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BVY 14-049

June 11, 2014

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

SUBJECT: Technical Specifications Proposed Change No. 309, Defueled Technical Specifications and Revised License Conditions for Permanently Defueled Condition - Supplement 3 (TAC No. MF3714)  
Vermont Yankee Nuclear Power Station  
Docket No. 50-271  
License No. DPR-28

REFERENCES: 1. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Technical Specifications Proposed Change No. 309, Defueled Technical Specifications and Revised License Conditions for Permanently Defueled Condition," BVY 14-010, dated March 28, 2014 (TAC No. MF3714)

Dear Sir or Madam:

By letter dated March 28, 2014 (Reference 1), Entergy Nuclear Operations, Inc. (ENO) proposed an amendment to Renewed Facility Operating License (OL) DPR-28 for Vermont Yankee Nuclear Power Station (VY). The proposed amendment would revise the VY OL and Technical Specifications (TS) to be consistent with the expected permanently shutdown and defueled condition of VY.

ENO has identified an administrative error, in that justification for the changes to current TS 3/4.6, Reactor Coolant System, and TS 3/4.12, Refueling and Spent Fuel Handling, were not provided in their entirety with Reference 1. Attachment 1 of this letter provides the complete description of changes and justification for TS 3/4.6 and TS 3/4.12 and also provides a correction to the TS 3/4.12.F, Fuel Movement, reference in the justification. This correction is shown in strikethrough/underline format.

The conclusions of the no significant hazards consideration and the environmental considerations contained in Reference 1 are not affected by, and remain applicable to, this supplement.

There are no new regulatory commitments made in this letter.

If you have any questions on this transmittal, please contact Mr. Philip Couture at 802-451-3193.

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

Executed on June 11, 2014.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Recchia", with a long horizontal flourish extending to the right.

CJW/plc

Attachment: 1. Technical Specification 3/4.6 and 3/4.12 Changes and Justification

cc: Mr. William M. Dean  
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USNRC Resident Inspector  
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Mr. Christopher Recchia, Commissioner  
VT Department of Public Service  
112 State Street, Drawer 20  
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Attachment 1

Vermont Yankee Nuclear Power Station

Proposed Change 309 - Supplement 3

Technical Specification 3/4.6 and 3/4.12 Changes and Justification

**TS SECTION 3/4.6, REACTOR COOLANT SYSTEM**

<u>Current TS 3/4.6</u>	<u>Proposed TS 3/4.6</u>
A. Pressure and Temperature Limitations	A. Deleted
B. Coolant Chemistry	B. Deleted
C. Coolant Leakage	C. Deleted
D. Safety and Relief Valves	D. Deleted
E. Structural Integrity and Operability Testing	E. Deleted
F. Jet Pumps	F. Deleted
G. Single Loop Operation	G. Deleted
H. Recirculation System	H. Deleted
J. Thermal Hydraulic Stability	J. Deleted

**Basis**

Existing TS Section 3/4.6, "Reactor Coolant System," contains LCOs and SRs that provide assurance of the integrity and safe operation of the RCS and the operation of the related safety devices. Because the VY Part 50 license will no longer authorize emplacement or retention of fuel in the reactor vessel, the LCOs (and associated SRs) that do not apply (or are no longer needed) in a defueled condition are being proposed for deletion. Note that TS 3/4.6.I has previously been deleted.

Pressure and Temperature Limitations

TS 3/4.6.A specifies maximum specified heatup and cooldown rates during reactor startup and shutdown to be consistent with the design assumptions and satisfy the stress limits for cyclic operation. These limitations are not required for a plant that will be in the permanently defueled condition since the Part 50 license will prohibit reactor operation and may be deleted. Accordingly, TS Figures 3.6.1, 3.6.2 and 3.6.3, which are referenced in TS 3.6.A and contain the reactor vessel pressure-temperature limitations may also be deleted.

Coolant Chemistry

TS 3/4.6.B specifies the radiochemistry limits for the reactor coolant in the RCS. Limits on the maximum allowable level of radioactivity in the coolant are established to ensure that in the event of a release of any radioactive material to the environment during a DBA, radiation doses are maintained within the limits of 10 CFR 50.67. This specification may be deleted because it is not

applicable to the safe storage and handling of spent fuel when the plant is in the permanently defueled condition. Additionally, the FHA, which will be the only credible DBA, will not result in a release of reactor coolant to the environment.

#### Coolant Leakage

TS 3/4.6.C specifies the maximum leakage rates of reactor coolant from the RCS. This specification may be deleted because it is not applicable the safe storage and handling of spent fuel when the plant is in the permanently defueled condition.

#### Safety and Relief Valves

TS 3/4.6.D specifies the operability requirements for the safety and relief valves. These valves provide overpressure protection to the reactor during operation. The Part 50 license will prohibit operation of the reactor once the certifications required by 10 CFR 50.82(a)(1) have been submitted. Therefore, this specification may be deleted.

#### Structural Integrity and Operability Testing

TS 3/4.6.E specifies the requirements for structural integrity and operability testing of safety-related components.

The inservice inspection and testing programs will no longer be required in the permanently defueled condition. 10 CFR 50.55a(f) and (g) are applicable only to operating nuclear power reactors. Once VY is certified to be permanently defueled, it will no longer be an operating power reactor.

As discussed in Regulatory Guide 1.184, "Decommissioning of Nuclear Power Reactors," the maintenance rule, 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," requires monitoring the performance or condition of certain SSCs that could affect safety. Once the certifications for cessation of operation and for permanent fuel removal specified in 10 CFR 50.82(a)(1) have been submitted, the maintenance rule will be used to monitor the performance or condition of the SSCs associated with the storage, control, and maintenance of spent fuel in a safe condition. The monitoring will be sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended functions as specified in 10 CFR 50.65(a)(1). Therefore, this specification may be deleted.

#### Jet Pumps

TS 3/4.6.F specifies the operability requirements for the jet pumps. The jet pumps function as part of the reactor recirculation system to provide sufficient coolant circulation through the core during normal power operation to maintain normal operating temperatures. Failure of a jet pump nozzle assembly hold down mechanism, nozzle assembly and/or riser, would increase the cross-sectional flow area for blowdown following the design basis double-ended line break (LOCA). The Part 50 license will prohibit operation of the reactor once the certifications required by 10 CFR 50.82(a)(1) have been submitted and the LOCA will not be a credible DBA once the plant is in the permanently defueled condition. Therefore, this specification may be deleted.

#### Single Loop Operation

TS 3/4.6.G specifies the system settings and configuration necessary to operate the reactor with one recirculation loop. The Part 50 license will prohibit operation of the reactor once the certifications required by 10 CFR 50.82(a)(1) have been submitted. Therefore, this specification may be deleted.

Recirculation System

TS 3.6.H specifies requirements for reactor operation with the recirculation system. The Part 50 license will prohibit operation of the reactor once the certifications required by 10 CFR 50.82(a)(1) have been submitted. Therefore, this specification may be deleted. There is no corresponding TS 4.6.H.

Thermal Hydraulic Stability

TS 3.6.J specifies restrictions against operating the reactor in the power flow exclusion area. The Part 50 license will prohibit operation of the reactor once the certifications required by 10 CFR 50.82(a)(1) have been submitted. Therefore, this specification may be deleted. There is no corresponding TS 4.6.J.

Summary

The protection and monitoring functions of the RCS have been designed to ensure safe operation of the reactor required to protect the integrity of a fission product barrier. The requirements of 10 CFR 50, Appendix G, will no longer apply in the permanently defueled condition because the reactor coolant pressure boundary will no longer be used as a fission product barrier.

Once VY docket the certifications required by 10 CFR 50.82(a)(1), the 10 CFR Part 50 license will no longer authorize operation of the reactor or placement or retention of fuel in the reactor vessel, in accordance with 10 CFR 50.82(a)(2). The maintenance rule will be used to monitor the performance or condition of the SSCs associated with the storage, control, and maintenance of spent fuel in a safe condition. Based on the above, the proposed deletion of TS Section 3/4.6 in its entirety is acceptable.

**TS SECTION 3/4.12, REFUELING AND SPENT FUEL HANDLING**

\*(Note: This section appears renumbered as new TS Section 3/4.2 in the markup and retyped TS pages. Proposed TS 3/4.12.C is renumbered to TS 3/4.2.A and proposed TS 3/4.12.H is renumbered to TS 3/4.2.B.)

Current TS 3/4.12, REFUELING AND SPENT FUEL HANDLING

3.12 Applicability: Applies to fuel handling, core reactivity limitations, and spent fuel handling.

3.12 Objective: To assure core reactivity is within capability of the control rods, to prevent criticality during refueling, and to assure safe handling of spent fuel casks.

4.12 Applicability: Applies to the periodic testing of those interlocks and instruments used during refueling.

4.12 Objective: To verify the operability of

Proposed TS 3/4.12\*, SPENT FUEL STORAGE

3.12\* Applicability: Applies to storage of spent fuel.

3.12\* Objective: To assure safe storage of spent fuel.

4.12\* Applicability: Applies to the parameters which monitor the storage of spent fuel.

4.12\* Objective: To verify that spent fuel is

<p>instrumentation and interlocks used in refueling.</p> <p>3/4.12.A Refueling Interlocks</p> <p>3/4.12.B Core Monitoring</p> <p>3/4.12.C Fuel Storage Pool Water Level</p> <p>3/4.12.D Control Rod and Control Rod Drive Maintenance</p> <p>3/4.12.E Extended Core Maintenance</p> <p>3/4.12.F Fuel Movement</p> <p>3/4.12.G Deleted</p> <p>3.12.H Spent Fuel Pool Water Temperature</p> <p>4.12.H Spent Fuel Pool Water Temperature</p> <p>Whenever irradiated fuel is in the spent fuel pool, the pool water temperature shall be recorded daily. If the pool water temperature reaches 150°F, all refueling operations tending to raise the pool water temperature shall cease and measures taken immediately to reduce the pool water temperature below 150°F.</p>	<p>being stored safely.</p> <p>3/4.12.A Deleted</p> <p>3/4.12.B Deleted</p> <p>3/4.12.C* No Change</p> <p>3/4.12.D Deleted</p> <p>3/4.12.E Deleted</p> <p>3/4.12.F Deleted</p> <p>3/4.12.G Deleted</p> <p>3.12.H* No Change</p> <p>4.12.H* Spent Fuel Pool Water Temperature</p> <p>Whenever irradiated fuel is in the spent fuel pool, the pool water temperature shall be recorded daily. If the pool water temperature reaches 150°F, all operations tending to raise the pool water temperature shall cease and measures taken immediately to reduce the pool water temperature below 150°F.</p>
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**Basis**

The existing TS Section 3/4.12, "Refueling and Spent Fuel Handling," contains LCOs and SRs that provide for appropriate functional capability of parameters and equipment within containment that are required for mitigation of design basis accidents during refueling operations (moving irradiated fuel to or from the reactor core). Because the VY Part 50 license will no longer authorize emplacement or retention of fuel in the reactor vessel, the LCOs (and associated SRs) that do not apply in a defueled condition are being proposed for deletion. The title of this section is proposed to be changed to "Spent Fuel Storage" to reflect that refueling of the reactor will no longer be possible. The applicability and objectives are also proposed to be changed to reflect the focus on safe storage of spent fuel. This specification is being renumbered to TS 3/4.2. The table of contents is also revised to reflect the numbering changes.

Refueling Interlocks

TS 3/4.12.A specifies requirements for refueling interlocks and restriction of certain refueling procedures such that there is assurance that inadvertent criticality does not occur during refueling. Refueling will not be permitted by the Part 50 license following certification of permanent removal of the fuel. Therefore, this specification will no longer be required.

### Core Monitoring

TS 3/4.12.B specifies requirements for monitoring the core during periods of station shutdown and to guide the operator during refueling operations and station startup. When all of the fuel has been permanently removed from the reactor, core monitoring will no longer be required.

### Fuel Storage Pool Water Level

TS 3/4.12.C specifies requirements to assure that there is adequate water to shield and cool the irradiated fuel assemblies stored in the pool, a minimum pool water level is established. This minimum water level of 36 feet is established because it would be a significant change from the normal level, well above a level to assure adequate cooling (just above active fuel). Since the reactor core will be offloaded to the SFP following shutdown, this specification will remain with no changes except for being renumbered to TS 3/4.2.A.

### Control Rod and Control Rod Drive Maintenance

TS 3/4.12.D specifies requirements for performing control rod/control rod drive maintenance and maintaining adequate shutdown margin during such activities to provide assurance that inadvertent criticality does not occur during such maintenance. With all fuel permanently removed from the reactor, this specification will no longer be required.

### Extended Core Maintenance

TS 3/4.12.E specifies requirements for unloading of a portion of the reactor core for such purposes as in-service inspection requirements, examination of the core support plate, control rod, control rod drive maintenance, etc. This specification provides assurance that inadvertent criticality does not occur during such operation. With all fuel permanently removed from the reactor, this specification will no longer be required.

### Fuel Movement

TS 3/4.12.~~G~~F specifies requirements to assure that the reactor core has been shut down for at least 24 hours following power operation and prior to fuel handling or movement. The analysis (Reference 2) based on the postulated FHA assumed that the reactor had been shut down for 24 hours for fission product decay prior to any fuel handling which could result in dropping of a fuel assembly. With all fuel permanently removed from the reactor, this specification will no longer be required.

### Spent Fuel Pool Water Temperature

TS 3/4.12.H specifies requirements for maintaining SFP water temperature less than 150°F whenever there is irradiated fuel in the SFP. Since the reactor core will be offloaded into the SFP following shutdown, the requirements in this specification will continue to apply in the permanently defueled condition. A change to TS 4.12.H is proposed to remove the word "refueling" since the reactor will never be able to be refueled again. The resultant TS 4.12.H will require action to be taken to cease any SFP operation that increases SFP temperature once the SFP temperature reaches 150°F and take immediate action to lower SFP temperature. This specification is being renumbered to TS 3/4.2.B.

### Summary

The above TS are related to assuring the appropriate functional capability of plant equipment, and



control of process variables, design features, or operating restrictions required for safe refueling operation of the facility only when the reactor is in REFUEL mode, during movement of irradiated fuel assemblies, or during safe storage of fuel assemblies in the SFP. However, 10 CFR 50.82(a)(2) prohibits operation of the plant or placing fuel in the reactor vessel, which thereby precludes entry into the REFUEL mode. Therefore, the TS listed in the previous paragraphs, which only address these specific plant systems, control of process variables, design features, or operating restrictions are no longer applicable. The specifications for SFP water level and temperature will remain.

The protection and monitoring functions of TS 3/4.12, Refueling and Spent Fuel Handling have been designed to ensure safe handling of the fuel in the reactor and in the SFP during refueling. Once VY docket the certifications required by 10 CFR 50.82(a)(1), the 10 CFR Part 50 license will no longer authorize operation of the reactor or placement or retention of fuel in the reactor vessel, in accordance with 10 CFR 50.82(a)(2). Therefore, this specification other than SFP water level and temperature restrictions will not be needed once VY is in the permanently defueled condition. Based on the above, the proposed deletion of the noted TS in Section 3/4.12 is acceptable.