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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 229 TO FACILITY OPERATING LICENSE NO. DPR-28

ENTERGY NUCLEAR VERMONT YANKEE, LLC

AND ENTERGY NUCLEAR OPERATIONS, INC.

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

Proprietary information pursuant to
Title 10 of the *Code of Federal Regulations* Section 2.390
has been redacted from this document.
Redacted information is identified by blank space enclosed within double brackets.

implementation of the proposed EPU. Based on this, the NRC staff concludes that spent fuel storage at VYNPS will continue to meet the requirements of draft GDC-40, 42, and 66 following implementation of the proposed EPU. Therefore, the NRC staff finds the proposed EPU acceptable with respect to spent fuel storage.

2.8.7 Additional Review Area - Methods Evaluation

2.8.7.1 Application of NRC-approved Analytical Methods and Codes

The analyses supporting safe operation at EPU conditions are required to be performed using NRC-approved licensing methodology, analytical methods and codes. In general, the analytical methods and codes are assessed and benchmarked against measurement data, comparisons to actual nuclear plant test data and research reactor measurement data. The validation and benchmarking process provides the means to establish the associated biases and uncertainties. The uncertainties associated with the predicted parameters and the correlations modeling the physical phenomena are accounted for in the analyses. NRC-approved licensing methodology, topical reports and codes specify the applicability ranges. The generic licensing topical reports (LTR) covering specific analytical methods or code systems quantify the accuracy of the methods or the code used. The safety evaluation reports approving topical reports include restrictions that delineate the conditions that warrant specific actions, such as obtaining measurement data or obtaining further NRC approval. In general, the use of NRC-approved analytical methods is contingent upon application of these methods and codes within the ranges for which the data were provided and against which the methods were evaluated. Thus, a plant-specific application does not entail review of the NRC-approved analytical methods and codes.

To implement the proposed EPU and maintain the current 18-month cycle, a higher number of maximum powered bundles are loaded into the core and the power of the average bundles is also increased, making the core radial power distribution flatter. Due to an increased two-phase pressure drop and higher coolant voiding, the flow in the maximum powered bundles decreases. This effect leads to a higher bundle power-to-flow ratio and higher exit void fraction. Since the maximum powered bundles set the thermal limits, EPU operation reduces the margins to thermal limits.

Table 2.8.7-1 below shows the predicted operating conditions for the maximum powered bundles for VYNPS as shown in Table 6-2 of Attachment 3 to Reference 25. Figures 2.8.7-1 through 2.8.7-4 show plots for some of these parameters for VYNPS throughout the core cycle.