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October 21, 2005

Docket No. 50-271
BVY 05-097
TAC No. MC0761

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

Subject: **Vermont Yankee Nuclear Power Station**
Technical Specification Proposed Change No. 263 – Supplement No. 37
Extended Power Uprate – Additional Information

Reference: 1) Entergy letter to U.S. Nuclear Regulatory Commission, "Vermont Yankee Nuclear Power Station, License No. DPR-28 (Docket No. 50-271), Technical Specification Proposed Change No. 263, Extended Power Uprate," BVY 03-80, September 10, 2003

This letter provides additional information regarding the application by Entergy Nuclear Vermont Yankee, LLC and Entergy Nuclear Operations, Inc. (Entergy) for a license amendment (Reference 1) to increase the maximum authorized power level of the Vermont Yankee Nuclear Power Station (VYNPS) from 1593 megawatts thermal (MWt) to 1912 MWt.

In the original submittal (Reference 1), Entergy proposed changes to the Technical Specifications (TS) and associated TS Bases to conform to the changed TS and to add clarity to existing requirements. In Attachment 9 to Reference 1, Entergy provided a proposed markup of TS Bases 1.1.B.

Attachment 1 to this letter provides clarification regarding the TS Bases for the core thermal power limit that is applicable when reactor pressure is ≤ 800 psia or core flow is ≤ 10% of rated core flow. TS Bases 1.1.B is being superseded in its entirety by the revision provided in Attachment 1 to this letter. The revised Bases expand on the current Bases and include the revised TS safety limit for extended power uprate (EPU) conditions.

There are no new regulatory commitments contained in this submittal.

This supplement to the license amendment request provides additional information to clarify Entergy's application for a license amendment and does not change the scope or conclusions in the original application, nor does it change Entergy's determination of no significant hazards consideration.

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If you have any questions or require additional information, please contact Mr. James DeVincentis at (802) 258-4236.

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

Executed on October 21, 2005.

Sincerely,

Jay K. Thayer
Site Vice President
Vermont Yankee Nuclear Power Station

Attachment (1)

cc: Mr. Samuel J. Collins (w/o attachment)
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Mr. Richard B. Ennis, Project Manager
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VT Department of Public Service
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Attachment 1

Vermont Yankee Nuclear Power Station

Proposed Technical Specification Change No. 263 – Supplement No. 37

Extended Power Uprate – Additional Information

Proposed Technical Specifications Bases 1.1.B

Total number of pages in Attachment 1 (excluding this cover sheet) is 1.

Proposed Technical Specifications Bases 1.1.B

B. **Core Thermal Power Limit (Reactor Pressure ≤ 800 psia or Core Flow ≤ 10% of Rated)**

The General Electric critical power correlation (also known as the GEXL critical power correlation) is applicable for operation at pressures greater than or equal to 800 psia and core flows greater than or equal to 10% of rated flow. For operation at lower pressures or core flows, the following basis is used:

At power levels at or below the low pressure, low flow (low power) thermal limit, the minimum core flow occurs for natural circulation, and as the power to flow ratio in natural circulation increases with increasing power, the maximum and most limiting power to flow ratio occurs for natural circulation at the low power thermal limit. This condition is therefore also the condition with the minimum margin to critical power. Analysis of the natural circulation flow rate at the low power thermal limit has shown that the core average mass flux is 0.3-0.4 Mlb/hr-ft^2 and the corresponding core pressure drop is 5-6 psi. For these conditions, full scale ATLAS test data have shown a critical power of 4-5 MWt. Analysis has also shown that a maximum radial peaking factor of 2 is expected at the low power thermal limit condition. Since the low power thermal limit basis corresponds to a maximum average bundle power of 1.2 MWt or less, fuel bundles with radial peaking factor as high as 3 will have margin to critical power. This bounds any radial peaking, and therefore the low power thermal limit is conservative. An average bundle power of 1.2 MWt occurs at 23% rated thermal power. Thus, a limit of 23% rated thermal power for operation with reactor pressure less than or equal to 800 psia is conservative.

With no reactor coolant recirculation loops in operation, the plant must be brought to a condition in which the LCO does not apply. Operation of at least one reactor coolant recirculation loop provides core flow greater than natural circulation, so the margin to a critical power condition is significantly greater than this bounding example for all normal operating conditions with power less than the low power thermal limit. Therefore, a low power thermal limit of 23% rated thermal power is conservative.

Additionally, a core thermal power limit of 23% rated thermal power ensures consistency with the threshold for requiring thermal limit monitoring (i.e., average planar linear heat generation rate, linear heat generation rate, and minimum critical power ratio). This assures that for those power levels where thermal limit monitoring is required, the General Electric critical power correlation is applicable.