

April 20, 2001

Mr. Michael A. Balduzzi  
Vice President, Operations  
Vermont Yankee Nuclear Power Corporation  
185 Old Ferry Road  
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Brattleboro, VT 05302-7002

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - ISSUANCE OF  
AMENDMENT RE: REFUELING INTERLOCKS (TAC NO. MB0627)

Dear Mr. Balduzzi:

The Commission has issued the enclosed Amendment No. 200 to Facility Operating License DPR-28 for the Vermont Yankee Nuclear Power Station, in response to your application dated November 30, 2000, as supplemented by letters dated March 8 and 12, 2001.

The amendment change would revise the operability requirements for the refueling interlocks contained within Technical Specification (TS) 3.12.A as well as the surveillance requirements specified within TS 4.12.A. Clarifying changes are made to TSs 3.12.D and 3.12.E to indicate that only the required interlocks need to be operable. In addition, TS 3.12.F will be clarified to articulate that there must be a minimum of 24 hours fission product decay prior to fuel handling. Some editorial changes will also be made to TS 3/4.12.B.

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

**/RA/**

Robert M. Pulsifer, Project Manager, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures: 1. Amendment No. 200 to  
License No. DPR-28  
2. Safety Evaluation

cc w/encls: See next page

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Vermont Yankee Nuclear Power Station

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VERMONT YANKEE NUCLEAR POWER CORPORATION

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 200  
License No. DPR-28

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment filed by the Vermont Yankee Nuclear Power Corporation (the licensee) dated November 30, 2000, as supplemented by letters dated March 8 and 12, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-28 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 200, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

***/RA/***

James W. Clifford, Chief, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: April 20, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 200

FACILITY OPERATING LICENSE NO. DPR-28

DOCKET NO. 50-271

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

229  
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Insert

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 200 TO FACILITY OPERATING LICENSE NO. DPR-28  
VERMONT YANKEE NUCLEAR POWER CORPORATION  
VERMONT YANKEE NUCLEAR POWER STATION  
DOCKET NO. 50-271

## 1.0 INTRODUCTION

By letter dated November 20, 2000, as supplemented by letters dated March 8 and 12, 2001, the Vermont Yankee Nuclear Power Corporation (VYNPC or the licensee) submitted a request to amend the Vermont Yankee Nuclear Power Station (VY) Technical Specifications (TSs). The proposed amendment would revise the TSs to revise the operability requirements for the refueling interlocks; more concisely define refueling interlocks and eliminate redundancy; clearly articulate action statements, including adding an optional operator action when one or more required refueling interlocks are inoperable which would allow fuel handling to continue; and revise the requirement for the reactor to be in cold shutdown for at least 24 hours prior to handling fuel to require that the reactor be shutdown for at least 24 hours for fission product decay prior to fuel movement within the reactor core. There are also some editorial changes to TS 3/4.12.B.

## 2.0 BACKGROUND

During refueling, reactivity in boiling water reactors is changed primarily by control rod movement or fuel movement. Refueling interlocks restrict the operation of the refueling equipment or the withdrawal of control rods to reinforce procedures that prevent the reactor from achieving criticality during refueling. Refueling interlocks accomplish this by preventing the loading of fuel into the core with any control rod withdrawn, and by preventing the withdrawal of a control rod from the core during fuel loading by inserting a control rod block. With the reactor mode switch in the refueling position, the indicated conditions are combined in logic circuits to determine if all restrictions on refueling operations and control rod insertion are satisfied. The following changes are proposed for the VY TS:

- (1) If one or more of the required interlocks are inoperable, Required Actions are to be provided to, in short, suspend fuel movement, or insert a control rod withdrawal block and verify all control rods inserted.
- (2) Current technical specifications (CTS) requirements related to: the "Control Rod Blocks" Refuel Interlock-"Mode switch in Startup/Hot Standby and refueling platform over the reactor", and the "Refueling Platform Reverse Motion (toward reactor vessel) Block" Refuel Interlock-"Mode switch in Startup/Hot Standby," are to be deleted from TS.

- (3) The refueling equipment interlock inputs that need to be functionally tested are to be identified as part of the surveillance requirement (SR).
- (4) The "Refuel Platform Hoist Blocks" Refuel Interlocks-"Hoist overload" and "High position limitation" are removed from the TS.
- (5) The frequency for the SR to verify refueling interlocks are operable, is proposed to be changed from 7 days to 31 days. This change was withdrawn by letter dated March 8, 2001.
- (6) The statement to perform the SR to verify refueling interlocks are operable, "following any repair work associated with the interlocks," is to be deleted.
- (7) The TS wording for minimum time to handle fuel is to be modified to articulate that the reactor is to be shutdown, not necessarily to cold shutdown, for a minimum of 24 hours prior to fuel movement within the reactor core.
- (8) Minor spelling errors and typographical errors are fixed in TS 3.12.B and TS 4.12.B.

### 3.0 EVALUATION

The proposed TS changes would revise the operability requirements for the refueling interlocks contained within TS 3.12 as well as the surveillance requirements specified within SR 4.12. In addition, TS 3.12.F will be clarified to state that there must be a minimum of 24 hours fission product decay prior to fuel handling. The proposed changes are consistent with the Standard Technical Specifications (STS), NUREG-1433, with the industry proposed Technical Specifications Task Force (TSTF) generic Traveler TSTF-225 incorporated, as modified. The evaluation of the proposed TS changes follows.

Proposed change #1 will add Required Actions (RAs) should the Limiting Condition for Operation (LCO) requirement that the refueling interlocks be operable during core alterations or in-vessel fuel movement not be met. The RAs will be to suspend fuel movement with equipment associated with the inoperable interlock(s), or immediately insert a control rod withdrawal block and verify all control rods are fully inserted. Note that this does require every single rod to be inserted. There are no exceptions, not even for rods in core cells which have been completely defueled. A core cell consists of the four fuel assemblies surrounding each control rod. Typically licensees will use blade guides to provide alignment and support to rods which are inserted in defueled cells.

The proposed change satisfies the purpose of the LCO, which is to ensure that fuel is not loaded into a cell with a withdrawn control rod and to prevent control rod withdrawal, thereby preventing inadvertent criticality. There are two different situations where these RAs could be used. The first situation is if an equipment problem renders any of the refueling interlocks inoperable. The licensee would have the option to defer the maintenance by enforcing the refueling interlocks using the RAs. The second situation would be if the surveillance requirement comes due during fuel movement. The licensee would have the option of declaring the refueling interlocks inoperable because of an overdue surveillance requirement and to use the RAs to enforce the refueling interlocks and continue fuel movement. This has the benefit of not interrupting a critical evolution such as fuel movement. There is no intent to allow the



licensee to never perform the surveillance requirement by relying on the RAs instead. As a minimum, the surveillance requirement to verify the operability of the refueling interlocks is expected to be satisfied at the start of each refueling outage. The proposed change provides equivalent protection against inadvertent criticality when interlocks are inoperable, equal to that provided when the interlocks are operable, and is, therefore, acceptable.

Proposed change #2 removes from the TSs the interlock requirements on the "Control Rod Blocks-Mode switch in Startup/Hot Standby and refueling platform over the reactor", and the "Refueling Platform Reverse Motion (toward reactor vessel) Block - Mode switch in Startup/Hot Standby". TS 3.12.A requires that the reactor mode switch be locked in the Refuel position during core alterations. Change #1 will add the RAs which require fuel movement to be suspended, or the insertion of a rod withdrawal block with all rods fully inserted, if the refueling interlocks are inoperable. If the reactor mode switch is moved to the Startup/Hot Standby position, TS 3.12.A will not be met, and the RAs will provide equivalent protection against inadvertent criticality. Therefore, this change is acceptable. The plant hardware is not being changed, but these interlocks will now be controlled through plant procedures, not by the TSs.

Proposed change #3 will identify, as part of SR 4.12.A, the refueling equipment interlock inputs that need to be functionally tested. The interlocks that are retained in the TSs will be included. This is a clarification and is an acceptable change.

Proposed change #4 removes the "Refuel Platform Hoist Blocks - Hoist overload" and "High position limitation" from the TS. These TS interlock requirements are not needed for the safety function of the interlocks, which is to prevent reactor criticality during refueling evolutions. These TS interlock requirements are safety features designed to prevent a fuel handling accident. However, the assumption in the fuel handling accident (FHA) is that the fuel assembly is dropped from the maximum height allowed by the fuel handling equipment mechanical stops. The bounding accident analyses demonstrates acceptable radiological consequences even if a fuel assembly is dropped. Consequently, the TS requirements of the refueling machinery do not constitute a design feature that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier, nor do they constitute a primary success path to mitigate fuel handling accidents. Therefore, they do not meet the criteria in 10 CFR 50.36(c)(2)(ii) for retention in the TSs. These changes are, therefore, acceptable.

Proposed change #5 was withdrawn by the licensee by letter dated March 8, 2001.

Proposed change #6 is to delete the SR frequency requirement to perform "following any repair work associated with the interlocks." To be operable, equipment that is in the TSs must meet the TS surveillance requirements. An SR is met when its acceptance criteria are satisfied (the usage of the terms "met" and "performed" are consistent between the STS and the VY TSs; see VY TS 1.Y, under the definition of surveillance frequency). Prior to returning inoperable equipment to operable status, licensees must have adequate assurance that applicable surveillances are met. When maintenance has the potential to affect whether or not the equipment can satisfy the acceptance criteria of an SR, then the SR is the preferred way; however, operability can also be confirmed through post-maintenance or modification testing. Thus, it is not necessary to explicitly require SR performance.

Therefore, this change is acceptable. This change proposal is also consistent with the STS, in that the corresponding STS SR does not explicitly state that the SR must be performed post maintenance.

Proposed change #7 is to reword the TS 3.12.F requirement that “Fuel shall not be moved or handled in the reactor core for 24 hours following reactor shutdown to cold shutdown conditions,” to state that there must be 24 hours of fission product decay prior to fuel handling within the reactor vessel. Cold shutdown is reached when the reactor coolant temperature is less than or equal to 212 °F, per TS 1.V. The VY Updated Final Safety Analysis Report (UFSAR) contains the analysis for a fuel handling accident in section 14.6.4. There is no information given in Section 14.6.4 as to how long the core is assumed to be shutdown prior to the fuel handling accident. However, in their submittal the licensee states that the 24 hours of shutdown time is consistent with their safety analysis. The time between when the reactor is shutdown and taken subcritical and the reactor reaches cold shutdown should also count for fission product decay time. Therefore, this change is acceptable.

Proposed change #8 is to correct minor spelling and typographical errors in LCO 3.12.B and SR 4.12.B. The abbreviation for source range monitors will be changed from “SRM’s” to “SRMs” to match the STS standard for this abbreviation. The spelling of “alternations” will be corrected to “alterations”. The phrases “of normal detector” will be revised to “of normal detectors” and “the detectors is” will be changed to “the detectors are”. These changes do not affect the meaning or the requirements of these sections, and are acceptable. Additionally, the TS Bases for refueling TSs are updated to reflect all of the above revisions. The NRC staff finds the changes to the TS Bases accurately reflect the changes above and the staff has no objection to these changes.

The NRC staff has reviewed the licensee’s proposed TS changes for modifying their refueling TSs. The proposed TS changes satisfy the criteria of 10 CR 50.36(c)(2)(ii) and the VY safety analysis for inclusion in the TSs, and are acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission’s regulations, the Vermont State official was notified of the proposed issuance of the amendment. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in amounts, and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (66 FR 15770). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: T. Tjader  
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Date: April 20, 2001