

May 27, 2004

Ms. Mariel Kinsey
15 Norton Hill Road
Ashfield, MA 01330

Dear Ms. Kinsey:

I am responding to your letter of March 29, 2004, to the Chairman of the U.S. Nuclear Regulatory Commission (NRC). In your letter you expressed concerns about the proposed power increase for the Vermont Yankee Nuclear Power Station (Vermont Yankee) and about the reliability of the plant's reactor cooling system. You also expressed concern about emergency planning at, and around, the Vermont Yankee site and made reference to security.

The NRC was established to regulate the commercial nuclear power industry by Federal law. Our primary responsibility is to protect public health and safety. Under this responsibility the NRC has three principal regulatory functions: (1) to establish standards and regulations; (2) to license nuclear facilities and users of nuclear materials that meet our regulatory requirements ; and (3) to inspect facilities and users of nuclear materials to ensure compliance with the requirements. You stated that the Vermont Public Service Board (PSB) is prevented by Federal law from taking safety into consideration when they make their decision. In its March 15, 2004, letter to the NRC, the Vermont PSB provided its concerns with the reliability of Vermont Yankee to generate electricity at the increased power level. Responsibility for ensuring the safety of nuclear facilities has been assigned to the NRC.

In regard to your concern about the proposed power increase, the NRC will not approve the Vermont Yankee power increase, or any proposed change to any plant license, unless our technical staff can conclude that public health and safety will be assured. Our technical reviews and inspections regarding the Vermont Yankee power increase address potential safety concerns for operating the plant at increased power. Our detailed technical review, coupled with the associated program of inspections, will provide us with the information we need to make a decision on the safety of operation of Vermont Yankee at increased power. I have enclosed a copy of our letter to the Vermont PSB, which provides additional information on our review process.

In regard to your concern about the reliability of the reactor coolant system, the NRC has requirements for the design, operation, and maintenance of systems important to safety. We require that components that are a part of the reactor coolant system be designed, fabricated, built, and tested to the highest practical standards. Licensees must periodically inspect components that are a part of the reactor coolant system pressure boundary as required by our regulations. With regard to your concern over the lack of a backup cooling system, commercial nuclear plants, including Vermont Yankee, are required to have redundant and diverse systems to provide emergency core cooling for postulated accidents. All plants have containment structures as a defense-in-depth measure to prevent release of radioactive material in the event of a serious accident.

As an additional safety measure, NRC regulations require that comprehensive emergency plans be prepared and periodically exercised to assure that actions can and will be taken to notify and protect citizens in the vicinity of a nuclear facility in the unlikely event of a radiological emergency. The NRC regulates the onsite emergency planning and requires nuclear plant operators to have detailed procedures for handling accidents, making timely notification to appropriate authorities, and providing accurate radiological information. Our oversight involves direct assessment of onsite emergency planning and preparedness of the facilities that we regulate, in addition to oversight of plant operations and security. At the Federal level, the Federal Emergency Management Agency (FEMA) has the lead in offsite emergency planning and response for nuclear power plants. The NRC assists FEMA in carrying out this role. Both the NRC and FEMA evaluated the most recent exercise at Vermont Yankee in April 2003, and both agencies determined that there is reasonable assurance that appropriate protective measures to protect the health and safety of surrounding communities can be taken and are capable of being implemented in the event of a radiological incident at Vermont Yankee.

In regard to your concern about the need to evacuate a large area around the Vermont Yankee site in the event of a radiological accident, emergency planning for commercial nuclear power plants specifies two concentric emergency planning zones centered around the plants. These zones are the areas for which planning is needed to assure that prompt and effective actions can be taken to protect the public in the unlikely event of an accident. The first zone is an area approximately 10 miles in radius from the center of the plant. In the event of an accident, this zone, or parts of it, may be evacuated. It is also possible that citizens within this zone may be asked to shelter themselves (i.e., remain indoors) in order to avoid exposure to airborne radioactive material. The second zone is an area approximately 50 miles in radius from the plant. Protective actions would be taken in this zone to avoid public exposure to radiation through ingestion of contaminated food and water. As direct exposure is expected to be sufficiently low outside of the initial 10-mile radius, evacuation or sheltering should not be necessary within the second zone.

With regard to plant security, although there have been no specific credible threats against the nation's nuclear power plants, following the events of September 11, 2001, the NRC has taken a number of steps to improve the already high level of security at nuclear power plants, including more training for security guards and requiring additional guards at the plants. The effectiveness of these security program improvements has been verified by the NRC.

In summary, the NRC will not approve a power uprate for Vermont Yankee unless our staff can conclude that public health and safety is assured. Redundant and diverse systems that supply emergency core cooling must be shown to be effective at the uprated power level in order for approval.

M. Kinsey

- 3 -

Thank you for your interest in NRC activities. For current information on the NRC's review of the proposed power uprate, please see the Vermont Yankee webpage on the NRC's website at <http://www.nrc.gov/reactors/plant-specific-items/vermont-yankee-issues.html>.

Sincerely,

/RA/

Cornelius F. Holden, Director
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Enclosure: Letter to the Vermont Public Service Board



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 4, 2004

Mr. Michael H. Dworkin, Chairman
Vermont Public Service Board
112 State Street, Drawer 20
Montpelier, Vermont 05620-2701

Dear Mr. Dworkin:

I am responding on behalf of the U.S. Nuclear Regulatory Commission (NRC) to your letters dated March 15 and 31, 2004, regarding the request by Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc. (Entergy), to amend the Vermont Yankee Nuclear Power Station license to increase the power level of the facility. In those letters, the Vermont Public Service Board requested that the NRC conduct its review of the proposed power uprate in a way that would provide Vermont a level of assurance about plant reliability equivalent to an independent engineering assessment. The NRC has decided to conduct a detailed engineering inspection that we believe will be appropriate for addressing our oversight responsibilities and is also responsive to the Board's concerns. This inspection will be performed as part of a new engineering inspection program that the NRC has been developing to enhance the Reactor Oversight Process.

NRC regulations and its oversight process focus on ensuring nuclear safety, whether the facility is operating at power or shut down. The NRC's statutory authority does not extend to regulating the reliability of electrical generation. The NRC recognizes, however, that there is some overlap between attributes that result in safe operation and those that contribute to overall plant reliability.

The Commission understands that the Board is concerned about the reliability of Vermont Yankee following an increase in power level, especially in light of operational issues that have occurred at some other plants that have recently implemented extended power uprates. The NRC recognizes the importance of these issues and is taking steps to ensure that they are satisfactorily addressed to maintain safety. For example, in response to instances of steam dryer cracking at some boiling water reactors, outside technical experts are assisting NRC staff in performing an audit of General Electric's analyses related to steam dryer performance and specific issues related to Vermont Yankee. We continue to engage the industry to ensure resolution of these issues and will consider additional regulatory action, if needed.

Enclosure

The NRC's established review process for power uprate applications is independent, thorough, and comprehensive. A description of the review process is enclosed. Engineering assessments have always been an integral part of the NRC's safety activities. Under our current Reactor Oversight Process, NRC resident inspectors and regional specialists routinely evaluate the work performed by the licensee's engineering organization to determine whether

engineering analyses adequately support safe operation. Over the past several months, the NRC has been developing a new engineering inspection program which we intend to pilot at selected plants. The NRC staff considered a number of factors, including the Board's request for an independent engineering assessment, and concluded it is appropriate to conduct this engineering inspection at Vermont Yankee. This new engineering assessment inspection incorporates the best practices of the existing and past engineering inspections. The NRC will use this inspection to verify that design bases have been correctly implemented for a sampling of components across multiple systems and to identify latent design issues. The inspection process uses operating experience, risk assessment, and engineering analysis to select risk-significant components and operator actions, and will ensure that adequate safety margins exist. Although the specific sampling of components is still being developed, it will include components from multiple systems that are potentially affected by a power uprate such as the emergency core cooling systems, the containment system, power conversion systems, and auxiliary systems. The inspection will be performed by a team of approximately six inspectors, including some NRC inspectors who do not have recent oversight experience with Vermont Yankee and at least two contractors with design experience. Three weeks of on-site inspection and over 700 hours of direct inspection time will be conducted. This level of effort exceeds that of the biennial safety system design inspection. The Commission believes it is appropriate for addressing the NRC's oversight responsibilities and is also responsive to the Board's concerns. The NRC staff will inform the State of Vermont of the schedule for this inspection to facilitate participation by State representatives, consistent with NRC policy.

The NRC Advisory Committee on Reactor Safeguards (ACRS) will also review the Vermont Yankee power uprate request. The ACRS is a statutory committee that reports directly to the Commission and is structured to provide a forum where experts representing many technical perspectives can provide advice that is factored into the NRC's decision-making process. The NRC staff will provide the results of its review efforts, including relevant inspection findings, to the ACRS for review. After the ACRS completes its review, it will make an independent recommendation regarding whether the proposed power uprate amendment should be approved.

The NRC will not approve the Vermont Yankee uprate, or any proposed change to a plant license, unless the NRC staff can conclude that the proposed change will be executed in a manner that assures the public's health and safety. In response to your request, the NRC staff has taken a close look at proposed inspections and technical reviews to ensure that they will identify and address potential safety concerns for operating at uprated power conditions. The staff has concluded that the detailed technical review, prescribed in the Extended Power Uprate Review Standard, coupled with the normal associated program of power uprate and engineering inspections, will provide the information necessary for the NRC staff to make a

decision on the safety of operation of Vermont Yankee under updated power conditions. The Commission believes that the results of NRC reviews and inspections, particularly the new engineering inspection, will assist in addressing the Board's concerns regarding the future reliability of Vermont Yankee. The NRC staff is prepared to meet with the Board to explain further our review process and scope, including the engineering assessment inspection.

Sincerely,

/RA/

Nils J. Diaz

Enclosure:
Established NRC Power Uprate Review Process

Established NRC Power Uprate Review Process

The NRC's established review process for power uprate applications is independent, thorough, and comprehensive. A team of engineers with specialties in a minimum of 17 different technical areas will review the Vermont Yankee power uprate application. The NRC plans to expend about 4000 hours to perform a comprehensive assessment of the engineering, design, and safety analyses related to the uprate. The NRC's "Review Standard for Extended Power Uprates" guides the staff in its review of the application. The Review Standard also provides guidance for determining when and what type of audits should be performed at the plant or vendor sites, as well as for performing our own confirmatory analyses and independent calculations to supplement the review.

The NRC's review of the power uprate application also includes on-site inspections. NRC inspections will review selected activities and modifications made to allow operation at higher power levels to verify that changes to plant systems will support safe plant operation and are in accordance with Vermont Yankee's licensing and design bases. The NRC will use Inspection Procedure 71004, "Power Uprates," as well as a number of our baseline inspection procedures to inspect issues specifically related to power uprate. These inspections will assess changes that could impact the integrity of barriers (e.g., higher flow rates which could increase vibration at specific support points), safety evaluations, plant modifications, post maintenance and surveillance testing, heat exchanger performance, and integrated plant operation. Additionally, our other baseline inspection activities, while not specifically directed at power uprate activities, will provide additional information about Vermont Yankee's ability to operate safely at a higher power level.

The NRC will adjust, as necessary, our technical review, audit plans, confirmatory analyses, or inspection activities if any issues are identified which may have a bearing on our decision on the Vermont Yankee power uprate application. For example, a recent examination of the steam dryer at Vermont Yankee identified cracks on both interior and exterior structures of the steam dryer. The steam dryer is an important component in the process for converting steam to electrical energy, but is not used to mitigate any accidents. The NRC is interested in steam dryer cracking because of the potential for parts to break loose and impact the performance of safety-related equipment. Entergy has indicated that the cracks are in low-stress, low-steam flow areas of the dryer and not in the areas where cracks were observed at other plants that implemented extended power uprates. NRC inspectors monitored Entergy's steam dryer inspection activities, and we will thoroughly review Entergy's follow-up actions as part of our evaluation of Vermont Yankee's request to operate at a higher power level.

Assessment of engineering has always been an integral part of the NRC's safety mission. In the 1990s, the NRC performed extensive reviews at plants across the country to determine if licensees were operating plants in accordance with their design bases. As part of this review, two team inspections were conducted at Vermont Yankee in 1997. One of these inspections was led by staff from NRC headquarters and included six contractors. In 1998, the NRC conducted an engineering inspection, as well as a team inspection to address operability issues resulting from Vermont Yankee's configuration improvement program. Under our current Reactor Oversight Process, NRC resident inspectors and regional specialists routinely evaluate the work performed by the licensee's engineering organization to determine whether the engineering analyses adequately supports safe operation. Our inspectors conduct both routine engineering inspections, as well as an in-depth team inspection every two years. Since the Reactor Oversight Process was implemented in 2000, the NRC has conducted two such safety system design team inspections.

Enclosure

Thank you for your interest in NRC activities. For current information on the NRC's review of the proposed power uprate, please see the Vermont Yankee webpage on the NRC's website at <http://www.nrc.gov/reactors/plant-specific-items/vermont-yankee-issues.html>.

Sincerely,

/RA/

Cornelius F. Holden, Director
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Enclosure: Letter to the Vermont Public Service Board

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