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October 18, 2007
BVY 07-076

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U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

References: 1) Letter, Entergy to USNRC, "Vermont Yankee Nuclear Power Station, License No. DPR-28, License Renewal Application," BVY 06-009, dated January 25, 2006.

2) Letter, Entergy to USNRC, "Vermont Yankee Nuclear Power Station, License Renewal Application, Amendment 30," BVY 07-062, dated September 27, 2007.

Subject: **Vermont Yankee Nuclear Power Station**
License No. DPR-28 (Docket No. 50-271)
License Renewal Application, Amendment 32

On January 25, 2006, Entergy Nuclear Operations, Inc. and Entergy Nuclear Vermont Yankee, LLC (Entergy) submitted the License Renewal Application (LRA) for the Vermont Yankee Nuclear Power Station (Reference 1).

In Reference (2), Entergy provided a response to RAI 2.4.4-2. In response to questions from the NRC staff during a site audit, additional clarifying information is provided in the attachment to this letter. The information is organized according to the sections in the initial response.

Should you have any questions concerning this submittal, please contact Mr. David Mannai at (802) 258-5422.

I declare under penalty of perjury that the foregoing is true and correct, executed on October 18, 2007.

Sincerely,

Ted A. Sullivan
Site Vice President
Vermont Yankee Nuclear Power Station

Attachment (1)
cc list (next page)

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NRR

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Attachment 1

Vermont Yankee Nuclear Power Station
License No. DPR-28 (Docket No. 50-271)

License Renewal Application

Amendment 32

RAI 2.4.4-2 Additional Information

VERMONT YANKEE NUCLEAR POWER STATION
LICENSE RENEWAL APPLICATION SUPPLEMENT
ATTACHMENT 1

Cooling Tower Background Information:

In the response to RAI 2.4.4-2, the section titled Cooling Tower Background Information compares features of the Seismic Class I cooling tower cells with features of the nonsafety-related cells. The following additional information clarifies and expands on the differences.

- Different design. Safety-related Cell CT2-1 and Seismic Class I Cell CT2-2 design includes additional 4"x4" cross-bracing to withstand wind and seismic loading. In CT2-1, some of the additional bracing is heavier 4" x 6" material.
- Different material specifications. Hardware for CT2-1 and CT2-2 is stainless steel, while the other towers may use carbon or galvanized steel. The stainless steel hardware minimizes potential iron salt attack at the bolted structural connections.
- Different level of quality. CT2-1 and CT2-2 are subject to the higher levels of oversight afforded to safety-related and Seismic Class I structures. The higher level of quality results in application of the station corrective action program to evaluate deficiencies and effect appropriate corrective actions.
- Different maintenance history. Because of their safety significance and higher level of quality, CT2-1 and CT2-2 have had more refurbishment during the past ten years than the other tower cells. During this period, the end wall of CT2-1 and the partition walls of CT2-1 and CT2-2 have been replaced, including the vertical columns and structural hardware. The original end walls and partition walls remain in many of the non-Seismic Class I cells.

Response to Part A:

Cooling tower cell CT2-1, which is part of the circulating water system, has the 10CFR54.4(a)(1) and (a)(3) intended function to support operation of the alternate cooling system by providing an alternate means of heat removal in the unlikely event that the service water pumps become inoperable. Therefore, CT2-1 is in the scope of license renewal and subject to aging management review. Cell CT2-1 itself and associated components of the residual heat removal service water (RHRSW) system fulfill the intended function. The credited RHRSW system components in CT2-1 are the 24" carbon steel suction piping located in the RHRSW suction pit and the 16" and 20" carbon steel distribution piping that discharges water into the cooling tower from the RHRSW pumps. Aging management review results for RHRSW system components at CT2-1 are provided in LRA Table 3.3.2-2. Circulating water piping is not relied on to perform the license renewal intended function of supporting alternate cooling system operation. The circulating water system piping has no other system intended functions in scope for 54.4(a)(1) or (a)(3). It does have a 54.4(a)(2) intended function to maintain integrity of nonsafety-related components such that no physical interaction with safety-related components could prevent satisfactory accomplishment of a safety function.

Response to Part B, Subpart I:

For cooling tower cell CT2-1, the portion of the circulating water system piping that is in scope for 54.4(a)(2) is the carbon steel piping outside the tower that supplies water to the tower. This portion of the piping has the potential for spatial interaction with safety-related electrical equipment due to spray or leakage. This carbon steel piping is subject to aging management review as shown in Tables 2.3.3.13-B and 3.3.2.13-9. This carbon steel circulating water system piping transitions to fiberglass upon entering CT2-1. The fiberglass circulating water piping has no license renewal intended function as discussed below. Therefore, fiberglass circulating water piping is not included in the LRA Section 3.3 tables.

The fiberglass circulating water piping is nonsafety-related and supports no system intended functions for 54.4(a)(1) or (a)(3). Pipe supports on this piping are part of the wooden tower structure and are subject to aging management review and included in the Structures Monitoring Program to ensure the piping cannot physically impact safety-related equipment. Following onset of the recent partial failure of CT2-4, two lengths of the circulating water piping separated at a connecting joint. Failure of vertical wooden structural columns caused the piping to sag and separate at the joint. Managing the effects of aging on the wooden tower structure will prevent a similar piping separation at the joints in CT2-1. The seismic analysis shows that the pipe stays intact during a seismic event. No other credible failure mechanisms can cause wholesale failure of the fiberglass piping. Postulated failures involving minor leakage from piping joints could spray or leak water on internal Cell CT2-1 components. These components are designed for a wetted environment during normal cooling tower operation and as such would not be adversely impacted. As a result, the fiberglass piping cannot prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1) due to spatial interaction from spray or leakage, and is not in scope and subject to aging management review under 54.4(a)(2).

If the fiberglass piping were subject to aging management review, the aging management review results would be that there are no aging effects requiring management due to the high corrosion resistance of fiberglass which is composed of glass fibers. This is consistent with NUREG-1801, Volume 2, Line V.F-8 that lists no aging effects for glass piping elements in raw water.

As discussed in the first paragraph of the response to RAI 2.4.4-2, Part B, Subpart I, breakaway connections are provided between the Seismic Class I cooling tower cells, CT2-1 and CT2-2, and the remaining tower cells. These breakaway connections mentioned in the RAI response are constructed by cutting the major wooden structural members connecting CT2-2 to CT2-3 and splicing them together with weaker materials that will separate in the event of significant seismic loading.

The response to RAI 2.4.4-2, Part B, Subpart I, Paragraph 2, mentions that the evaluation of the available basin capacity does not credit the water volume below cells CT2-10 and CT2-11. The basin below these two cells is shallow and the small volume of water is conservatively not credited for available capacity. Because the volume of the basin beneath cells CT2-10 and CT2-11 is not credited, a postulated collapse of the wooden structure of these two cells displaces no credited volume.

Paragraph 3 of the response to RAI 2.4.4-2, Part B, Subpart I, discusses the potential for debris blockage of the residual heat removal service water (RHRSW) system suction. The RHRSW system takes suction from a pit in the northwest corner of CT2-1. The pit is approximately 60 feet from the nearest non-Seismic Class I cell. The suction pit is covered by steel grating. During alternate cooling system operation, RHRSW system flow is recirculated through CT2-1. The only flow into CT2-1 from the basin below the remaining cells is the flow required to make up for normal operating losses, such as, evaporation and drift. The flow rate from adjacent cells into CT2-1 is low with a resulting velocity of less than a tenth of the 0.25 ft/sec velocity cited in the RAI response for flow through the grating over the suction pit.