

January 5, 2006

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

SUBJECT: NOTICE OF CONSIDERATION OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE AND PROPOSED NO SIGNIFICANT HAZARDS
CONSIDERATION DETERMINATION - EXTENDED POWER UPRATE,
VERMONT YANKEE NUCLEAR POWER STATION (TAC NO. MC0761)

Dear Mr. Kansler:

Enclosed is a copy of a "Notice of Consideration of Issuance of Amendment to Facility Operating License and Proposed No Significant Hazards Consideration Determination" related to your application for an amendment dated September 10, 2003, as supplemented by letters dated October 1, and October 28 (2 letters), 2003, January 31 (2 letters), March 4, May 19, July 2, July 27, July 30, August 12, August 25, September 14, September 15, September 23, September 30 (2 letters), October 5, October 7 (2 letters), December 8, and December 9, 2004, and February 24, March 10, March 24, March 31, April 5, April 22, June 2, August 1, August 4, September 10, September 14, September 18, September 28, October 17, October 21 (2 letters), October 26, October 29, November 2, November 22, and December 2, 2005, for Vermont Yankee Nuclear Power Station (VYNPS). The proposed amendment would allow an increase in the maximum authorized power level for VYNPS from 1593 megawatts thermal (MWt) to 1912 MWt.

This notice has been forwarded to the Office of Federal Register for publication.

Sincerely,

/RA/

Richard B. Ennis, Senior Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosure: As stated

cc w/encl: See next page

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President
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White Plains, NY 10601

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Vermont Yankee Nuclear Power Station

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Vermont Yankee Nuclear Power Station

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UNITED STATES NUCLEAR REGULATORY COMMISSION

ENERGY NUCLEAR VERMONT YANKEE, LLC AND

ENERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-271

NOTICE OF CONSIDERATION OF ISSUANCE OF AMENDMENT

TO FACILITY OPERATING LICENSE

AND PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The U.S. Nuclear Regulatory Commission (NRC or the Commission) is considering issuance of an amendment to Facility Operating License No. DPR-28, issued to Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (the licensee), for operation of the Vermont Yankee Nuclear Power Station (VYNPS) located in Windham County, Vermont.

The proposed amendment would change the VYNPS operating license to increase the maximum authorized power level from 1593 megawatts thermal (MWt) to 1912 MWt. This change represents an increase of approximately 20 percent above the current maximum authorized power level. The proposed extended power uprate (EPU) amendment would also change the VYNPS Technical Specifications (TSs) to provide for implementing uprated power operation.

Before issuance of the proposed license amendment, the Commission will have made findings required by the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations.

The Commission has made a proposed determination that the amendment request involves no significant hazards consideration. Under the Commission's regulations in Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.92, this means that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. The NRC staff's analysis of the issue of no significant hazards consideration is presented below:

First Standard

Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

As discussed in the licensee's application dated September 10, 2003, the VYNPS EPU analyses, which were performed at or above EPU conditions, included a review and evaluation of the structures, systems, and components (SSCs) that could be affected by the proposed change. The licensee reviewed plant modifications and revised operating parameters, including operator actions, to confirm acceptable performance of plant SSCs under EPU conditions. On this basis, the licensee concluded that there is no increase in the probability of accidents previously evaluated.

Further, as also discussed in the licensee's application, while not being submitted as a risk-informed licensing action, the proposed amendment was evaluated by the licensee from a risk perspective. Using the NRC guidelines established in Regulatory Guide (RG) 1.174, and the calculated results from the VYNPS Level 1 and 2 probabilistic safety analyses, the best estimate for the core damage frequency (CDF) increase due to the proposed EPU is 3.3 E-7 per year (an increase of 4.2 percent over the pre-EPU CDF of 7.77 E-6 per year). The best

estimate for the large early release frequency (LERF) increase due to the proposed EPU is 1.1 E-7 per year (an increase of 4.9 percent over the pre-EPU LERF of 2.23 E-6 per year). The NRC staff concludes, based on review of the licensee's risk evaluation and the acceptance guidelines in RG 1.174, that the proposed amendment would not involve a significant increase in the probability of an accident previously evaluated.

The NRC staff's evaluation of the proposed amendment included review of the SSCs that could be affected by the proposed change. This review included evaluation of plant modifications, revised operating parameters, changes to operator actions and procedures, the EPU test program, and changes to the plant TSs. Based on this review, the staff concludes that there is reasonable assurance that the SSCs important to safety will continue to meet their intended design basis functions under EPU conditions. Therefore, the staff concludes that there is no significant change in the ability of these SSCs to preclude or mitigate the consequences of accidents.

The NRC staff's evaluation also reviewed the impact of the proposed EPU on the radiological consequences of design-basis accidents for VYNPS. The staff's review concluded that dose criteria in 10 CFR 50.67, as well as the applicable acceptance criteria in Standard Review Plan Section 15.0.1, would continue to be met at EPU conditions.

The NRC staff concludes, based on review of the SSCs that could be affected by the proposed amendment and review of the radiological consequences, that the proposed amendment would not involve a significant increase in the consequences of an accident previously evaluated.

Based on the above, the NRC staff concludes that the proposed amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated.

Second Standard

Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

As stated above, the NRC staff's evaluation of the proposed amendment included review of the SSCs that could be affected by the proposed change. This review included evaluation of plant modifications, revised operating parameters, changes to operator actions and procedures, the EPU test program, and changes to the plant TSs. Based on this review, the staff concludes that the proposed amendment would not introduce any significantly new or different plant equipment, would not significantly impact the manner in which the plant is operated, and would not have any significant impact on the design function or operation of the SCCs involved. The staff's review did not identify any credible failure mechanisms, malfunctions, or accident initiators not already considered in the VYNPS design and licensing bases. Consequently, the staff concludes that the proposed change would not introduce any failure mode not previously analyzed.

Based on the above, the NRC staff concludes that the proposed change would not create the possibility of a new or different kind of accident from any accident previously evaluated.

Third Standard

Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

As discussed in the licensee's application, continuing improvements in analytical techniques based on several decades of boiling-water reactor safety technology, plant performance feedback, operating experience, and improved fuel and core designs, have resulted in a significant increase in the design and operating margin between the calculated safety analyses results and the current plant licensing limits. The NRC staff's review found that

the proposed EPU will reduce some of the existing design and operational margins. However, safety margins are considered to not be significantly reduced if: (1) applicable regulatory requirements, codes and standards or their alternatives approved for use by the NRC, are met, and (2) if safety analysis acceptance criteria in the licensing basis are met, or if proposed revisions to the licensing basis provide sufficient margin to account for analysis and data uncertainty.

Margin of safety is related to confidence in the ability of the fission product barriers (i.e., fuel cladding, reactor coolant pressure boundary (RCPB), and containment) to limit the level of radiation dose to the public. The NRC staff evaluated the impact of the proposed EPU on the fission product barriers as discussed below.

The NRC staff evaluated the impact of the proposed EPU to assure that acceptable fuel damage limits are not exceeded. This included consideration of the VYNPS fuel system design, nuclear system design, thermal and hydraulic design, accident and transient analyses, and fuel design limits. The evaluation included an assessment of the margin in the associated safety analyses supporting the proposed EPU. The staff's evaluation found that the licensee's analysis was acceptable based on use of approved analytical methods and that the licensee had included sufficient margin to account for analysis and data uncertainty. In addition, the licensee will continue to perform cycle-specific analysis to confirm that fuel design limits will not be exceeded during each cycle. The staff's evaluation concluded that the applicable VYNPS licensing basis requirements would continue to be met following implementation of the proposed EPU (e.g., draft General Design Criteria (GDC) 6, 7, and 8; and 10 CFR 50.46). Therefore, the NRC staff concludes that fuel cladding integrity would be maintained within acceptable limits under the proposed EPU conditions.

The NRC staff further evaluated the impact of the proposed EPU on the RCPB. The evaluation included an assessment of overpressure protection; structural integrity of the RCPB

pipings, components, and supports; and structural integrity of the reactor vessel. With respect to overpressure protection, the staff found that the licensee had used an NRC-approved evaluation method, had used the most limiting pressurization event, and had determined that the peak calculated pressure would remain below the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) allowable peak pressure. With respect to structural integrity of the RCPB pipings, components, and supports, the staff found that the licensee had performed its evaluation using the process and methodology defined in NRC-approved topical reports. The staff's evaluation concluded that RCPB structural integrity would be maintained at EPU conditions. With respect to structural integrity of the reactor vessel, the staff found that the licensee had implemented an acceptable reactor vessel materials surveillance program in a previously-approved amendment that was based on neutron fluence values acceptable for VYNPS at EPU conditions. In addition, the staff found that the existing pressure-temperature limit curves contained in the TSs would remain bounding for EPU conditions. The staff also found that the methodology used by the licensee to evaluate the loads on the reactor vessel was consistent with an NRC-approved methodology and that the maximum stresses and fatigue usage factors for EPU conditions would be within ASME Code allowable limits. The staff's evaluation regarding the RCPB concluded that the applicable VYNPS licensing basis requirements would continue to be met following implementation of the proposed EPU (e.g., draft GDC 9, 33, 34, and 35; 10 CFR 50.60; and 10 CFR Part 50, Appendices G and H). Therefore, the NRC staff concludes that RCPB structural integrity would be maintained under the proposed EPU conditions.

Finally, the NRC staff evaluated the impact of the proposed EPU on the containment. The staff found that the licensee's analysis used acceptable calculational methods and conservative assumptions and that the containment pressure and temperature under EPU conditions would remain below existing design limits. The staff also evaluated the licensee's

proposed change to the licensing basis to credit containment accident pressure to meet the net positive suction head (NPSH) requirements for the emergency core cooling system pumps. The staff found that the licensee's analysis was performed using conservative assumptions and that the credited pressure remains below the containment accident pressure that would be available under EPU conditions. The staff's evaluation regarding the containment concluded that the applicable VYNPS licensing basis requirements would continue to be met following implementation of the proposed EPU (e.g., draft GDC 10, 41, 49, and 52; and 10 CFR Part 50, Appendix K). Therefore, the NRC staff concludes that containment structural integrity would be maintained under the proposed EPU conditions.

In summary, the NRC staff has concluded that the structural integrity of the fission product barriers (i.e., fuel cladding, RCPB and containment) would be maintained under EPU conditions. As such, the proposed amendment would not degrade confidence in the ability of the barriers to limit the level of radiation dose to the public.

Based on the above, the NRC staff concludes that the proposed change would not involve a significant reduction in a margin of safety.

Conclusion

Based on this review, it appears that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the NRC staff proposes to determine that the amendment request involves no significant hazards consideration.

The Commission is seeking public comments on this proposed determination. Any comments received within 30 days after the date of publication of this notice will be considered in making a final determination.

The Commission previously published a "Notice of Consideration of Issuance of Amendment to Facility Operating License and Opportunity for a Hearing" for the proposed VYNPS EPU amendment in the *Federal Register* on July 1, 2004 (69 FR 39976). This Notice provided 60 days for the public to request a hearing. On August 30, 2004, the Vermont Department of Public Service and the New England Coalition filed requests for hearing in connection with the proposed amendment. By Order dated November 22, 2004, the Atomic Safety and Licensing Board (ASLB) granted those hearing requests and by Order dated December 16, 2004, the ASLB issued its decision to conduct a hearing using the procedures in 10 CFR Part 2, Subpart L, "Informal Hearing Procedures for NRC Adjudications." No additional opportunity for hearing is provided in connection with this notice.

In accordance with the Commission's regulations in 10 CFR 50.91, if a final determination is made that the proposed amendment involves no significant hazards consideration, the Commission may issue the amendment and make it immediately effective, notwithstanding submission of adverse comments or a request for hearing. In that event, any required hearing would be completed after issuance of the amendment; however, if a final determination is made that the proposed amendment involves a significant hazards consideration, the amendment would not be issued prior to completion of the hearing.

Written comments may be submitted by mail to the Chief, Rules and Directives Branch, Division of Administrative Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and should cite the publication date and page number of this *Federal Register* notice. Written comments may also be delivered to Room 6D59, Two White Flint North, 11545 Rockville Pike, Rockville, Maryland, from 7:30 a.m. to 4:15 p.m. Federal workdays.

For further details with respect to the proposed action, see the licensee's application dated September 10, 2003, as supplemented on October 1, and October 28 (2 letters), 2003, January 31 (2 letters), March 4, May 19, July 2, July 27, July 30, August 12, August 25, September 14, September 15, September 23, September 30 (2 letters), October 5, October 7 (2 letters), December 8, and December 9, 2004, and February 24, March 10, March 24, March 31, April 5, April 22, June 2, August 1, August 4, September 10, September 14, September 18, September 28, October 17, October 21, 2005 (2 letters), October 26, October 29, November 2, November 22, and December 2, 2005. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the ADAMS Public Electronic Reading Room on the NRC Web site, <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff at 1-800-397-4209, or 301-415-4737, or send an e-mail to pdr@nrc.gov.

Dated at Rockville, Maryland, this 5th day of January 2006.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard B. Ennis, Senior Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation