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BVY 11-007

February 4, 2011

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

SUBJECT: License Renewal Application Supplemental Information
Vermont Yankee Nuclear Power Station
Docket No. 50-271
License No. DPR-28

REFERENCES: 1. Letter, Entergy to USNRC, "License Renewal Application," BVY 06-09, dated January 25, 2006
2. Letter, Entergy to USNRC, "License Renewal Application Annual Update," BVY 10-069, dated December 30, 2010

Dear Sir or Madam:

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 (VYNPS) as indicated by Reference 1. In Reference 2, Entergy submitted an annual report of changes to the current licensing basis that materially affect the content of the VYNPS LRA, including the Safety Analysis Report supplement as required by 10CFR54.21(b). This report included revisions made to license renewal commitments that apply to the diesel fuel monitoring program. By teleconference on January 21, 2011, the NRC requested that Entergy provide additional clarifying information on the commitment changes and corresponding changes to the applicable sections of the VYNPS LRA.

Attachment 1 of this letter provides supplemental information to the LRA to provide clarifying information on the diesel fuel monitoring program commitment changes and corresponding changes to section B.1.9, Diesel Fuel Monitoring, of the LRA. Attachment 2 provides a list of license renewal commitments revised in this letter.

There are no new regulatory commitments being made in this letter.

Should you have any questions or require additional information concerning this submittal, please contact Mr. Robert Wanczyk at 802-451-3166.

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I declare under penalty of perjury, that the foregoing is true and correct. Executed on February 4, 2011.

Sincerely,



[MJC/PLC]

Attachments: 1. License Renewal Application Supplemental Information
2. List of License Renewal Commitments

cc: Mr. Eric J. Leeds, Director
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Attachment 1

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

License Renewal Application

Supplemental Information

**Vermont Yankee Nuclear Power Station
License Renewal Application - Supplemental Information**

By letter dated December 30, 2010, Entergy Nuclear Operations, Inc. and Entergy Nuclear Vermont Yankee, LLC (Entergy) provided revised license renewal commitments related to Section B.1.9 of the Vermont Yankee Nuclear Power Station (VYNPS) license renewal application (LRA), Diesel Fuel Monitoring program. By teleconference on January 21, 2011, the NRC requested that Entergy provide additional clarifying information on the commitment changes and corresponding changes to the applicable sections of the VYNPS LRA.

License renewal commitment 4 was revised to state that the acceptance criterion for the fuel oil storage and fire pump diesel storage (day) tank bottom surface ultrasonic measurements will be in accordance with the applicable American Petroleum Institute (API) or Steel Tank Institute (STI) standard. Section B.1.9 of the LRA previously included a reasonable acceptance criterion for both tanks of greater than or equal to 60% of the nominal tank bottom thickness, but this acceptance criterion was not derived from or necessary to meet any specific regulatory requirement or acceptance criterion in the current licensing basis. From the NRC License Renewal Safety Evaluation Report (SER) for VYNPS:

The applicant also stated, in the LRA, that for the ultrasonic measurements of the diesel fuel storage tank bottom thickness an acceptance criteria of 60 percent of the nominal thickness will be used.

The GALL Report does not provide an acceptance criterion for the bottom surface thickness of the diesel fuel storage tank. The fuel oil tank is not pressurized so the staff judged the use of 60 percent of the nominal wall thickness provides sufficient margin to be an acceptable criterion for the ultrasonic thickness measurements. The use of this acceptance criterion will provide additional assurance that the effects of aging will be detected before the loss of intended function.

The API and STI publish standards for above ground steel tank inspections that contain acceptance criteria for tank bottom thickness. The fuel oil storage tank was fabricated in accordance with National Fire Protection Association Standard, NFPA No. 30. Section 22.17 of Chapter 22 of the 2008 Edition of NFPA No. 30 provides guidance for the inspection and maintenance of aboveground storage tanks. Subsection 22.17.2 states that each aboveground steel tank shall be inspected and maintained in accordance with API 653, *Tank Inspection, Repair, Alteration, and Reconstruction*, or STI SP001, *Standard for Inspection of Aboveground Storage Tanks*. API 653 is applicable to the fuel oil storage tank. The fire pump diesel storage tank was shop-fabricated and falls within the scope of STI SP001. Use of the tank bottom thickness acceptance criteria contained within the applicable standards for the fuel oil storage tank (API 653) and the fire pump diesel day tank (STI SP001) will provide adequate assurance that corrective action will be taken before the loss of intended function during the period of extended operation (PEO). For clarification, license renewal commitment 4 is revised to read as follows.

Commitment 4

The Diesel Fuel Monitoring Program will be enhanced to specify that UT measurements of the fuel oil storage tank bottom surface will have acceptance criterion in accordance with American Petroleum Institute standard API 653 and UT measurements of the fire pump diesel storage (day) tank bottom surface will have acceptance criterion in accordance with Steel Tank Institute standard STI SP001.

License renewal commitments 46 and 47 were revised to allow use of later revisions of fuel oil testing standard ASTM D975-02 for analyzing the fuel oil in the fire pump diesel storage (day) tank (46) and common portable fuel oil storage tank (47). VYNPS Technical Specification (TS) 4.10.C.2 requires that diesel fuel oil be sampled and checked for quality in accordance with the applicable ASTM standard.

In 2007, VYNPS switched from low sulfur fuel oil to ultra low sulfur fuel oil (ULSF) for use in safety-related systems in response to new EPA regulations and NRC Information Notice 2006-22. ASTM D975-09 Table 1 contains specifications for testing ULSF (Grade No. 2-D S15). By letter dated September 28, 2009, VYNPS provided to the NRC revised bases for TS 4.10.C.2 to reflect that ASTM standard ASTM D975-09 is used for performing viscosity, water and sediment tests. The test results are considered acceptable if they are within the acceptance limits of Table 1 of ASTM D975-09. Additionally, VYNPS Technical Requirements Manual Section 4.13.B.2.b requires that the fire pump diesel fuel oil storage tank be sampled and meet the acceptance limits of Table 1 of ASTM D975-09 with respect to viscosity, water and sediment.

ASTM D975-04 is the most recent revision of the standard referenced in the Generic Aging Lessons Learned Report (GALL) Final Report (NUREG-1801 Revision 2) Aging Management Program (AMP) XI.M30, "Fuel Oil Chemistry." GALL AMP XI.M30 states that "ASTM D975-04 or other appropriate standards may be used to develop fuel oil acceptance criteria."

A comparison of ASTM D975-09, ASTM D975-04 and ASTM D975-02 Table 1 specification requirements shows that all of the requirements contained in the D975-02 and D975-04 editions are contained in the D975-09 edition. The D975-09 edition contains a specific requirement for ULSF not included in the two earlier editions. ASTM D975-09 is therefore an appropriate standard for sampling and analyzing fuel oil during the PEO. The enhancements to analyze fuel oil in the fire pump diesel storage (day) tank, John Deere diesel storage tank and common portable fuel oil storage tank for particulates in accordance with ASTM D2276 remain unchanged. The appropriate standard for testing for water and sediment in ULSF is ASTM D2709, not ASTM D1796. Therefore, analyzing the common portable fuel oil storage tank in accordance with ASTM D1796 is not appropriate. License renewal commitment 47 is revised to specify that the fuel oil in the common portable fuel oil storage tank will be analyzed according to ASTM D2709 for water and sediment. VYNPS is also revising license renewal commitments 46 and 47 as follows to remove reference to a specific revision of ASTM D975.

Commitment 46

Enhance the Diesel Fuel Monitoring Program to specify that fuel oil in the fire pump diesel storage (day) tank will be analyzed according to ASTM D975 and for particulates per ASTM D2276. Also, fuel oil in the John Deere diesel storage tank will be analyzed for particulates per ASTM D2276.

Commitment 47

Enhance the Diesel Fuel Monitoring Program to specify that fuel oil in the common portable fuel oil storage tank will be analyzed according to ASTM D975, per ASTM D2276 for particulates, and per ASTM D2709 for water and sediment.

Section B.1.9 of the LRA is revised as follows to specify that the revision in use at VYNPS is ASTM D975-09. New text is underlined. Deleted text is shown as strikethrough.

B.1.9 Diesel Fuel Monitoring

Program Description

The Diesel Fuel Monitoring Program at VYNPS is comparable to the program described in NUREG-1801, Section XI.M30, Fuel Oil Chemistry Program.

The program entails sampling to ensure that adequate diesel fuel quality is maintained to prevent corrosion of fuel systems. Exposure to fuel oil contaminants such as water and microbiological organisms is minimized by periodic draining and cleaning of selected tanks and by verifying the quality of new oil before its introduction into storage tanks. Sampling and analysis activities are in accordance with technical specifications on fuel oil purity and the guidelines of ASTM standards D4057-88 and D975-0902 (or later revisions of these standards).

Exceptions to NUREG-1801

The Diesel Fuel Monitoring Program at VYNPS is consistent with the program described in NUREG-1801, Section XI.M30, Fuel Oil Chemistry Program, with the following exceptions.

| Attributes Affected | Exceptions |
|---|--|
| 1.Scope of Program 6.Acceptance Criteria | The guidelines of ASTM Standard D6217 are not used along with those of D2276 for determination of particulates. ¹ |
| 2.Preventive Actions | No additives are used beyond what the refiner adds during production. ² |
| 3.Parameters Monitored / Inspected 6.Acceptance Criteria | Only ASTM Standard D1769 D2709 is used for determination of water and sediment, rather than Standards D1796 and D2709. ³ |
| 3.Parameters Monitored / Inspected 6.Acceptance Criteria | Determination of particulates may be according to ASTM Standard D2276, rather than modified ASTM D2276 Method A. ⁴ |

Exception Notes:

1. ~~VYNPS technical specifications specify use of ASTM D975-02, which recommends use of ASTM D2276. The D2276 acceptance criterion is more stringent than that of D6217. Therefore, ASTM D6217 is not necessary for determination of particulates.~~
2. VYNPS does not add biocides, stabilizers, or corrosion inhibitors to the diesel fuel. Plant-specific operating experience has not indicated significant problems related to MIC. Since water contamination in the diesel fuel storage tanks is minimized, the potential for MIC is limited.
3. NUREG-1801 states that ASTM Standards D1796 and D2709 are used for determination of water and sediment. However, these standards describe the determination of water and sediment for oils with different viscosities. ~~Either standard is applicable to the #2 diesel fuel oil used at VYNPS. VYNPS uses~~ ASTM Standard D2709 is the appropriate standard for determination of water and sediment in the VYNPS fuel oil.
4. Determination of particulates may be according to ASTM Standard D2276 which conducts particulate analysis using a 0.8 micron filter, rather than the 3.0 micron filter specified in NUREG-1801. Use of a filter with a smaller pore size results in a larger sample of particulates since smaller particles are retained. Thus, use of a 0.8 micron filter is more conservative than use of the 3.0 micron filter specified in NUREG-1801.

Enhancements

The following enhancements will be initiated prior to the period of extended operation.

| Attributes Affected | Enhancement |
|-----------------------------------|--|
| 4. Detection of Aging Effects | Ultrasonic thickness measurement of the fuel oil storage and fire pump diesel storage (day) tank bottom surfaces will be performed every 10 years during tank cleaning and inspection. |
| 6. Acceptance Criteria | <p><u>UT measurements of the fuel oil storage tank bottom surface will have acceptance criterion in accordance with American Petroleum Institute standard API 653 and UT measurements of the fire pump diesel storage (day) tank bottom surface will have acceptance criterion in accordance with Steel Tank Institute standard STI SP001.</u></p> <p>UT measurements of the fuel oil storage and fire pump diesel storage (day) tank bottom surfaces will have acceptance criterion $\geq 60\%$ Tnom.</p> |
| 3. Parameters Monitored/Inspected | Fuel oil in the fire pump diesel storage (day) tank will be analyzed according to ATSM D975-092 and for particulates per ASTM D2276 |
| 3. Parameters Monitored/Inspected | Fuel oil in the John Deere diesel storage tank will be analyzed for particulates per ASTM D2276 |
| 3. Parameters Monitored/Inspected | Fuel oil in the common portable fuel oil storage tank will be analyzed according to ASTM D975-092, per ASTM D2276 for particulates, and ASTM D4796 <u>D2709</u> for water and sediment. |

- References:
1. Letter, Entergy to USNRC, Vermont Yankee Nuclear Power Station, License No. DPR-28, "License Renewal Application," BVY 06-09, dated January 25, 2006
 2. Letter, Entergy to USNRC, Vermont Yankee Nuclear Power Station, License No. DPR-28, "License Renewal Application Annual Update," BVY 10-069, dated December 30, 2010

3. Letter, Entergy to USNRC, Vermont Yankee Nuclear Power Station, License No. DPR-28, "Revision of Technical Specifications Bases Page," BVY 09-055, dated September 28, 2009

Attachment 2

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

License Renewal Application

List of License Renewal Commitments

**VERMONT YANKEE NUCLEAR POWER STATION
LICENSE RENEWAL COMMITMENT LIST**

During the development and review of the Vermont Yankee Nuclear Power Station License Renewal Application, Entergy made commitments to provide aging management programs to manage the effects of aging on structures and components during the extended period of operation. The following table lists the revised license renewal commitments made in this submittal, along with the implementation schedule and the source of the commitment..

| ITEM | COMMITMENT | IMPLEMENTATION SCHEDULE | SOURCE | Related LRA Section No./ Comments |
|-------------|---|--------------------------------|--|--|
| 4 | The Diesel Fuel Monitoring Program will be enhanced to specify UT measurements of the fuel oil storage tank bottom surface will have acceptance criterion in accordance with American Petroleum Institute standard API 653 and UT measurements of the fire pump diesel storage (day) tank bottom surface will have acceptance criterion in accordance with Steel Tank Institute standard STI SP001. | March 21, 2012 | BVY 06-009 BVY 07-018 BVY 10-069 BVY 11-007 | B.1.9 and regional inspection |
| 46 | Enhance the Diesel Fuel Monitoring Program to specify that fuel oil in the fire pump diesel storage (day) tank will be analyzed according to ASTM D975 and for particulates per ASTM D2276. Also, fuel oil in the John Deere diesel storage tank will be analyzed for particulates per ASTM D2276. | March 21, 2012 | BVY 07-018 BVY 10-069 BVY 11-007 | Regional inspection |
| 47 | Enhance the Diesel Fuel Monitoring Program to specify that fuel oil in the common portable fuel oil storage tank will be analyzed according to ASTM D975, per ASTM D2276 for particulates, and ASTM D2709 for water and sediment. | March 21, 2012 | BVY 07-018 BVY 10-069 BVY 11-007 | Regional inspection |