

# NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY  
WESTERN MASSACHUSETTS ELECTRIC COMPANY  
HOLYOKE WATER POWER COMPANY  
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February 16, 1990

Docket No. 50-213  
B13450

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

Gentlemen:

Haddam Neck Plant  
Reactor Vessel Material Surveillance Program  
Proposed Changes to Technical Specifications

Pursuant to 10CFR50.90, Connecticut Yankee Atomic Power Company (CYAPCO) hereby proposes to amend Operating License DPR-61 by incorporating the attached changes into the Technical Specifications for the Haddam Neck Plant. These proposed changes are being submitted to support the reactor vessel thermal shield removal project being conducted during the current (Cycle 15) refueling outage. The revised pages are provided in Attachment No. 1. These proposed changes are being provided in Standard Technical Specification (STS) format to support the conversion of the Haddam Neck Plant Technical Specifications to STS format. "Change bars" in the margin indicate changes related to this request on STS format pages previously submitted to the NRC Staff.

Background

In a meeting with the NRC Staff on December 21, 1989, CYAPCO provided information on the plan to remove the thermal shield from the reactor vessel at the Haddam Neck Plant during the current (Cycle 15) refueling outage. CYAPCO is hereby providing as Attachment No. 2 to this letter, information describing the process of removing the thermal shield at the Haddam Neck Plant. This report provides details about the decision to remove the thermal shield, the cutting technique, systems of debris control, and analyses that are being performed to support this project. This report is intended to outline what analyses are planned, underway or already complete. When completed, the results of these analyses will be submitted to the NRC Staff. Attachment No. 3 contains a detailed discussion of programs to control debris and clean up the reactor coolant system (RCS) after the work is complete.

CYAPCO has concluded, on a preliminary basis, that there are no unreviewed safety questions associated with this project. On that basis alone, CYAPCO believes we could perform the thermal shield removal without "prior commission approval" in accordance with 10CFR50.59. However, the reactor vessel material surveillance capsules are attached to the thermal shield and therefore will be removed with the thermal shield. CYAPCO has decided not to reinsert these capsules into the vessel and secure them by some alternate mechanism and

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instead will institute an alternate vessel material surveillance program. As such, the Haddam Neck Plant Technical Specifications need to be modified to reflect this alternate program. Therefore, CYAPCO is submitting the proposed changes to the technical specifications contained herein, in accordance with 10CFR50.90.

#### Description of Proposed Changes

The proposed changes would relocate Table 4.4-5 from the technical specifications to the Haddam Neck Plant Updated Final Safety Analysis Report (UFSAR). Table 4.4-5, "Reactor Vessel Material Surveillance Program--Withdrawal Schedule" provides the schedule for removal of the reactor vessel material specimen irradiation capsules. It also provides the vessel location, lead factor, and withdrawal time in effective full power years (EFPY) for each remaining capsule. Surveillance Requirement 4.4.9.1.2 states that the capsules should be removed and examined at specific time periods. Overall, these specifications are intended to meet the requirements of 10CFR50 Appendix H, "Reactor Vessel Material Surveillance Program Requirements," and to establish a basis for the Haddam Neck Plant heatup and cooldown curves in Figures 3.4-3, 4, and 5 of the technical specifications.

Since the specimen capsules will be removed with the thermal shield, and not reinstalled in the reactor vessel, the technical specifications as currently written could not be fulfilled. As such, the proposed changes would remove the specific withdrawal schedule table, Table 4.4-5, and the direct reference to that Table in Surveillance Requirement 4.4.9.1.2. The technical specifications will continue to regulate the surveillance program and its impacts on the pressure/temperature curves. Surveillance Requirement 4.4.9.1.2 will continue to specify that the requirements of 10CFR50, Appendix H, are to be implemented. Appendix H references ASTM standard E-185 which covers procedures for monitoring the radiation-induced materials in the beltline of light-water cooled nuclear power reactor vessels. It provides a withdrawal schedule which is based upon the predicted transition temperature shift at the vessel inside surface. Relocation of this schedule to the UFSAR will not affect the reactor vessel material surveillance program.

The other change in this package involves Figures 3.4-3, 4, and 5. Due to the removal of the thermal shield, the neutron flux at the reactor vessel wall will increase. CYAPCO has performed a conservative calculation that demonstrates that the heatup and cooldown curves (Figures 3.4-3, 4, and 5) are valid up to 18 EFPYs, as opposed to the previous value of 22 EFPYs. Figures 3.4-3, 4, and 5 are being changed to reflect their revised applicability. The revised figures will be valid through at least 1992.

Specifically, the proposed technical specification changes are as follows:

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|---|--------------|---------------|--|
| o | SR 4.4.9.1.2 | Page 3/4 4-40 | Delete the reference<br>to Table 4.4-5 |
|---|--------------|---------------|--|



o	Figure 3.4-3	Page 3/4 4-41	Change 22 to 18 EFPYs
o	Figure 3.4-4	Page 3/4 4-42	Change 22 to 18 EFPYs
o	Figure 3.4-5	Page 3/4 4-43	Change 22 to 18 EFPYs
o	Table 4.4-5	Page 3/4 4-44	Delete
o	Bases 3/4.4.9	Page 3/4 4-9	Change 22 to 18 EFPYs
o	Bases 3/4.4.9	Page B3/4 4-12	Delete the reference to Table 4.4-5.

#### Alternate Appendix H Program

With the removal of the thermal shield from the Haddam Neck Plant reactor vessel, the material surveillance capsules will be removed and not returned. Since CYAPCO is required to maintain a material surveillance program in accordance with 10CFR50 Appendix H, as reflected by the technical specifications, CYAPCO has outlined an alternate program that we believe satisfies the regulations and has been implemented by other licensees.

The alternate program will incorporate two separate but related activities, 1) an ex-vessel dosimetry program, and 2) a program to irradiate the Haddam Neck Plant's critical material to a fluence equivalent to 48 EFPYs. This assures the ability to operate the plant through the end of life and through a 20-year life extension.

Prior to startup for Cycle 16, CYAPCO will procure and install a reactor cavity neutron dosimetry system that will provide continuous monitoring of the reactor vessel neutron exposure throughout the service life of the reactor. Comprehensive sensor sets, including radiometric monitors and solid state track recorders will be installed at six locations within the cavity to characterize the neutron energy spectra near the midplane region of the reactor vessel. In addition, stainless steel gradient chains will be used in conjunction with the encapsulated sensors to complete the azimuthal and axial mapping of the neutron environment over the beltline region of the vessel.

With respect to the material surveillance capsules, four of the capsules have previously been removed from the the Haddam Neck Plant reactor vessel and analyzed. Four capsules remain with one to be removed at 25 EFPYs and three on standby. CYAPCO is planning at this time to use Northeast Nuclear Energy Company's Millstone Unit No. 3 as a host reactor for the four remaining capsules. The total neutron fluence per EFPY at the capsule location in the Millstone Unit No. 3 reactor is greater than that for the Haddam Neck Plant reactor. To facilitate this option, CYAPCO will be disassembling a capsule and repacking the specimens into a Millstone Unit No. 3 style assembly. This will be performed to support installation of the Haddam Neck capsules into Millstone Unit No. 3 during the fall of 1990 refueling outage.

The above described program will be documented in the Haddam Neck Plant UFSAR. The Haddam Neck Plant "Reactor Vessel Irradiation Surveillance Program" is included as Attachment No. 4 to this letter.

#### Significant Hazards Consideration

In accordance with 10CFR50.92, CYAPCO has reviewed the attached proposed changes (Attachment No. 1) and has concluded that they do not involve a significant hazards consideration. The basis for this conclusion is that the three criteria of 10CFR50.92(c) are not compromised. The proposed changes do not involve a significant hazards consideration because the changes would not:

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

The reactor vessel material surveillance program is used to assess the fracture toughness properties of the vessel wall and ensure nonductile failure of the vessel wall is prevented. However, no accident involving the rupture of the reactor vessel wall is evaluated in the safety analysis report. Compliance with 10CFR50, Appendix H, as stipulated in the technical specifications, will provide continued confidence in the reactor vessel materials. The change in the validity date for the existing heatup and cooldown curves was calculated by CYAPCO based on the increased fluence per EFPY at the vessel wall due to the thermal shield removal. The proposed changes do not impact plant operation or the performance of any safety system. Therefore, the proposed changes do not increase the probability or consequences of any accident or malfunction of any safety-related equipment.

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

The possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report is not created. The surveillance program is a passive monitoring of the vessel wall material properties. The relocation of the capsule withdrawal schedule will not change the surveillance program or introduce any single failures. The program will still be implemented per the requirements of 10CFR50, Appendix H, as specified in the technical specifications. This relocation will not directly affect the reactor vessel's structural integrity nor create the possibility of a failure or rupture. The reduction in the number of years of validity for the heatup and cooldown curves is based on a conservative calculation and simply reflects the projected increase in fluence per EFPY due to the thermal shield removal. The proposed changes do not have the potential to initiate any event nor do the changes alter plant operation. Thus, the changes do not create a new or different kind of accident.



3. Involve a significant reduction in a margin of safety

The margin of safety, as defined in the basis for any Technical Specification, is not reduced. The surveillance program is used to periodically calculate pressure/temperature limits. The validity date for the existing heatup and cooldown curves has been adjusted to account for the increased fluence per EFPY due to the thermal shield removal. CYAPCO performed a conservative calculation to establish the revised applicability limits for the heatup and cooldown curves in order to maintain the margin of safety. The current heatup and cooldown figures are still valid through 1992. The proposed changes do not adversely impact any of the safety systems, nor do they increase the number of challenges to the safety systems. This change is considered to be administrative in nature and does not affect or reduce the safety of the plant. For these reasons, the changes do not involve a reduction in the margin of safety.

The Commission has provided guidance concerning the application of the standards in 10CFR50.92 by providing certain examples (51FR 7751, March 6, 1986) of amendments that are considered not likely to involve a significant hazards consideration. The changes proposed herein are not enveloped by a specific example. As described above, the proposed changes do not constitute a significant hazards consideration since the intent of the reactor vessel material surveillance program will not change. Although the specific capsule removal schedule will be transferred from the technical specifications to the UFSAR, the technical specifications will still specify that a program be conducted that addresses the requirements of 10CFR50 Appendix H. The actual program specifics, as will be described in the UFSAR, will be different in implementation but equivalent with respect to results. The removal of the thermal shield will result in a higher neutron flux at the vessel wall. CYAPCO performed a conservative calculation that revised downward the number of years the present heatup and cooldown curves are applicable.

Based upon the information contained in this submittal and the environmental assessment for the Haddam Neck Plant, there are no significant radiological or nonradiological impacts associated with the proposed action, and the proposed license amendment will not have a significant effect on the quality of the human environment.

The Haddam Neck Plant Nuclear Review Board has reviewed and approved the attached proposed revisions and concurs with the above determinations.

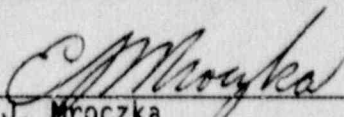
In accordance with 10CFR50.91(b), CYAPCO is providing the State of Connecticut with a copy of this amendment.

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CYAPCO respectfully requests that this license amendment request be reviewed and issued by April 15, 1990 to support restart of the Haddam Neck Plant following the Cycle 15 refueling outage.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY

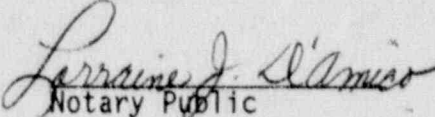
  
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E. J. Mroczka  
Senior Vice President

cc: W. T. Russell, Region I Administrator  
A. B. Wang, NRC Project Manager, Haddam Neck Plant  
J. T. Shedlosky, Senior Resident Inspector, Haddam Neck Plant

Mr. Kevin McCarthy  
Director, Radiation Control Unit  
Department of Environmental Protection  
Hartford, CT 06116

STATE OF CONNECTICUT )  
  ) ss. Berlin  
COUNTY OF HARTFORD )

Then personally appeared before me, E. J. Mroczka, who being duly sworn, did state that he is Senior Vice President of Connecticut Yankee Atomic Power Company, a Licensee herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the Licensee herein, and that the statements contained in said information are true and correct to the best of his knowledge and belief.

  
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Notary Public  
My Commission Expires March 31, 1993