August 16, 2006

Mr. Michael Kansler
President
Entergy Nuclear Operations, Inc.
440 Hamilton Avenue
White Plains, NY 10601-1839

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION

Dear Mr. Kansler:

By letter dated January 25, 2006, as supplemented by letter dated March 15, 2006, the U.S. Nuclear Regulatory Commission (NRC) received the Entergy Nuclear Operations, Inc., application for renewal of Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station (VYNPS). The NRC staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Specifically, the enclosed requests for additional information are from Section B.1.2, "BWR CRD Return Line Nozzle," and B.1.24, "Reactor Vessel Surveillance," of the VYNPS license renewal application.

Based on discussions with Mr. Jim DeVincentis of your staff, a mutually agreeable date for your response is within 30 days of the date of this letter. If you have any questions regarding this letter or if circumstances result in your need to revise the response date, please contact me at 301-415-4053 or by e-mail at jgr@nrc.gov.

Sincerely,

/RA/

Jonathan Rowley, Project Manager
License Renewal Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosure:
Requests for Additional Information

cc w/encl: See next page

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OFFICIAL RECORD COPY

Letter to Michael Kansler from Jonathan Rowley dated August 16, 2006

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REQUESTS FOR ADDITIONAL INFORMATION (RAIs)

RAI B.1.24-1

The applicant, in the updated final safety analysis report (UFSAR) supplement A.2.1.26, "Reactor Vessel Surveillance Program," and in the aging management program (AMP) B.1.24, "Reactor Vessel Surveillance," states that it will implement the Boiling Water Reactor Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP) at the Vermont Yankee Nuclear Power Station (VYNPS) as specified in the BWRVIP-116 report, "BWR Vessel and Internals Project Integrated Surveillance Program Implementation for License Renewal." By letter dated March 1, 2006, the staff issued the final safety evaluation (SE) for the BWRVIP-116 report and therefore, the staff requests that the applicant include the following commitment (shown in bold underlined font) in UFSAR supplement Section A.2.1.26 and in AMP B.1.24 of the license renewal application (LRA).

> **The BWRVIP-116 report which was approved by the staff will be implemented at VYNPS with the conditions documented in Sections 3 and 4 of the staff's final SE dated March 1, 2006, for the BWRVIP-116 report.**

RAI B.1.24-2

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix H requires that an ISP used as a basis for a licensee implemented reactor vessel surveillance program be reviewed and approved by the U. S. Nuclear Regulatory Commission staff. The ISP to be used by the applicant is a program that was developed by the BWRVIP. The applicant will apply the BWRVIP ISP as the method by which the VYNPS will comply with the requirements of 10 CFR Part 50, Appendix H. The BWRVIP ISP identifies capsules that must be tested to monitor neutron radiation embrittlement for all licensees participating in the ISP and identifies capsules that need not be tested (standby capsules). Table 3-3 of the BWRVIP-116 report indicates that the standby capsule from the VYNPS unit is not to be tested. This untested capsule was originally part of the applicant's plant-specific surveillance program and has received significant amounts of neutron radiation.

The staff requests that the applicant include the following commitment (shown in bold underlined font) in the UFSAR supplement Section A.2.1.26 and in AMP B.1.24 of the LRA.

> **If the VYNPS standby capsule is removed from the RPV without the intent to test it, the capsule will be stored in a manner which maintains it in a condition which would permit its future use, including during the period of extended operation, if necessary.**

RAI B.1.2-1

The applicant states that the Control Rod Drive (CRD) return line nozzle has been capped at VYNPS. The staff requests that the applicant provide the following information regarding the cap and the weld.

(1) Describe the configuration, location and material of construction of the capped nozzle.

This should include the existing base material for the nozzle, piping (if piping remnants exist) and cap material, and any welds.

(2) Describe how the aging effects for this weld and the cap are managed in accordance with the guidelines of BWRVIP-75, "BWR Vessel and Internals Project (BWRVIP), Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedule."

(3) Discuss whether the event at Pilgrim (leaking weld at capped nozzle, September 30, 2003) is applicable to VYNPS. The staff issued Information Notice 2004-08, "Reactor Coolant Pressure Boundary Leakage Attributable to Propagation of Cracking in Reactor Vessel Nozzle Welds," dated April 22, 2004, which states that the cracking occurred in an Alloy 182 weld that was previously repaired extensively. Discuss experience with previous leakage at the VYNPS capped nozzle, if any. Include in your discussion the past inspection techniques applied, the results obtained, and mitigative strategies imposed. Provide information as to how the plant-specific experience related to this aging effect impacts the attributes specified in AMP B.1.2, "BWR CRD Return line Nozzles."

RAI B.1.2-2

Section 4 of the Generic Aging Lessens Learned Report (GALL) AMP XI.M6, "BWR Control Rod Drive (CRD) Return Line Nozzle," recommends that the aging degradation in the CRD return line nozzles should be monitored per the inspection recommendations specified in NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking." Section 8.2(2) of NUREG-0619 recommends that ultrasonic testing (UT) should be performed on the welded connection joining the rerouted CRD return line to the system which then returns the flow to the reactor vessel during each refueling outage.

In a letter dated January 15, 1982, the applicant made a commitment to the staff indicating that it will perform UT examination of the CRD to the reactor water cleanup (RWCU) weld joint as discussed in NUREG-0619 for three consecutive refuel outages. The applicant further stated that upon the completion of these inspections, the inspection frquency will be reassessed based on the inspection results. In AMP B.1.2, "BWR CRD Return Line Nozzle," the applicant stated that it inspected the CRD return line to the RWCU weld joint using UT methods for three consecutive refuel outages and found no indications. Since no indications were found, the applicant intends to take exception to GALL AMP XI.M6, in which the applicant proposes not to inspect the aforementioned weld joint during the extended period of operation. The staff determined that the following information regarding the subject weld is required to complete its review.

(1) The applicant should provide technical justification for not performing the UT examination of the subject weld as recommended by the GALL AMP XI.M6 and NUREG-0619 during the extended period of operation.

(2) The applicant should confirm that the CRD return lines that are connected to RWCU piping system that fall under the jurisdiction of the ASME Code, Section XI boundary will be inspected per the ASME Section XI Code.

RAI 4.2-1

In Section 4.2.1 of the VYNPS LRA it is stated that "...the reactor fluence ....has been projected to the end of the period of extended operation." In Sections 4.2.1 and 4.2.2 of the LRA there is no discussion of how this extrapolation was performed. Vermont Yankee has been approved for operation at an extended power uprate. In general, power uprates are based on revised axial power profiles with higher axial peaks at a lower axial location. Therefore, extrapolation of the existing axial profile may not provide an accurate projection.

In view of the above, please respond to the following:

(1) Compare the axial power profiles (at the peak power azimuthal location) and confirm that the extrapolation remains valid.

(2) Confirm that the projected operating plan will support the assumed axial power profile to the end of the period of extended operation.