



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

January 30, 2013

Site Vice President  
Entergy Nuclear Operations, Inc.  
Vermont Yankee Nuclear Power Station  
P.O. Box 250  
Governor Hunt Road  
Vernon, VT 05354

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - ISSUANCE OF  
AMENDMENT TO RENEWED FACILITY OPERATING LICENSE RE: ROD  
WORTH MINIMIZER BYPASS ALLOWANCE (TAC NO. ME7927)

Dear Sir or Madam:

The Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 255 to Renewed Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station (VYNPS), in response to your application dated February 1, 2012, as supplemented on May 8, 2012.

The licensee's application for the proposed amendment revised the VYNPS Technical Specification 3.3.B.3 for bypassing the Rod Worth Minimizer consistent with the allowances and required actions recommended in the Standard Technical Specifications, NUREG-1433, Revision 3, "Standard Technical Specifications General Electric Plants, [boiling-water reactor] BWR/4."

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

Sincerely,

A handwritten signature in black ink, appearing to read "R. Guzman".

Richard V. Guzman, Senior Project Manager  
Plant Licensing Branch 1-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures:

1. Amendment No. 255 to License No. DPR-28
2. Safety Evaluation

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

ENERGY NUCLEAR VERMONT YANKEE, LLC

AND ENERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER STATION

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 255  
Renewed License No. DPR-28

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment filed by Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (the licensee) dated February 1, 2012, as supplemented by letter dated May 8, 2012, 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.

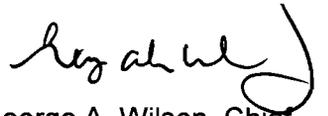
2. Accordingly, the license is amended as indicated in the attachment to this license amendment, and paragraph 3.B of the Renewed Facility Operating License No. DPR-28 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 255, 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 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



George A. Wilson, Chief  
Plant Licensing Branch I-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the License and  
Technical Specifications

Date of Issuance: January 30, 2013

ATTACHMENT TO LICENSE AMENDMENT NO. 255

RENEWED FACILITY OPERATING LICENSE NO. DPR-28

DOCKET NO. 50-271

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove Page

3

Insert Page

3

Replace the following pages of 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 Pages

83

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Insert Pages

83

83a

- D. Entergy Nuclear Operations, Inc., pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any Byproduct, source, or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components.
  - E. Entergy Nuclear Operations, Inc., pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not to separate, such byproduct and special nuclear material as may be produced by operation of the facility.
3. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Section 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:
- A. Maximum Power Level

Entergy Nuclear Operations, Inc. is authorized to operate the facility at reactor core power levels not to exceed 1912 megawatts thermal in accordance with the Technical Specifications (Appendix A) appended hereto.
  - B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 255 are hereby incorporated in the license. Entergy Nuclear Operations, Inc. shall operate the facility in accordance with the Technical Specifications.
  - C. Reports

Entergy Nuclear Operations, Inc. shall make reports in accordance with the requirements of the Technical Specifications.
  - D. This paragraph deleted by Amendment No. 226.
  - E. Environmental Conditions

Pursuant to the Initial Decision of the presiding Atomic Safety and Licensing Board issued February 27, 1973, the following conditions for the protection of the environment are incorporated herein:

    - 1. This paragraph deleted by Amendment No. 206, October 22, 2001.
    - 2. This paragraph deleted by Amendment 131, 10/07/91.

### 3.3 LIMITING CONDITIONS FOR OPERATION

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2. The Control Rod Drive Housing Support System shall be in place when the Reactor Coolant System is pressurized above atmospheric pressure with fuel in the reactor vessel unless all operable control rods are fully inserted.
3. While the reactor is below 17% power, the Rod Worth Minimizer (RWM) shall be operable while moving control rods except that:
  - (a) If the RWM is inoperable during a reactor startup.
    1. Immediately suspend control rod movement except by scram.

OR

    - 2.1.a Immediately verify  $\geq 12$  rods withdrawn,

OR

    - 2.1.b Immediately verify by administrative measures that startup with the RWM inoperable has not been performed in the last calendar year.

AND

    - 2.2 During control rod movement, verify movement of control rods is in compliance with banked position withdrawal sequence (BPWS) by a second licensed operator or other qualified member of the technical staff.

### 4.3 SURVEILLANCE REQUIREMENTS

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2. The Control Rod Drive Housing Support System shall be inspected after reassembly.
3. Prior to control rod withdrawal for startup the Rod Worth Minimizer (RWM) shall be verified as operable by performing the following:
  - (a) Verify that the control rod withdrawal sequence for the Rod Worth Minimizer computer is correct.
  - (b) The Rod Worth Minimizer diagnostic test shall be performed.

### 3.3 LIMITING CONDITIONS FOR OPERATION

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- (b) If the RWM is inoperable during a reactor shutdown, during control rod movement, verify movement of control rods is in compliance with BPWS by a second licensed operator or other qualified member of the technical staff.

### 4.3 SURVEILLANCE REQUIREMENTS

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 255 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-28

ENERGY NUCLEAR VERMONT YANKEE, LLC

AND ENERGY NUCLEAR OPERATIONS, INC.

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

1.0 INTRODUCTION

By letter dated February 1, 2012 (Reference 1), as supplemented by letter dated May 8, 2012 (Reference 2), Entergy Nuclear Operations, Inc. (Entergy, the licensee) submitted a license amendment request (LAR) for changes to the Vermont Yankee Nuclear Power Station (VYNPS) Technical Specifications (TSs).

The supplemental letter dated May 8, 2012, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on April 17, 2012 (77 FR 22812).

The proposed change would revise the TS 3.3.B.3 allowances for bypassing the Rod Worth Minimizer (RWM) consistent with the allowances and required actions recommended in the Standard Technical Specifications (STS) (Reference 3). The VYNPS TS 3.3.B.3 currently requires the RWM to be operable while moving control rods when the reactor is less than 17 percent power. If the RWM is inoperable during reactor startup, VYNPS TS 3.3.B.3 allows the startup to continue provided at least 12 control rods have been withdrawn and a second licensed operator verifies that the operator at the reactor console is following the control rod program. The VYNPS TS 3.3.B.3 also allows no more than two rods to be moved if all rods, except those that cannot be moved with control rod drive pressure, are fully inserted.

The proposed change would add two new conditions to VYNPS TS 3.3.B.3 that addresses RWM inoperability during reactor startup while the reactor is less than 17 percent power. In addition, a new condition is added that addresses RWM inoperability during reactor shutdown.

## 2.0 REGULATORY EVALUATION

The regulatory requirements and guidance which the NRC staff considered in assessing the proposed TS change are as follows:

Section 182a of the Atomic Energy Act requires applicants for nuclear power plant operating licenses to include TSs as part of the license. In Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.36, "Technical Specifications" the Commission established its regulatory requirements related to the content of TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following categories: (1) safety limits, limiting safety system settings and control settings, (2) limiting conditions for operation (LCOs), (3) Surveillance Requirements (SRs), (4) design features, (5) administrative controls, (6) decommissioning, (7) initial notification, and (8) written reports.

As stated in 10 CFR 50.36(c)(2)(i), the "Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specification..." Criterion 3 of 10 CFR 50.36(c)(2)(ii) requires an LCO to be established for a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

The STS were developed based on the criteria in 10 CFR 50.36(c)(2)(ii). Existing LCOs and related SRs included as TS requirements which satisfy any of the criteria specified in 10 CFR 50.36(c)(2)(ii) must be retained in the TS. The NRC staff reviewed the licensee's proposed TS changes in accordance with NUREG-1433, "Standard Technical Specifications General Electric Plants, BWR/4."

## 3.0 TECHNICAL EVALUATION

### 3.1 Licensee's Proposed Change

The following changes were proposed to TS 3.3.B.3:

#### Current TS 3.3.B.3

3. While the reactor is below 17% power, the Rod Worth Minimizer (RWM) shall be operating while moving control rods except that:
  - (a) If after withdrawal of at least 12 control rods during a startup, the RWM fails, the startup may continue provided a second licensed operator verifies that the operator at the reactor console is following the control rod program;
  - or
  - (b) If all rods, except those that cannot be moved with control rod drive pressure, are fully inserted, no more than two rods may be moved.

Proposed LCO 3.3.B.3 (Reference 1)

3. While the reactor is below 17% power, the Rod Worth Minimizer (RWM) shall be operable while moving control rods except that:

(a) If the RWM is inoperable during a reactor startup.

1. Immediately suspend control rod movement except by scram.

OR

2.1. a Immediately verify  $\geq 12$  rods withdrawn,

OR

2.1. b Immediately verify by administrative measures that startup with the RWM inoperable has not been performed in the last 12 months.

AND

2.2. During control rod movement, verify movement of control rods is in compliance with banked position withdrawal sequence (BPWS) by a second licensed operator or other qualified member of the technical staff.

(b) If the RWM is inoperable during a reactor shutdown, during control rod movement, verify movement of control rods is in compliance with BPWS by a second licensed operator or other qualified member of the technical staff.

3.2 Licensee Evaluation

In Section 3, "Technical Evaluation," of the licensee's LAR, the licensee stated that:

The RWM function assists and supplements the operator with an effective backup control rod monitoring routine that enforces adherence to established startup, shutdown and low power level control rod procedures. The computer prevents the operator from establishing control rod patterns that are not consistent with established RWM sequences by initiating appropriate rod select block, rod withdrawal block, and rod insert block interlock signals to the Reactor Manual Control System's rod block circuitry.

The licensee further stated that the RWM sequences stored in the computer memory are based on control rod withdrawal procedures designed to limit, and thereby minimize, individual control rod worth to acceptable levels as determined by the design basis control rod drop accident. The RWM function does not interfere with normal reactor operation, and in the event of failure, does not itself cause rod patterns to be established which would violate the design objective of the RWM. The RWM function may be bypassed and its rod block function

disabled only by specific procedural control initiated by the reactor operator and as allowed by the plant TS.

### 3.3 NRC Staff Evaluation

The NRC staff reviewed the licensee's submittal and the supplemental information provided in response to NRC staff's request for additional information (RAI) (Reference 2), and related documentation (e.g., VYNPS TSs, Updated Final Safety Analysis Report (UFSAR), and the STS). The NRC staff understands that the licensee proposes to modify the language used in the current LCO 3.3.B.3. consistent with that of the STS regarding the allowances for bypassing RWM during reactor startup.

The Reactor Protection System (RPS) is designed to initiate a reactor scram when one or more monitored parameters exceed their specified limits to preserve the integrity of the fuel cladding and the reactor coolant pressure boundary and minimize the energy that must be absorbed following an accident. The proposed TS amendment does not change the applicability of RPS functions during plant startup; however the language proposed in LCO 3.3.B.3 clarifies the allowances for bypassing RWM during startup that makes the VYNPS TS consistent with the allowances recommended in the STS.

Consistent with the STS, the proposed amendment allows, if the RWM is inoperable during a reactor startup, the option to immediately suspend control rod movement except by scram or to immediately verify by administrative methods that startup with the RWM inoperable has not been performed in the last calendar year. The additional administrative controls to allow startup or shutdown to continue include requiring a second licensed operator or other qualified member of the technical staff to verify that movement of control rods is in compliance with the BPWS. The NRC staff also concurs that the proposed change requires that there be a high degree of reliability of the RWM system so that the allowance is not abused. The NRC staff finds that that plant startups and shutdowns can be safely performed with the RWM inoperable by imposing additional administrative requirements consistent with the NRC staff approved STS, does not impact the current safety analyses of record for the transients and accidents, and that the imposition of additional procedure and administrative controls provide reasonable assurance that the plant will be operated within its design and licensing basis.

The NRC staff identified that the originally submitted license amendment request was not consistent with NUREG-1433, Revision 3. To address the inconsistencies with NUREG-1433, Revision 3, the NRC staff requested information from the licensee in an RAI dated April 4, 2012 (ML130090298). The following summarizes the NRC staff's question, and the licensee's response:

RAI: Entergy Nuclear Operations, Inc. proposed to revise TS 3.3.B.3 allowances for bypassing the RWM consistent with the allowances provided in NUREG-1433, volume 1, revision 3. However, the proposed required action 2.1.b in TS 3.3.B.3 is not consistent with NUREG-1433, volume 1, revision 3 and is also non-conservative.

Provide a technical evaluation that addresses the non-conservative phrase, "in the last 12 months" in proposed required action 2.1.b or provide technical specifications that are consistent with NUREG-1433, volume 1, revision 3.

The licensee submitted its response to the RAI question in a letter dated May 8, 2012 (Reference 2):

RAI Response: Attachment 2 provides revised TS and TS bases pages updated to use the wording from NUREG-1433, volume 1, revision 3.

The licensee updated its proposed change in response to the RAI. The RAI response proposes to revise the proposed change to VYNPS TS 3.3.B.3 specifications to immediately verify by administrative measures that startup with the RWM inoperable has not been performed in the last calendar year when the reactor is less than 17 percent power.

The NRC reviewed the licensee's response to the staff's RAI, and found it to be acceptable since it is consistent with the wording used in NUREG-1433, Volume 1, Revision 3. On May 10, 2012, the Federal Register announced the availability of NUREG-1433, Volume 1 Revision 4 (Reference 4). The NRC staff also compared the licensee's response to NUREG-1433 Volume 1, Revision 4. The NRC staff determined that the licensee's response is also consistent with NUREG-1433 Volume 1, Revision 4.

The new proposed VYNPS TS 3.3.B.3 maintains the current requirement for the RWM to be operable while moving control rods when the reactor is less than 17 percent power and allows reactor startup to continue provided at least 12 control rods have been withdrawn, and a second licensed operator verifies that the operator at the reactor console is following the control rod program (i.e., banked position withdrawal sequence). In addition, the licensee, in electing to implement the STS wording, added new conditions to VYNPS TS 3.3.B.3. The first added condition requires immediately stopping control rod movement, except by scram, if the RWM is not operable when the reactor is less than 17 percent power. The second added condition allows the startup to continue with an inoperable RWM as long as the licensee immediately verifies by administrative measures that startup with the RWM inoperable has not been performed in the last calendar year and a second licensed operator or other qualified member of the technical staff verifies the movement of control rods is in compliance with banked position withdrawal sequence during the control rod movement. The third condition addresses an inoperable RWM during reactor shutdown. It allows reactor shutdown to continue with an inoperable RWM, if during control rod movement, a second licensed operator or other qualified member of the technical staff verifies the movement of control rods is in compliance with banked position withdrawal sequence.

The proposed change conservatively adds additional conditions and requirements beyond VYNPS's current TS 3.3.B.3, and therefore, is more restrictive than current VYNPS TS 3.3.B.3. The additional conditions provide reasonable assurance that VYNPS will be operated within its design and licensing basis. This proposed change also conforms to NUREG-1433, Revision 4. The NRC staff finds that the requirements in 10 CFR 50.36 will continue to be met and the proposed change is acceptable.

#### 3.4 NRC Staff Conclusion

The NRC staff determines that the proposed license amendment request is acceptable based on the following considerations: (1) plant startups and shutdowns can be safely performed with the RWM inoperable by requiring the licensee's additional procedure and administrative controls, as recommended in the NRC staff-approved STS; (2) the proposed amendment does not impact the current safety analyses of record for VYNPS regarding the plant transient and accident analyses; (3) the proposed amendment provides reasonable assurance that the plant will be operated within its design and licensing basis, and (4) the proposed VYNPS TS LCO 3.3.B.3 language is consistent with that of the NRC staff-approved STS. The NRC staff, therefore, concludes that the proposed license amendment is 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. 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 (77 FR 22812). 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) there is reasonable assurance that 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.

#### 7.0 REFERENCES

1. Letter from C. J. Wamser (Entergy) to USNRC, "Technical Specifications Proposed Change No. 298, Rod Worth Minimizer Bypass Allowance, Vermont Yankee Nuclear Power Station," February 1, 2012 (Agencywide Document Access and Management System (ADAMS) Accession No. ML12037A065).
2. Letter from C. J. Wamser (Entergy) to USNRC, "Technical Specifications Proposed Change No. 298, Response to Request for Additional Information, Vermont Yankee Nuclear Power Station," May 8, 2012 (ADAMS Accession No. ML12135A216).
3. NUREG-1433 "Standard Technical Specifications General Electric BWR/4 Plants," Volume 1, Revision 3 (ADAMS Accession No. ML041910194).
4. NUREG-1433 "Standard Technical Specifications General Electric BWR/4 Plants," Volume 1, Revision 4 (ADAMS Accession No. ML12104A192).

Principal Contributors: M. Razzaque, NRR/DSS/SRXB  
K. Bucholtz, NRR/DSS/STSB

Date: January 30, 2013

January 30, 2013

Vice President, Operations  
Entergy Nuclear Operations, Inc.  
Vermont Yankee Nuclear Power Station  
P.O. Box 250  
Governor Hunt Road  
Vernon, VT 05354

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - ISSUANCE OF  
AMENDMENT TO RENEWED FACILITY OPERATING LICENSE RE: ROD  
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A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Richard V. Guzman, Senior Project Manager  
Plant Licensing Branch 1-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures:

1. Amendment No. 255 to License No. DPR-28
2. Safety Evaluation

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\*SE Input via memo. No substantial changes made.

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