissioning events, the margin of safety associated with the consequences of decommissioning accidents is not reduced by this activity. Therefore, the proposed change does not involve a significant reduction in the margin of safety.

Consequently, the YNPS License Termination Plan does not involve a significant hazards consideration as defined in 10CFR50.92.

### **Environmental Impact Considerations**

This amendment request satisfies the criteria specified in 10CFR51.22(c)(9) for a categorical exclusion from the requirements to perform an environmental assessment or to prepare an environmental impact statement. The criteria of 10CFR51.22(c)(9) are addressed as follows:

(i) *The amendment involves no significant hazards consideration.*

As discussed in the "Significant Hazards Consideration" Section above, this proposed license amendment does not involve a significant hazards consideration.

(ii) *There is no significant change in the types or significant increase in the amounts of effluents that may be released offsite.*

The proposed license amendment is consistent with the plant activities described in the YNPS Possession Only License. The environmental impacts associated with doses to members of the public related to decommissioning activities and site release for unrestricted use were considered in NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," (FGEIS), Supplement 1 to the FGEIS, and NUREG-1496, "Generic Environmental Impact Statement in Support of the Rulemaking on Radiological Criteria for License Termination." In conjunction with the preparation of the YNPS Decommissioning Plan, YAEC performed an environmental review of site-specific decommissioning activities. A Decommissioning Environmental Report, dated December 1993, was prepared and concluded that the environmental impacts associated with YNPS site-specific decommissioning activities would be bounded by previously issued environmental impact statements issued for the YNPS Possession Only License or issued generically by the NRC. The release of effluents from the plant will continue to be controlled by plant procedures throughout the decommissioning, and the activities at the YNPS will continue to be performed in accordance with the YNPS Offsite Dose Calculation Manual.

*(iii) There is no significant increase in individual or cumulative occupational radiation exposure.*

YAEC performed an environmental review of site-specific decommissioning activities. Information from that environmental review was included in a YAEC Decommissioning Environmental Report that was prepared and submitted in conjunction with the Decommissioning Plan. By reference, that YNPS Decommissioning Environmental Report is included in the LTP.

As discussed in Chapter 8 of the LTP, the total occupational radiation exposure (excluding public and transportation dose) impact for the proposed decommissioning activities (including completed decontamination of the Reactor Coolant System) has been estimated in the PSDAR at approximately 580 person-rem, which is less than the 1,115 person-rem exposure limits for a PWR from NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities."

As discussed in Chapter 8 of the LTP, the total occupational radiation exposure due to transportation of radioactive waste has been estimated in the PSDAR at approximately 7 person-rem, which is less than the 100 person-rem exposure limits of the FGEIS. The estimated radiation exposure to the general public due to transportation is less than 2 person-rem, which is less than the corresponding FGEIS value of 21 person-rem.

The LTP describes the process and modeling to demonstrate compliance with the radiological criteria of 10CFR20.1402 for unrestricted future use of the YNPS site. These criteria are: (a) residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem/year and (b) residual radioactivity levels are consistent with ALARA (as low as reasonably achievable) criteria defined by the LTP.

The LTP includes the requirement that, prior to the demolition of each defined building, the building must meet the unrestricted release criteria of 10CFR20.1402. Consequently, the resulting radiation exposures from either the demolition of the building and/or the use of the resulting debris will conform to the requirements of 10CFR20.1402.

The foregoing discussions demonstrate that there is no significant increase in individual or cumulative occupational radiation exposure.

Thus, this activity satisfies the criteria provided in 10CFR51.22(c)(9) for categorical exclusion from the requirements of an environmental impact statement or environmental assessment.

**Attachment 2**  
**New License Condition**

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- (5) Deleted by Amendment No. 147.
- (6) Deleted by Amendment No. 148.
- (7) Deleted by Amendment No. 148.
- (8) Deleted by Amendment No. 148.
- (9) The movement of special nuclear material used as reactor fuel into the Vapor Container (containment) is prohibited.
- (10) Deleted by Amendment No. 152.

**(11) License Termination Plan (LTP)**

The License Termination Plan dated November 2003 is approved by NRC License Amendment No. \_\_\_\_\_

In addition to those criteria specified in 10CFR50.59, 10CFR50.82(a)(6), and 10CFR50.82(a)(7), changes to the approved License Termination Plan shall require NRC approval prior to being implemented, if the change:

- (a) Increases the probability of making a Type I decision error above the level stated in the LTP;
- (b) Increases the radionuclide-specific derived concentration guideline levels (DCGL) and related minimum detectable concentrations;
- (c) Increases the radioactivity level, relative to the applicable DCGL, at which investigation occurs;
- (d) Changes the statistical test applied to one other than the Sign Test or Wilcoxon Rank Sum Test.

Re-classification of survey areas from a less to a more restrictive classification (e.g., from a Class 3 to a Class 2 area) may be done without prior NRC notification; however, re-classification to a less restrictive classification (e.g., Class 1 to a Class 2 area) will require NRC notification at least 14 days prior to implementation.

Amendment No. \_\_\_\_\_

**Attachment 3**  
**YNPS License Termination Plan**