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August 10, 2006

Docket No. 50-271
BVY 06-076
TAC No. MC 9668

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

Reference:
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, USNRC to VYNPS, "Request for Additional Information for the Review of Vermont Yankee Nuclear Power Station License Renewal Application", NVY 06-089, dated July 10, 2006.

Subject: **Vermont Yankee Nuclear Power Station**
License No. DPR-28 (Docket No. 50-271)
License Renewal Application, Amendment 8

On January 25, 2006, Entergy Nuclear Operations, Inc. and Entergy Nuclear Vermont Yankee, LLC (Entergy) submitted the License Renewal Application for the Vermont Yankee Nuclear Power Station (VYNPS) as indicated by Reference 1. Attachment 1 provides responses to the requests for additional information as detailed in Reference 2 that were the result of the scoping and screening methodology audit at VYNPS

Should you have any questions concerning this letter, please contact Mr. James DeVincentis at (802) 258-4236.

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 10, 2006.

Sincerely,

Ted A. Sullivan
Site Vice President
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Attachment 1
cc: See next page

A117

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Attachment 1

Vermont Yankee Nuclear Power Station

License Renewal Application Supplement

Amendment 8

Scoping and Screening Methodology RAI Responses

RAI 2.1-1
RAI 2.1-2
RAI 2.1-3
RAI 3.0-1

RAI 2.1-1

10 CFR 54.4(a)(1) states, in part, that systems, structures, and components (SSCs) within the scope of license renewal include safety-related SSCs which are those relied upon to remain functional during and following design basis events (as defined in 10 CFR 50.49(b)(1)). 10 CFR 50.49, states that design basis events are defined as conditions of normal operation, including anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed. In regard to identification of design basis events, Section 2.1.3, "Review Procedures," of NUREG-1800 states:

> The set of design basis events as defined in the rule is not limited to Chapter 15 (or equivalent) of the UFSAR. Examples of design basis events that may not be described in this chapter include external events, such as floods, storms, earthquakes, tornadoes, or hurricanes, and internal events, such as a high-energy-line break. Information regarding design basis events as defined in 10 CFR 50.49(b)(1) may be found in any chapter of the facility UFSAR, the Commission's regulations, NRC orders, exemptions, or license conditions within the CLB. These sources should also be reviewed to identify systems, structures and components that are relied upon to remain functional during and following design basis events (as defined in 10 CFR 50.49(b)(1)) to ensure the functions described in 10 CFR 54.4(a)(1).

During the scoping and screening methodology audit, the NRC staff questioned how non-accident design basis events, particularly design basis events that may not be described in the UFSAR, were considered during scoping. The NRC audit team noted that limiting the review of design bases events to those described in the UFSAR accident analysis could result in omission of safety-related functions described in the current licensing basis.

The staff, therefore, requests the applicant to provide:

a. A list of the design basis events evaluated as part of the license renewal scoping process.

b. A description of the methodology used to ensure that all design bases events (including conditions of normal operation, anticipated operational transients, design basis accidents, external events, and natural phenomena) were addressed during license renewal scoping evaluation.

c. A list of the documentation sources reviewed to ensure that all design basis events were identified.

If, in addressing the above issues, the applicant's review indicates that additional scoping evaluations are required, describe these additional scoping evaluations to address the 10 CFR 54.4(a)(1) criteria. As applicable, list any additional SSCs included within the scope as a result of these efforts, and list those structures and components for which aging management reviews

(AMRs) were conducted. For each structure or component describe the aging management programs (AMPs), as applicable, to be credited for managing the identified aging effects.

RAI 2.1-1 Response

a. The design basis events encompassed in the license renewal scoping process include the following.

- Abnormal operational transients (UFSAR Sections 14.4.2, 14.5)
- Design basis accidents (UFSAR Sections 14.6)
- Events for which the alternate cooling system is credited (loss of the Vernon Pond, flooding of the service water intake structure or fire in the service water intake structure - see UFSAR Section 10.8)
- Design basis events described in site topical design basis documents (earthquakes, tornadoes, external flooding, low water, and internal flooding)

b. The scoping process used two basic means of ensuring that all design bases events (including conditions of normal operation, anticipated operational transients, design basis accidents, external events, and natural phenomena) were addressed during license renewal scoping evaluation.

1. The UFSAR and design basis documents were reviewed directly.
2. The safety classification of systems and components was reviewed. The safety classification process, controlled by Entergy corporate and site-specific procedures, is based on the UFSAR, the design basis documents, Regulatory Guide 1.97, and licensing commitments that included design basis event information. The safety classification process identifies systems, structures, and components that perform the functions defined in 10 CFR 54.4(a)(1).

c. As indicated in the response to (a) above, documentation sources reviewed to ensure that all design basis events were identified are the UFSAR and site topical design basis documents.

No additional scoping evaluations were required as a result of addressing these issues.

RAI 2.1-2

NRC Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," Revision 1, dated September 2005, (Reg Guide 1.188) provided NRC endorsement on the use of NEI 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Revision 6, dated June 2005, (NEI 95-10). Reg Guide 1.188 indicated that NEI 95 -10, Revision 6, provides methods that the

NRC staff considers acceptable for complying with the requirements of 10 CFR Part 54 for preparing a license renewal application (LRA).

NEI 95-10, Appendix F, "Industry Guidance on Revised 54.4(a)(2) Scoping Criterion (Non-Safety Affecting Safety)," (NEI 95-10, Appendix F) discusses non-safety SSCs directly connected to safety-related SSCs. NEI 95-10, Appendix F states, in part, that an equivalent anchor may be defined in the CLB, or may consist of a large piece of plant equipment or series of supports that have been evaluated as a part of a plant-specific piping design analysis. Additionally, the guidance states that an applicant may use a combination of restraints or supports, such that the non-safety piping and associated structures and components attached to safety-related piping, is included in the scope up to a boundary point that encompasses at least two supports in each of three orthogonal directions. The guidance in NEI 95-10, Appendix F also describes as an alternative to identifying a seismic anchor or series of equivalent anchors, the use of bounding criteria, which includes; using a base-mounted component, a flexible connection, or the free end of the piping run as the end point for the portion of the non-safety piping attached to the safety-related piping, to be included in the scope of license renewal.

Section 2.1.1.2.2, "Physical Failure of Nonsafety-related SSCs", of the LRA states the following:

> For VYNPS, the "structural boundary" is defined as the portion of a piping system outside the safety class pressure boundary, yet relied upon to provide structural support for the pressure boundary. The structural boundary is often shown on piping isometric drawings and is considered synonymous with the first seismic or equivalent anchor.

Section 2.1.2.1.2, "Identifying Components Subject to Aging Management Review Based on Support of an Intended Function for 10 CFR 54.4.2", of the LRA states the following:

> Non-safety-related piping systems connected to safety-related systems were included up to the structural boundary or to a point that includes and adequate portion of the nonsafety-related piping run to conservatively include the first seismic or equivalent anchor. An equivalent anchor is a combination of hardware or structures that together are equivalent to a seismic anchor. A seismic anchor is defined as hardware or structures that, as required by analysis, physically restrain forces and moments in three orthogonal directions. If isometric drawings were not readily available to identify the structural boundary, connected lines were included to a point beyond the safety/nonsafety interface, such as a base-mounted component, flexible connection, or the end of a piping run (such as a drain line). This is consistent with the guidance of NEI 95-10, Appendix F.

Based on a review of the LRA, the applicant's scoping and screening implementation procedures, and discussions with the applicant, the NRC staff determined that additional information is required with respect to certain aspects of the applicant's evaluation of the 10 CFR 54.4(a)(2) criteria. The staff requests the applicant to provide the following information:

a. Indicate how the structural boundary, which includes the portion of the non-safety piping system outside the safety-related pressure boundary and relied upon to provide structural support for the pressure boundary, was developed. Include a description of the analysis performed to identify the portion of non-safety piping and components required to support the integrity of the safety-related piping and components and the method used to develop the isometric drawings (relative to the identification of the structural boundary).

b. Indicate whether equivalent anchors, outside of the analyzed structural boundary and not including the bounding condition terminations (base-component, flexible connection, and end of the piping run), were used. If equivalent anchors, outside of the analyzed structural boundary and not including the bounding condition terminations, were not used, items (c) and (d) below do not need to be addressed.

c. If equivalent anchors, as described in item (b) above, were used, indicate the definition of equivalent anchor which was used for the purpose of the 10 CFR 54.4(a)(2) evaluation and how the definition corresponds to the CLB and to the definition of equivalent anchor listed in NEI 95-10, Appendix F.

d. If equivalent anchors, as described in item (b) above, were used, indicate the number and location of equivalent anchors (i.e., extent of condition).

In addressing each of the above issues, if the review indicates that use of the scoping methodology precluded the identification of any non-safety SSCs that could interact with safety-related SSCs, describe any additional scoping evaluations to be performed to address the 10 CFR 54.4(a)(2) criteria. As part of your response, list any additional SSCs included within the scope as a result of your efforts, and list those structures and components for which AMRs were conducted. For each structure and component, describe the AMPs, as applicable, to be credited for managing the identified aging effects.

RAI 2.1-2 Response

a. The structural boundary was developed through a review of the drawings prepared to indicate portions of systems that support system intended functions. The drawings were reviewed to identify safety/nonsafety interfaces. Nonsafety-related piping systems connected to safety-related systems were then traced back to the structural boundary or to a point that includes an adequate portion of the nonsafety-related piping run to conservatively include the first seismic anchor. If isometric drawings were not readily available to identify the structural boundary, connected lines were included back to a point beyond the safety/nonsafety interface such as a base-mounted component, flexible connection, or the end of a piping run (such as a drain line). No new piping stress analysis was performed to identify the portion of non-safety piping and components required to support the integrity of the safety-related piping and components and no isometric drawings were developed to identify the structural boundary. Existing drawings and the results of existing analyses as reflected on those drawings were used to develop the structural boundary. The use of this

scoping method did not preclude the identification of any nonsafety-related SSCs that could interact with safety-related SSCs.

b. Equivalent anchors other than the analyzed structural boundaries and the bounding condition terminations as defined in NEI 95-10 Appendix F were not used to develop the structural boundaries.

c. N/A

d. N/A

RAI 2.1-3

10 CFR 54.4(a)(3) requires that all SSCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulation for station blackout (10 CFR 50.63) be included in the scope of license renewal. Section 2.1.1.3.5 of the applicant's LRA states that the Vernon Hydroelectric Station is credited as the alternate AC power source for station blackout (SBO). Section 2.4.5 of the LRA states that the Vernon Hydroelectric Station structures are within the scope of license renewal. However, the mechanical and electrical systems associated with the Vernon Hydroelectric Station are not specifically addressed in the LRA.

Report Number LRPD-01, "System and Structure Scoping Results," Revision 0, provides the applicant's results for identifying systems (mechanical and electrical) and structures that are in the scope of license renewal. Section 5 and Table 2-1 of LRPD-01 identify the Vernon Hydroelectric Station structures that are in the scope of license renewal. However, the mechanical and electrical systems associated with the Vernon Hydroelectric Station are not specifically addressed in LRPD-01.

Based on the review of the applicant's scoping evaluation related to the 10 CFR 54.4(a)(3) SBO criterion, the NRC staff requests the applicant to provide the following information:

a. Describe the scoping and screening methodology applied to the mechanical and electrical systems associated with the Vernon Hydroelectric Station, and identify those mechanical and electrical SSCs that are in the scope of license renewal and subject to an AMR.

b. If, in addressing the above issues, the applicant's review indicates that additional scoping evaluations are required, describe these additional scoping evaluations. As applicable, list any additional SSCs included within the scope as a result of these efforts, and list those structure and components for which AMRs were conducted. For each structure or component describe the AMPs, as applicable, to be credited for managing the identified aging effects.

RAI 2.1-3 Response

a. Of the plants that have applied for license renewal in the United States, Peach Bottom is the only other plant that credits an offsite hydroelectric station as its AAC source for station blackout. Peach Bottom received its renewed operating license in May 2003. For the Peach Bottom plant license renewal, the only aging management program credited for the AAC hydroelectric station was the Federal Energy Regulatory Commission (FERC) dam inspection and maintenance program requirements, provided in 18 CFR 12. This is appropriate considering the mechanical and electrical equipment associated with the turbine generator constitute an active assembly that is routinely confirmed available through normal operation.

   Entergy, consistent with the Peach Bottom precedent, credited the FERC dam inspection program to manage the effects of aging on civil and structural elements of the Vernon Hydroelectric Station (VHS). In accordance with NUREG-1801, for dam inspection and maintenance, programs under the regulatory jurisdiction of FERC or the U.S. Army Corps of Engineers, continued through the period of extended operation, will be adequate for the purpose of aging management.

   Since the mechanical and electrical equipment associated with the turbine generator constitute an active assembly that is routinely confirmed available through normal operation, the scoping and screening methodology applied to VYNPS systems (described in LRA Section 2.1.1) was applied to the mechanical and electrical systems of the VHS as an aggregated active assembly. As an active assembly, the mechanical and electrical systems were not considered subject to aging management review. This is consistent with the treatment of the alternate AC source for the Peach Bottom plant license renewal application.

b. Notwithstanding the above, Entergy performed an integrated plant assessment (IPA) for passive, long-lived electrical and mechanical components of the VHS. This assessment is described in the response to RAI 3.6.2.2-N-08 (Letter BVY 06-063, July 14, 2006).

RAI 3.0-1

The NRC staff reviewed the applicant's AMPs described in Appendix A, "Updated Safety Analysis Report Supplement," and Appendix B, "Aging Management Programs and Activities," of the Vermont Yankee Nuclear Power Station LRA. In addition, the NRC staff reviewed each individual AMP basis document to ensure consistency in the use of the quality assurance attributes for each program. The purpose of this review was to assure that the aging management activities were consistent with the staff's guidance described in NUREG-1800, Section A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)."

Based on the NRC staff's evaluation, the descriptions and applicability of the plant-specific AMPs and their associated quality attributes provided in Appendix A, Section A.2.1, and Appendix B, Section B.0.3, of the LRA are generally consistent with the staff's position regarding quality assurance for aging management. However, the applicant has not sufficiently described the use of the quality assurance program and its associated attributes (corrective action, confirmation process, and administrative controls). Specifically, the applicant did not identify those AMPs which do not credit the VYNPS 10 CFR Part 50, Appendix B, Quality Assurance Program, for the corrective action, confirmation process, and administrative control attributes, or provide a description of the process used in lieu of the VYNPS Quality Assurance Program.

Additionally, the NRC staff noted that the AMP basis documents did not consistently describe the application of the VYNPS 10 CFR Part 50, Appendix B, Quality Assurance Program, or an alternative for the corrective action, confirmation process, and administrative control attributes in each AMP. The NRC staff, therefore, requests that the applicant provide the following information to address these issues:

a. A supplement to the description in the Appendix A, Section A.2.1, of the LRA to clearly indicate the application of the VYNPS 10 CFR Part 50, Appendix B, Quality Assurance Program, or an alternative for the corrective action, conformation process, and administrative control attributes in each program.

b. If any alternative approaches are identified in Item "a" above, in lieu of the VYNPS 10 CFR Part 50, Appendix B, Quality Assurance Program, their descriptions provided should be of sufficient detail for the staff to determine if the quality attributes for the AMPs are consistent with the review acceptance criteria contained in NUREG-1800, Section A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)".

c. A consistent description for each AMP bases document which describes the application of the VYNPS 10 CFR Part 50, Appendix B, Quality Assurance Program, or an alternative for the corrective action, confirmation process, and administrative control attributes in each AMP.

RAI 3.0-1 Response

a. The following is hereby appended to Appendix A, Section A.2.1, of the LRA.

   The corrective action, confirmation process, and administrative controls of the Entergy (10 CFR Part 50, Appendix B) Quality Assurance Program are applicable to all aging management programs and activities that will be required during the period of extended operation, with the exception of the Vernon Dam FERC Inspection.

b. As described in LRA Section A.2.1.31, the Vernon Hydroelectric Station (VHS) is subject to the Federal Energy Regulatory Commission (FERC) inspection program. This program complies with Title 18 of the Code of Federal Regulations, Conservation of Power and Water

Resources, Part 12 (Safety of Water Power Projects and Project Works). The NRC has previously found that mandated FERC inspection programs are acceptable for aging management. Although the VHS is not under the VYNPS QA program, it consists of multiple generating sources and connections to the switchyard. The appropriate controls for VHS and the Vernon tie are in place to provide reasonable assurance of continued acceptable performance through the period of extended operation. Unavailability of the Vernon tie is cause for entry into the VYNPS corrective action program, which invokes associated elements of the QA program. The corrective action program requires evaluation and appropriate corrective action to correct the nonconforming condition. Therefore, QA attributes are adequate for license renewal. This is consistent with the discussion of QA attributes provided in the response to RAI 3.6.2.2-N-08 (Letter BVY 06-063, July 14, 2006).

c. As indicated in the response to 3.0-1.a, the corrective action, confirmation process, and administrative controls of the Entergy (10 CFR Part 50, Appendix B) Quality Assurance Program are applicable to all aging management programs and activities that will be required during the period of extended operation, with the exception of the Vernon Dam FERC Inspection. The program basis document has been revised to reference 10 CFR Part 50, Appendix B for these attributes for all aging management programs, with the exception of the Vernon Dam FERC Inspection. For additional discussion of the QA attributes associated with the VHS, refer to the response to Item b and the response to RAI 3.6.2.2-N-08 (Letter BVY 06-063, July 14, 2006).