CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT
362 INJUN HOLLOW ROAD • EAST HAMPTON, CT 06424-3099

July 7, 2000
CY-00-077
Re: 10CFR50.90

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Haddam Neck Plant
Submittal of License Termination Plan and Proposed Revision To Operating License

In accordance with 10CFR50.82(a)(9), Connecticut Yankee Atomic Power Company (CYAPCO) hereby submits the License Termination Plan for the Haddam Neck Plant. 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, CYAPCO submits, pursuant to 10 CFR 50.90, an application to amend the Haddam Neck Plant license. This proposed license amendment adds a license provision that provides criteria by which the need for NRC approval of changes to the approved License Termination Plan is determined.

Attachment 1 provides the background and reason for the proposed change, a description of the proposed change, a no significant hazards consideration determination, and an environmental impact consideration determination. Attachment 2 provides a copy of the affected page to Facility Operating License No. DPR-61 with changes annotated. Attachment 3 provides the Haddam Neck Plant License Termination Plan for NRC review and approval. In accordance with 10CFR50.82(a)(9)(i), the Haddam Neck Plant License Termination Plan is being submitted as a supplement to the UFSAR, and is being 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.

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The Plant Operations Review Committee and the Nuclear Safety Assessment Board have reviewed the proposed amendment request.

Additionally, as appropriate, the Haddam Neck Plant License Termination Plan incorporates preliminary comments from the Environmental Protection Agency, the Connecticut Department of Environmental Protection, the Connecticut Department of Public Health, and the Community Decommissioning Advisory Committee.

In accordance with 10CFR 50.91(b), CYAPCO is providing the State of Connecticut 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.

If the NRC staff should have any questions regarding this submittal, please contact Mr. G. P. van Noordennen at (860) 267-3938.

Sincerely,

CONNECTICUT YANKEE ATOMIC POWER COMPANY

K. J. Heider
Vice President -Operations and Decommissioning

Attachments

CC: H.J. Miller, NRC Region I Administrator
L.L. Wheeler, NRC Project Manager, Haddam Neck Plant
R.R. Bellamy, Chief, Decommissioning and Laboratory Branch, NRC Region I
J.T. Greeves, Director, NRC Division of Waste Management
C.L. Pittiglio, NRC NMSS Project Manager, Decommissioning
M. Rosenstein, Associate Director, Office of Ecosystems Protection, US EPA Region I
E.L. Wilds, Jr., Director, CT DEP Monitoring and Radiation Division

Subscribed and sworn to before me

this 7th day of July, 2000

Gerard P. van Noordennen

Date Commission Expires: December 31, 2002

Re: 10CFR50.90
CY-00-077

Attachment 1

Background and Reason for Change

On December 5, 1996, Connecticut Yankee Atomic Power Company (CYAPCO) notified the NRC of the permanent cessation of operations of its Haddam Neck Plant (HNP) and the permanent removal of all fuel assemblies from the reactor vessel and their emplacement in the Spent Fuel Pool. Following the cessation of operations, CYAPCO has been preparing to decommission the HNP. The Post Shutdown Decommissioning Activities Report was submitted, in accordance with 10CFR50.82(a)(4), on August 22, 1997. On January 26, 1998, CYAPCO transmitted an Updated Final Safety Analysis Report (UFSAR) to reflect the plant's shutdown status, and on June 30, 1998, the NRC amended the HNP Facility Operating license to reflect the plant's permanent shutdown status.

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 UFSAR 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. CYAPCO is not, at this time, submitting its application for termination of license.

Description of Change

CYAPCO proposes to amend the license to include a provision to allow CYAPCO 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 UFSAR.

The change method includes four change criteria elements. Thus, CYAPCO proposes to amend its license to incorporate a new license condition, License Condition C.7 as follows:

"(7) License Termination Plan (LTP)

The License Termination Plan dated July ___ , 2000 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 radionuclide-specific derived concentration guideline levels (as discussed in Section 6 of the LTP) or area factors;

(b) Increases the probability of making a Type I decision error above the level stated in the LTP;

(c) Increases the investigation level thresholds for a given survey unit classification; or

(d) Changes the classification of a survey unit from a more restrictive classification to a less restrictive classification."

No Significant Hazards Consideration Determination

CYAPCO has reviewed the proposed change to the Operating 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 (SHC). 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 Haddam Neck Plant UFSAR is the resin container accident. Whereas previously doses associated with gaseous waste system accidents would have bounded those associated with solid waste system failures, the small amount of radioactivity contained within the gaseous radioactive waste system with the plant in the permanently defueled condition results in this system's failure no longer being bounding. The curie content of the resin container was based on the actual radioactivity inventory collected on the resin from the reactor coolant system decontamination. This corresponded to approximately 90% of the NRC Class C burial limits. Consistent with NUREG-0782 for a resin fire, one percent of the activity of the container was assumed to be released to the environment. The 1% bounds the potential airborne release fraction from various resin incidents, such as an exothermic reaction during dewatering, dropping of a high integrity container, or a resin spill. Other airborne particulate radwaste or radioactive material accidents considered in the UFSAR but bounded by the resin container fire are as follows:

- a fire in the radwaste storage facility,
- a drop of a component (e.g., steam generator, reactor vessel, or heat exchanger) being removed from the site,

- a van of radioactive waste materials consumed by a fire while stored in the yard area on-site,
- a radiological HEPA filter rupture,
- segmentation of components or structures during loss of local engineering controls,
- an oxyacetylene tank explosion, or
- an explosion of liquid propane gas leaked from a front-end loader.

The UFSAR also discusses a fuel handling accident in the fuel building, involving the drop of a spent fuel assembly onto the fuel racks. The postulated drop assumes the rupture of all fuel rods in the associated assembly. The probability or consequences of this accident would not be increased during any future fuel transfer operations in the spent fuel pool related to decommissioning. Transfer of the spent fuel to canisters for dry cask storage will involve additional restrictions contained in the cask certificate of compliance in order to maintain decommissioning activities within the assumption and consequences of the fuel handling accident.

The requested license amendment is consistent with plant activities described in the Post Shutdown Decommissioning Activities Report (PSDAR) and the HNP Decommissioning UFSAR. Accordingly, no systems, structures, or components that could initiate the previously evaluated accidents or are required to mitigate these accident 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 UFSAR. The requested license amendment is consistent with the plant activities described in the HNP Decommissioning UFSAR and the PSDAR. Thus, the proposed change does not affect plant systems, structures, or components in a way not previously evaluated. No new failure mechanisms will be created by this activity, and 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 License Termination Plan (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.

Additionally, the LTP was designed with recognition that (a) the methods in MARSSIM (Multi-Agency Radiation Survey and Site Investigation Manual) and (b) the building surface contamination levels are not directly applicable to use with complex nonstructural components. Therefore, the LTP states that nonstructural components remaining in buildings (e.g., pumps, heat exchangers, etc.) will be evaluated against the criteria of RG 1.86 to determine if the components can be released for unrestricted use. The LTP also states that materials, surveyed and evaluated as a part of normal decommissioning activities and prior to implementation of the final status survey, will be surveyed for release using current site procedures to demonstrate compliance with the "no detectable" criteria. Such materials that do not pass these criteria will be controlled as contaminated.

Also, as previously discussed, the bounding accident for decommissioning is the resin container accident. 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.

Thus, the proposed change does not involve a significant reduction in the margin of safety.

Conclusion

Thus, the HNP 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 "No Significant Hazards" Section above, this activity 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 HNP Operating 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, "Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," and NUREG-1496, "Generic Environmental Impact Statement in Support of the Rulemaking on Radiological Criteria for License Termination." In support of the HNP PSDAR, CYAPCO performed an environmental review of site-specific decommissioning activities. The PSDAR concluded that the environmental impacts associated with HNP site-specific decommissioning activities will be bounded by previously issued environmental impact statements issued for the HNP Operating 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 HNP will continue to be performed in accordance with the HNP Radiological Effluent Monitoring and Offsite Dose Calculation Manual (REMODCM). In addition, because of the decay of short-lived radionuclides, the number of nuclides which could potentially be released in effluents has decreased.

Additionally, the LTP was designed with recognition that (a) the methods in MARSSIM (Multi-Agency Radiation Survey and Site Investigation Manual) and (b) the building surface contamination levels are not directly applicable to use with complex nonstructural components. Therefore, the LTP states that nonstructural components remaining in buildings (e.g., pumps, heat exchangers, etc.) will be evaluated against the criteria of RG 1.86 to determine if the components can be released for unrestricted use. The LTP also states that materials, surveyed and evaluated as a part of normal decommissioning activities and prior to implementation of the final status survey, will be surveyed for release using current site procedures to demonstrate compliance with the "no detectable" criteria. Such materials that do not meet these criteria will be controlled as contaminated.

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

In support of the HNP PSDAR, CYAPCO performed an environmental review of site-specific decommissioning activities. Information from that environmental review was included in a HNP Supplement to the Environmental Report that was prepared and submitted in conjunction with the PSDAR. By reference, that HNP Supplement to the Environmental Report is included in the License Termination Plan (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 935 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," (FGEIS) for a PWR. This estimate is primarily based on January 1997 plant dose rate surveys with no credit for (1) decay in place of radionuclides (such as Co-60), (2) sequenced removal of higher dose components first, (3) aggressive ALARA program initiatives, (4) increased worker efficiency with experience, or (5) smaller scale decontamination activities.

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 61 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 approximately 11 person-rem, which is less than the corresponding FGEIS value of 21 person-rem.

For each defined survey area and building, the LTP also describes the process and modeling to demonstrate compliance with the radiological criteria of 10CFR20.1402 for unrestricted future use of the HNP 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.

Conclusion

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

(5) Physical Protection

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Haddam Neck Plant Physical Security Plan," with revisions submitted through January 24, 1989; "Haddam Neck Plant Guard Training and Qualification Plan," with revisions submitted through January 27, 1983; and "Haddam Neck Plant Safeguards Contingency Plan," with revisions submitted through December 9, 1983. Changes made in accordance with 10 CFR 73.55 shall be implemented in accordance with the schedule set forth therein.

(6) Fuel Movement

The movement of special nuclear material used as reactor fuel into the containment is prohibited.

(7) License Termination Plan (LTP)

The License Termination Plan dated July ___ , 2000 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 radionuclide-specific derived concentration guideline levels (as discussed in Section 6 of the LTP) or area factors;

(b) Increases the probability of making a Type I decision error above the level stated in the LTP;

(c) Increases the investigation level thresholds for a given survey unit classification; or

(d) Changes the classification of a survey unit from a more restrictive classification to a less restrictive classification.

D. This license is effective as of the date of issuance and authorizes ownership and possession of this facility until the Commission notifies the licensee in writing that the license is terminated. The licensee shall:

1. Take actions necessary to decommission and decontaminate this facility and continue to maintain this facility, including, where applicable, the storage, control and maintenance of the spent fuel, in a safe condition; and

Attachment 3