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Michael J. Colomb  
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BVY 10-018

April 13, 2010

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: Technical Specifications Proposed Change No. 291  
Control Rod Block Actuation Logic System Functional Test  
Vermont Yankee Nuclear Power Station  
Docket No. 50-271  
License No. DPR-28

Dear Sir or Madam:

In accordance with 10CFR50.90, Entergy Nuclear Operations, Inc. (ENO) is proposing an amendment to Operating License DPR-28 for the Vermont Yankee Nuclear Power Station (VY). The proposed change institutes a requirement to perform a Logic System Functional Cycle Test of the Control Rod Block actuation instrumentation trip functions once every Operating Cycle.

ENO has reviewed the proposed amendment in accordance with 10CFR50.92 and concludes it does not involve a significant hazards consideration. In accordance with 10CFR50.91, a copy of this application, with attachments, was provided to the State of Vermont, Department of Public Service.

Attachment 1 to this letter provides an evaluation of the proposed change. Attachment 2 contains a markup of the current TS and TS Bases pages. Attachment 3 contains the retyped TS and Bases pages. The TS Bases are provided for information only.

ENO requests approval of the proposed amendment by May 1, 2011 with a 60 day implementation period.

There are no new regulatory commitments made in this letter.

A001  
NRC

If you have any questions on this transmittal, please contact Mr. James DeVincentis at 802-451-3150.

I declare under penalty of perjury that the foregoing is true and correct. Executed on April 13, 2010.

Sincerely,

A handwritten signature in black ink, appearing to read 'MJC/PLC', written in a cursive style.

MJC/PLC

Attachment 1: Evaluation of the Proposed Change  
Attachment 2: Markup of the Current Technical Specification and Bases Pages  
Attachment 3: Retyped Technical Specification and Bases Pages

cc: Mr. Samuel J. Collins  
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Mr. James S. Kim, Project Manager  
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Mr. David O'Brien, Commissioner  
VT Department of Public Service  
112 State Street – Drawer 20  
Montpelier, Vermont 05620-2601

Attachment 1

Vermont Yankee Nuclear Power Station

Proposed Change No. 291

Evaluation of the Proposed Change

## 1. SUMMARY DESCRIPTION

Entergy Nuclear Operations, Inc. (ENO) is requesting to amend Operating License DPR-28 for Vermont Yankee Nuclear Power Station (VY). The proposed change would revise Technical Specifications (TS) Section 4.2.E to add requirement 4.2.E.2 to perform a Logic System Functional Test (LSFT) of the Control Rod Block (CRB) actuation instrumentation trip functions once every Operating Cycle.

## 2. DETAILED DESCRIPTION

VY TS include Limiting Conditions for Operation (LCO) and Surveillance Requirements (SR) for the CRB actuation instrumentation. TS 3.2.E and Table 3.2.5 provide the LCO requirements and TS 4.2.E and Table 4.2.5 provides the required SRs (functional tests and frequencies).

Prior to the implementation of License Amendment (LA) 236 (Reference (a)) the VY TS included a requirement to perform a LSFT of the CRB actuation trip system logic once every Operating Cycle. During implementation of LA 236, Entergy discovered that this requirement was deleted from the TS without adequate justification. This was entered into the Corrective Action Program and controls were put in place to ensure the SR was completed once every Operating Cycle while a TS change was processed to reinstitute the requirement.

The following change is proposed to the current TS Section 4.2.E:

**Proposed TS 4.2.E.2**

Perform a Logic System Functional Test of Control Rod Block Actuation instrumentation Trip Functions once every Operating Cycle.

## 3. TECHNICAL EVALUATION

Control rods provide the primary means for control of reactivity changes. CRB instrumentation includes channel sensors, logic circuitry, switches, and relays that are designed to backup administrative controls on control rod movement. The TS include LCO and SRs covering the Rod Block Monitor (RBM) and the Reactor Mode Switch (RMS) shut down position trip functions.

The purpose of the RBM is to limit control rod withdrawal if localized neutron flux exceeds a predetermined setpoint during control rod manipulations. The RBM has two channels, either of which can initiate a control rod block when the channel output exceeds the control rod block setpoint.

With the RMS in the shutdown position, a control rod withdrawal block is applied to all control rods to ensure that the shutdown condition is maintained. This trip function prevents inadvertent criticality as a result of a control rod withdrawal during cold shutdown and hot shutdown or during a refueling outage when the reactor mode switch is required to be in the shutdown position.

Current SR testing of the RBM and RMS shutdown position trip functions is described in TS Table 4.2.5. The RBM trip functions are functionally tested every 3 months and the RMS shutdown

position trip function is functionally tested every refueling outage. These SRs test the individual trip functions but do not constitute a Logic System Functional Test (LSFT) as defined in TS section 1.0.H.

This proposed change adds a requirement for performance of a LSFT of the CRB instrumentation once every Operating Cycle. This additional test ensures that the entire logic is tested consistent with TS requirements.

#### **4. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION**

Entergy Nuclear Operations, Inc. (ENO) is proposing to modify the Vermont Yankee Nuclear Power Station Technical Specification section 4.2.E to add requirement 4.2.E.2 to perform a logic system functional test (LSFT) of the Control Rod Block (CRB) actuation instrumentation trip functions once every Operating Cycle.

ENO has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10CFR50.92, "Issuance of amendment," as discussed below:

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

Response: No. The change does not impact the function of any structure, system or component that affects the probability of an accident or that supports mitigation or consequences of an accident previously evaluated. The proposed change adds a requirement to perform additional testing of the control rod block instrumentation. The proposed change does not affect reactor operations or accident analysis and there is no change to the radiological consequences of a previously analyzed accident. The operability requirements for accident mitigation systems remain consistent with the licensing and design basis. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No. The proposed change does not involve any physical alteration of plant equipment and does not change the method by which any safety-related system performs its function. The proposed change involves the addition of a requirement to perform a logic system functional test of plant instrumentation. This test is within the design capability of the system and does not create the possibility of a different kind of accident. No new or different types of equipment will be permanently installed.

Operation of existing installed equipment is unchanged. The methods governing plant operation and testing remain consistent with current safety analysis assumptions.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No. These changes do not change any existing design or operational requirements and do not adversely affect existing plant safety margins or the reliability of the equipment assumed to operate in the safety analysis. The proposed change only affects the testing of the control rod block instrumentation. As such, there are no changes being made to safety analysis assumptions, safety limits or safety system settings that would adversely affect plant safety as a result of the proposed change. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, ENO concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10CFR50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

## **5. ENVIRONMENTAL CONSIDERATIONS**

This amendment request meets the eligibility criteria for categorical exclusion from environmental review set forth in 10CFR51.22(c)(9) as follows:

- (i) The amendment involves no significant hazards determination.

As described in this evaluation, the proposed change involves no significant hazards consideration.

- (ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

The proposed amendment adds additional testing for the CRB instrumentation and therefore does not involve any physical alterations to the plant configuration that could lead to a change in the type or amount of effluent release offsite.

- (iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed amendment adds a requirement to perform a LSFT that is already being performed. These testing activities do not result in a significant increase in individual or cumulative occupational radiation exposure.

Based on the above, ENO concludes that the proposed change meets the eligibility criteria for categorical exclusion as set forth in 10CFR51.22(c)(9). Pursuant to 10CFR51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

## **6. REFERENCES**

- a. Letter, USNRC to Entergy Nuclear Operations, Inc., Vermont Yankee Nuclear Power Station – Issuance of Amendment Re: Instrumentation Technical Specifications(TAC No. MD8111), NVEY 09-062, dated June 12, 2009

Attachment 2

Vermont Yankee Nuclear Power Station

Proposed Change No. 291

Markup of the Current Technical Specification and Bases Pages

3.2 LIMITING CONDITIONS FOR OPERATION

D. Deleted.

E. Control Rod Block Actuation

The control rod block instrumentation for each Trip Function in Table 3.2.5 shall be operable in accordance with Table 3.2.5.

4.2 SURVEILLANCE REQUIREMENTS

D. Deleted.

E. Control Rod Block Actuation

1. The control rod block instrumentation shall be functionally tested and calibrated as indicated in Table 4.2.5.

When a Rod Block Monitor channel is placed in an inoperable status solely for performance of required surveillances, entry into associated Limiting Conditions for Operation and required Actions may be delayed for up to 6 hours provided the associated Trip Function maintains control rod block initiation capability.

2. Perform a Logic System Functional Test of Control Rod Block Actuation instrumentation Trip Functions once every Operating Cycle.

BASES: 3.2.E/4.2.E CONTROL ROD BLOCK ACTUATION

## ACTIONS (continued)

control rod withdrawal block function. However, since the required actions of Table 3.2.5 ACTION Note 2 are consistent with the normal action of an operable Reactor Mode Switch-Shutdown Position Trip Function (i.e., maintaining all control rods inserted), there is no distinction between having one or two channels inoperable.

In both cases (one or both channels inoperable), suspending all control rod withdrawal and initiating action to fully insert all insertable control rods in core cells containing one or more fuel assemblies will ensure that the core is subcritical with adequate Shutdown Margin ensured by Specification 3.3.A.1. Control rods in core cells containing no fuel assemblies do not affect the reactivity of the core and are therefore not required to be inserted. Action must continue until all insertable control rods in core cells containing one or more fuel assemblies are fully inserted.

## SURVEILLANCE REQUIREMENTS

Surveillance Requirement 4.2.E.1

As indicated in Surveillance Requirement 4.2.E.1, control rod block instrumentation shall be functionally tested and calibrated as indicated in Table 4.2.5. Table 4.2.5 identifies, for each Trip Function, the applicable Surveillance Requirements.

Surveillance Requirement 4.2.E.1 also indicates that when an RBM channel is placed in an inoperable status solely for performance of required instrumentation Surveillances, entry into associated LCO and required Actions may be delayed for up to 6 hours provided the associated Trip Function maintains control rod block capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to operable status or the applicable LCO entered and required Actions taken. This allowance is based on the reliability analysis (Ref. 4) assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that a control rod block will be initiated when necessary.

← INSERT ATTACHED

Table 4.2.5, Functional Test

For Trip Functions 1.a, 1.b, and 1.c, a Functional Test is performed on each required channel to ensure that the channel will perform the intended function. The Functional Test of the RBM channels includes the Reactor Manual Control "Select Relay Matrix" System input. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. The Frequency of "Every 3 Months" is based on the reliability analysis of Reference 5.

For Trip Function 2, a Functional Test is performed to ensure that the entire channel will perform the intended function. The Functional Test for the Reactor Mode Switch-Shutdown Position Trip Function is performed by attempting to withdraw any control rod with the reactor mode switch in the

#### Surveillance Requirement 4.2.E.2

The Logic System Functional Test demonstrates the operability of the required initiation logic and simulated automatic operation for a specific channel. The testing required by the Control Rod Block Actuation Technical Specifications overlaps this Surveillance to provide testing of the assumed functions. The frequency of "once every Operating Cycle" is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has demonstrated that these components will usually pass the Surveillance when performed at the specified frequency.

Attachment 3

Vermont Yankee Nuclear Power Station

Proposed Change No. 291

Retyped Technical Specification and Bases Pages

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