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BVY 12-005

February 1, 2012

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

**SUBJECT:** Technical Specifications Proposed Change No. 297  
Suppression Chamber-Drywell Leak Rate Test Surveillance Frequency Change  
Vermont Yankee Nuclear Power Station  
Docket No. 50-271  
License No. DPR-28

Dear Sir or Madam:

In accordance with 10CFR50.90, Vermont Yankee (VY) is proposing an amendment to Operating License DPR-28. The proposed change will revise Technical Specification (TS) 4.7.A.6.b to allow the drywell to suppression chamber leak rate test to be performed once per operating cycle. No changes to test acceptance criteria are proposed. Other administrative changes are also made to support this change.

VY 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, is being provided to the State of Vermont, Department of Public Service.

Attachment 1 provides a detailed description and evaluation of the proposed change. Attachment 2 contains a markup of the current TS and Bases pages. Attachment 3 contains the retyped TS and Bases pages. The Bases are provided for information.

VY requests review and approval of the proposed license amendment by February 1, 2013 and a 60 day implementation period from the date of the amendment approval.

There are no new regulatory commitments made in this letter.

If you have any questions on this transmittal, please contact Mr. Robert Wanczyk at 802-451-3166.

A001  
LRR

I declare under penalty of perjury that the foregoing is true and correct.

Executed on February 1, 2012.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris J. Williams". The signature is fluid and cursive, with a long horizontal stroke at the end.

[CJW/JMD]

**Attachments**

1. Description and Evaluation of the Proposed Changes
2. Markup of the Current Technical Specifications and Bases Pages
3. Retyped Technical Specifications and Bases Pages

cc: Mr. William M. Dean  
Regional Administrator, Region 1  
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Mr. James S. Kim, Project Manager  
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USNRC Resident Inspector  
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Ms. Elizabeth Miller, Commissioner  
VT Department of Public Service  
112 State Street – Drawer 20  
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Attachment 1  
Vermont Yankee Nuclear Power Station  
Proposed Change 297  
Description and Evaluation of Proposed Changes

**1. SUMMARY DESCRIPTION**

This evaluation supports a request by Vermont Yankee (VY) to amend Operating License DPR-28. The proposed change would revise the VY Technical Specifications (TS) for performance of the drywell to suppression chamber leak rate test from being a “refueling outage test” to being an “operating cycle test.” No changes to test acceptance criteria are proposed. Other administrative changes are also made to support this change.

VY is on an 18 month operating cycle that is defined as the interval between the end of a refueling outage and the end of the next subsequent refueling outage. This change will allow the surveillance specified in TS 4.7.A.6.b.3 to be performed during the operating cycle which is inclusive of the refueling outage. The test will continue to be subject to the test interval tolerance provided in TS 4.0.2.

Specific Changes include:

- Changing the title of TS 4.7.A.6.b from “Refueling Outage Tests” to “Refueling Outage Test” since only one test will now be specified. This change is administrative.
- Deleting TS 4.7.A.6.b.2. This provision was deleted by a prior amendment and its removal is administrative.
- Renumbering TS 4.7.A.6.b.3 to TS 4.7.A.6.c and TS 4.7.A.6.c.1 and adding the title “Operating Cycle Test” to allow the test to be performed during the operating cycle.

**2. DETAILED DESCRIPTION**

The following changes are proposed to TS:

<p>Current TS 4.7.A.6.b</p> <p>b. <u>Refueling Outage Tests</u></p> <p>(1) All suppression chamber – drywell vacuum breaker position indication and alarm systems shall be calibrated and functionally tested.</p> <p>(2) Deleted</p> <p>(3) A drywell to suppression chamber leak rate test shall demonstrate that with an initial differential pressure of not less than 1.0 psi, the differential pressure decay rate shall not exceed the equivalent of the leakage rate through a 1-inch orifice.</p>	<p>Proposed TS 4.7.A.6.b and TS 4.7.A.6.c</p> <p>b. <u>Refueling Outage Test</u></p> <p>(1) All suppression chamber – drywell vacuum breaker position indication and alarm systems shall be calibrated and functionally tested.</p> <p>c. <u>Operating Cycle Test</u></p> <p>(1) A drywell to suppression chamber leak rate test shall demonstrate that with an initial differential pressure of not less than 1.0 psi, the differential pressure decay rate shall not exceed the equivalent of the leakage rate through a 1-inch orifice.</p>
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### 3. TECHNICAL EVALUATION

The proposed TS 4.7.A.6.c.1 will require a drywell to suppression chamber leak rate test be performed during each operating cycle. The leak rate test is currently required to be performed during the refuel outage. VY proposes to change the TS to require the surveillance to be performed on an operating cycle basis so that the test can be performed either during a refuel outage or at another time during the operating cycle. This would allow performance of the test just prior to a refuel outage to confirm the operability of the pressure suppression function of the primary containment and assess the need for maintenance during the refueling outage. No changes to test acceptance criteria are proposed.

The pressure suppression chamber to drywell vacuum breakers limit the pressure differential between the drywell and suppression chamber so that the structural integrity of the containment is maintained, especially during post-accident containment cooling. A description of the vacuum breaker design is provided in UFSAR section 5.2 "Primary Containment System." No changes to the vacuum breaker configuration or design requirements are proposed. Additionally, the proposed change does not change any technical requirements contained in the TS, licensing basis or safety analysis. The change only affects the scheduling of the TS requirements.

The current TS require performance of the drywell to suppression chamber leak rate test during refueling outages that are conducted approximately every 18 months. The TS Bases states that the test is performed at the end of each refueling cycle to verify that significant leakage flow paths do not exist between the drywell and suppression chamber. Testing at other times during the operating cycle (e.g., just prior to the refuel outage) on a fixed schedule within the tolerance provided by TS 4.0.2 will also ensure leakage is within analysis assumptions. There are no design analyses that rely on a specific surveillance frequency to support analysis assumptions.

The proposed change will require the drywell to suppression chamber leak rate test be performed once every operating cycle. VY is on an 18 month operating cycle which is defined as the interval between the end of a refueling outage and the end of the next subsequent refueling outage. This ensures the surveillance is performed at approximately the same interval. The proposed change will provide the flexibility to perform the surveillance during the operating cycle (i.e., during refuel outage, on-line or during a non-refueling shutdown). The scheduling requirements of TS 4.0.2 apply to this surveillance and ensure the surveillance is performed within the tolerance (i.e., 25%) specified in the TS.

The frequency for the equivalent Standard Technical Specification (STS)(Reference 6.a) Surveillance Requirement (SR) (3.6.1.1.2) for performance of the drywell to suppression chamber leak rate test is once per 18 months. The STS Bases notes that the 18 month surveillance frequency was developed considering that it is prudent that this surveillance be performed during a unit outage and also in view of the fact that component failures that might have affected this test are identified by other containment SRs. However, the STS includes a retest frequency, following two consecutive test failures, that would require the test to be done when operating. Based on this, the STS does not preclude performing the test at other times during the operating cycle. Additionally, other containment SRs (e.g., 10CFR50 Appendix J Testing) require components to meet stringent acceptance criteria and the probability that the results of a prior drywell to suppression chamber leak rate test would be invalidated is considered extremely low. Should significant work be performed on the vacuum breakers during a refueling outage the leak rate test may be necessary as a post maintenance test.

The proposed change for performance of the drywell to suppression chamber leak rate test will allow the test to be done at other times during the operating cycle subject to the surveillance interval requirements of TS 4.0.2. VY has identified another Entergy facility (James A. Fitzpatrick Nuclear Power Station) that performs this test with the plant on line using the normal differential pressure that exists between the drywell and suppression chamber.

Based on this, the change to allow performance of the leak rate test on an operating cycle basis does not pose a significant additional safety risk.

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

Pursuant to 10CFR50.92, Vermont Yankee (VY) has reviewed the proposed change and concludes that the change does not involve a significant hazards consideration since the proposed change satisfies the criteria in 10CFR50.92(c). These criteria require 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; (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 proposed change would revise the VY Technical Specifications (TS) surveillance requirements for performance of the drywell to suppression chamber leak rate test from being a refueling outage test to being an operating cycle test. Other administrative changes needed to support this change are also included.

The discussion below addresses each of these criteria and demonstrates that the proposed amendment does not constitute a significant hazard.

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

Response: No.

The proposed amendment does not significantly increase the probability or consequences of an accident since it does not involve a modification to any plant equipment or affect how plant systems or components are operated. No design functions or design parameters are affected by the proposed amendment. The proposed amendment involves the scheduling of a surveillance requirement so that the affected surveillance can be done anytime during the operating cycle. The proposed amendment does not impact the ability of the vacuum breakers to function in the event of a LOCA during the test. Performance of the surveillance on line versus during a refuel outage does not pose a significant increase in risk. No changes to the acceptance criteria for the surveillance are proposed. Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed change involves the schedule for performing a TS surveillance requirement. The proposed change does not change the method by which any safety-related system performs its function. No new or different types of equipment will be installed and the test will be performed within the bounds of the TS requirements. The methods governing plant operation and testing remain consistent with current safety analysis assumptions. The proposed amendment involves the scheduling of a surveillance requirement so that the affected surveillance can be done anytime during the operating cycle. No changes to acceptance criteria for the surveillance are proposed. 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 amendment involve a significant reduction in a margin of safety?

Response: No.

The proposed amendment involves the scheduling of a surveillance requirement so that the affected surveillance can be done anytime during the operating cycle. No changes to the acceptance criteria for the surveillance are proposed. The proposed change ensures that the safety functions of the pressure suppression chamber-drywell vacuum breakers continue to be fulfilled by performing the surveillance. The proposed amendment does not involve a physical modification of the plant and does not change the design or function of any component or system. Therefore, the proposed amendment will not involve a significant reduction in the margin of safety.

Based on the above, Entergy concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(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 Section 4 of 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 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 does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above, VY 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. NUREG-1433 "Standard Technical Specifications General Electric Plants, BWR/4,"  
Volume 1, Revision 3

Attachment 2

Vermont Yankee Nuclear Power Station

Proposed Change 297

Markup of the Current Technical Specifications and Bases Pages

Attachment 3  
Vermont Yankee Nuclear Power Station  
Proposed Change 297  
Retyped Technical Specifications and Bases Pages

3.7 LIMITING CONDITIONS FOR  
OPERATION

line is verified to be closed and conditions required by 3.7.D.2 are met.

6. Pressure Suppression Chamber - Drywell Vacuum Breakers

- a. When primary containment is required, all suppression chamber - drywell vacuum breakers shall be operable except during testing and as stated in Specifications 3.7.A.6.b and c, below. Suppression chamber - drywell vacuum breakers shall be considered operable if:

- (1) The valve is demonstrated to open fully with the applied force at all valve positions not exceeding that equivalent to 0.5 psi acting on the suppression chamber face of the valve disk.
- (2) The valve can be closed by gravity, when released after being opened by remote or manual means, to within not greater than the equivalent of 0.05 inch at all points along the seal surface of the disk.

4.7 SURVEILLANCE REQUIREMENTS

6. Pressure Suppression Chamber - Drywell Vacuum Breakers

a. Periodic Operability Tests

Operability testing of the vacuum breakers shall be in accordance with Specification 4.6.E and within 12 hours after any discharge of steam to the suppression chamber from the safety/relief valves and within 12 hours following an operation that causes any of the vacuum breakers to open. Operability of the corresponding position switches and position indicators and alarms shall be verified monthly and following any maintenance.

b. Refueling Outage Tests

- (1) All suppression chamber - drywell vacuum breaker position indication and alarm systems shall be calibrated and functionally tested.

~~(2) Deleted~~

3.7 LIMITING CONDITIONS FOR OPERATION

- (3) The position alarm system will annunciate in the control room if the valve opening exceeds the equivalent of 0.05 inch at all points along the seal surface of the disk.
- b. Up to two (2) of the ten (10) suppression chamber - drywell vacuum breakers may be determined to be inoperable provided that they are secured, or known to be, in the closed position.
- c. Reactor operation may continue for fifteen (15) days provided that at least one position alarm circuit for each vacuum breaker is operable and each suppression chamber - drywell vacuum breaker is physically verified to be closed immediately and daily thereafter.

7. Oxygen Concentration

- a. The primary containment atmosphere shall be reduced to less than 4 percent oxygen by volume with nitrogen gas while in the RUN MODE during the time period:
  - i. From 24 hours after thermal power is greater than 15% rated thermal power following startup, to

4.7 SURVEILLANCE REQUIREMENTS

C. Operating Cycle Test

- (3) A drywell to suppression chamber leak rate test shall demonstrate that with an initial differential pressure of not less than 1.0 psi, the differential pressure decay rate shall not exceed the equivalent of the leakage rate through a 1-inch orifice.



7. Oxygen Concentration

The primary containment oxygen concentration shall be measured and recorded on a weekly basis.

BASES: 4.7 (Cont'd)

*E Operating*

~~At the end of each refueling cycle~~, a leak rate test shall be performed to verify that significant leakage flow paths do not exist between the drywell and suppression chamber. The drywell pressure will be increased by at least 1 psi with respect to the suppression chamber pressure and held constant. The 2 psig set point will not be exceeded. The subsequent suppression chamber pressure transient (if any) will be monitored with a sensitive pressure gauge. If the drywell pressure cannot be increased by 1 psi over the suppression chamber pressure it would be because a significant leakage path exists; in this event the leakage source will be identified and eliminated before power operation is resumed. If the drywell pressure can be increased by 1 psi over the suppression chamber the rate of change of the suppression chamber pressure must not exceed a rate equivalent to the rate of leakage from the drywell through a 1-inch orifice. In the event the rate of change exceeds this value then the source of leakage will be identified and eliminated before power operation is resumed.

*the plant will be shutdown, i.e. operating,*

The drywell-suppression chamber vacuum breakers are exercised in accordance with Specification 4.6.E, following termination of discharge of steam into the suppression chamber from the safety/relief valves and following any operation that causes the vacuum breakers to open. This monitoring of valve operability is intended to assure that valve operability and position indication system performance does not degrade between refueling inspections. When a vacuum breaker valve is exercised through an opening-closing cycle, the position indicating lights are designed to function as follows:

Full Closed (Closed to $\leq 0.050$ " open)	2 White - On
Open ( $> 0.050$ " open to full open)	2 White - Off

Experience has shown that a weekly measurement of the oxygen concentration in the primary containment assures adequate surveillance of the primary containment atmosphere.

B. and C. Standby Gas Treatment System and Secondary Containment System

Initiating reactor building isolation and operation of the standby gas treatment system to maintain at least a 0.15 inch of water vacuum within the secondary containment provides an adequate test of the operation of the reactor building isolation valves, leakage tightness of the reactor building, and performance of the standby gas treatment system. The testing of reactor building automatic ventilation system isolation valves in accordance with Technical Specification 4.6.E demonstrates the operability of these valves. In addition, functional testing of initiating sensors and associated trip channels demonstrates the capability for automatic actuation. Periodic testing gives sufficient confidence of reactor building integrity and standby gas treatment system performance capability.

### 3.7 LIMITING CONDITIONS FOR OPERATION

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#### 6. Pressure Suppression Chamber - Drywell Vacuum Breakers

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### 4.7 SURVEILLANCE REQUIREMENTS

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##### b. Refueling Outage Test

(1) All suppression chamber - drywell vacuum breaker position indication and alarm systems shall be calibrated and functionally tested.

### 3.7 LIMITING CONDITIONS FOR OPERATION

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- (3) The position alarm system will annunciate in the control room if the valve opening exceeds the equivalent of 0.05 inch at all points along the seal surface of the disk.
- b. Up to two (2) of the ten (10) suppression chamber - drywell vacuum breakers may be determined to be inoperable provided that they are secured, or known to be, in the closed position.
- c. Reactor operation may continue for fifteen (15) days provided that at least one position alarm circuit for each vacuum breaker is operable and each suppression chamber - drywell vacuum breaker is physically verified to be closed immediately and daily thereafter.

#### 7. Oxygen Concentration

- a. The primary containment atmosphere shall be reduced to less than 4 percent oxygen by volume with nitrogen gas while in the RUN MODE during the time period:
  - i. From 24 hours after thermal power is greater than 15% rated thermal power following startup, to

### 4.7 SURVEILLANCE REQUIREMENTS

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- (1) A drywell to suppression chamber leak rate test shall demonstrate that with an initial differential pressure of not less than 1.0 psi, the differential pressure decay rate shall not exceed the equivalent of the leakage rate through a 1-inch orifice.

#### 7. Oxygen Concentration

The primary containment oxygen concentration shall be measured and recorded on a weekly basis.

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BASES: 4.7 (Cont'd)

Each operating cycle, a leak rate test shall be performed to verify that significant leakage flow paths do not exist between the drywell and suppression chamber. The drywell pressure will be increased by at least 1 psi with respect to the suppression chamber pressure and held constant. The 2 psig set point will not be exceeded. The subsequent suppression chamber pressure transient (if any) will be monitored with a sensitive pressure gauge. If the drywell pressure cannot be increased by 1 psi over the suppression chamber pressure it would be because a significant leakage path exists; in this event the leakage source will be identified and eliminated before power operation is resumed. If the drywell pressure can be increased by 1 psi over the suppression chamber the rate of change of the suppression chamber pressure must not exceed a rate equivalent to the rate of leakage from the drywell through a 1-inch orifice. In the event the rate of change exceeds this value then the plant will be shut down, if operating, the source of leakage will be identified and eliminated before power operation is resumed.

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