From: "Daflucas, Ronda" <rdafluc@entergy.com>
To: "Rick Ennis" <RXE@nrc.gov>
Date: 9/14/05 12:54PM
Subject: Supplement 33

Attached is the signed cover letter.

Ronda Daflucas
Vermont Yankee Project Manager, NRR
Entergy Nuclear Operations, Inc.
802-258-4232

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Subject:	Supplement 33
Creation Date:	9/14/05 12:53PM
From:	"Daflucas, Ronda" <rdafluc@entergy.com>
Created By:	rdafluc@entergy.com

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MESSAGE	148	09/14/05 12:53PM
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BVY 05-084 cover.pdf	246003	
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Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc.
Vermont Yankee
P.O. Box 0500
185 Old Ferry Road
Brattleboro, VT 05302-0500
Tel 802 257 5271

September 14, 2005

Docket No. 50-271
BVY 05-084
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. 33
Extended Power Uprate – Response to Request for Additional Information

References:
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

2) 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, Supplement No. 31 – Response to Request for Additional Information," BVY 05-074, August 4, 2005

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.

This submittal responds to the remaining items from NRC's audit of the VYNPS steam dryer analysis of August 22 through 25, 2005 and clarifies information contained in Entergy's response to request for additional information dated August 4, 2005 (Reference 2).

As a result of the discussions held during the steam dryer audit, Entergy has performed or will take the following actions:

1. In order to address the NRC staff's questions regarding steam dryer analysis uncertainties, the VYNPS steam dryer analysis computational fluid dynamics (CFD) and acoustic circuit model (ACM) uncertainty evaluations were expanded to include:

    a) ACM uncertainty considering all 27 Quad Cities 2 (QC2) 790 MWe benchmark pressure sensors predictions.

b) CFD model uncertainty based on comparisons to full scale BWR instrumented dryer data.

c) Strain gage measurement uncertainty to address potential under-prediction in hoop strain at individual response frequencies.

Revised VYNPS dryer load definition uncertainty is described in the updated response to RAI EMEB-B-18 and Exhibit EMEB-B-18-1. This supersedes the previous version of the RAI response. In the event that acoustic signals are identified that challenge the VYNPS limit curve during extended power uprate (EPU) power ascension, Entergy will perform a frequency specific assessment of ACM uncertainty at the acoustic signal frequency to assess if an increase in the value established in EMEB-B-18-1 is required. The instrument uncertainty will be revised to reflect the planned installation of additional strain gages and associated data acquisition equipment.

2. To improve the accuracy of the steam dryer measurement system, Entergy will install 32 additional strain gages on the main steam piping during the Fall 2005 refueling outage (RFO-25) and will enhance the data acquisition system prior to extended power uprate (EPU) operation in order to reduce the measurement uncertainty associated with the ACM.

   a) Entergy will monitor both the additional strain gage data and existing strain gage data during power ascension.

   b) In the event that acoustic signals are identified that challenge the VYNPS dryer monitoring performance limit curve during EPU power ascension, Entergy will evaluate dryer loads and reestablish the limit curve based on the new strain gage data.

   c) Main steam (MS) piping arrangement drawings that depict the arrangement of the main steam piping and branch lines, new strain gages, existing ACM monitoring points, and MS system accelerometers has been included in Figure EMEB-B-77-1.

   d) The specifications for enhanced strain gage and data acquisition systems are included in Attachment 12.

3. After reaching 120% of current licensed thermal power (CLTP), i.e., 1912 MWt, Entergy will obtain measurements from the strain gages and establish the VYNPS dryer flow induced vibration (FIV) load fatigue margin, update the dryer stress report, and re-establish steam dryer monitoring plan (SDMP) limit curve with the updated ACM load definition and revised instrument uncertainty. This information will be provided to the NRC staff.

4. Responses to the NRC staff's questions generated during its audit of General Electric's (GE) scale model test (SMT) facility are included in Attachment 7.

5. During power ascension, if an engineering evaluation is required in accordance with the SDMP, the structural analysis will continue to address frequency uncertainties up to

+/-10% and assure that peak responses that fall within this uncertainty band are addressed.

6. The VYNPS steam dryer skirt was added to the finite element analysis (FEA) and evaluated as described in the revised response to RAI EMEB-B-39 (Attachment 2).

7. A more comprehensive evaluation of potential VYNPS main steam system acoustic resonators in vortex shedding frequencies is provided in the revised response to RAI EMEB-B-77 in Attachment 3. Included in this response revision is a drawing showing the relative locations of VYNPS main steam system cavities (potential resonators), ACM input measurement locations and piping FIV monitoring accelerometers.

8. An update of the VYNPS steam dryer stress analysis, incorporating the revised ACM and CFD model uncertainty values, is provided in a revision to Exhibit EMEB-B-143-1, Attachment 5. This revised Exhibit also describes how not exceeding the VYNPS steam dryer limit curve assures that the fatigue endurance limit will not be exceeded during power ascension and dryer structural integrity will be maintained.

9. The EPU power ascension SDMP has been revised to reflect long term monitoring of plant parameters potentially indicative of a dryer failure. The SDMP was additionally revised to reflect consistency of the VYNPS steam dryer inspection program with SIL 644 Rev. 1, identification of the NRR Project Manager for VYNPS as the point of contact for providing SDMP information during power ascension. Submittal to the NRC of the final 120% EPU VYNPS load definition will be made upon completion of the power ascension test program.

10. Entergy will submit to NRC the FIV related portions of the EPU startup test procedure, including methodology for updating the limit curve, prior to power ascension.

The RAI responses and information provided in Attachments 1, 5 and 7 contain Proprietary Information as defined by 10CFR2.390 and should be handled in accordance with the provisions of that regulation. Attachments 8, 9 and 10 are non-proprietary versions of Attachments 1, 5 and 7, respectively. Affidavits supporting the proprietary nature of the GE documents are provided as Attachment 11.

Entergy believes that with this submittal Entergy has fully responded to all the information requested by the NRC staff on steam dryer analyses, and that the information provided supports the preparation of the NRC staff's safety evaluation report for EPU. Entergy submits that the information provided in response to the NRC staff's requests demonstrates that VYNPS can be safely operated at up to 120% CLTP.

This submittal also provides as an enclosure CD-ROM data disks (proprietary information) associated with the GE response to the Scale Model Test facility audit.

The following attachments are included in this submittal:

Attachment	Title
1	Revised response to RAI EMEB-B-18 and Exhibit EMEB-B-18-1, VYNPS dryer load uncertainty
2	Revised response to RAI EMEB-B-39, consideration of steam dryer skirt in the structural finite element analysis
3	Revised response to RAI EMEB-B-77, estimate of main steam system resonator natural and vortex shedding frequencies
4	Revised response to RAI EMEB-B-96
5	Revised Exhibit EMEB-B-143-1
6	Revised Steam Dryer Monitoring Plan
7	GE Scale Model audit question responses
8	Non-proprietary version of Attachment 1
9	Non-proprietary version of Attachment 5
10	Non-proprietary version of Attachment 7
11	GE affidavits for Attachments 1, 5 and 7
12	Additional strain gage equipment and data acquisition system specifications

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.

There are no new regulatory commitments contained in this submittal. However, acceptance of the proposed license condition will result in certain actions with respect to steam dryer monitoring and evaluations.

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 September 14, 2005.

Sincerely,

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

Attachments (12)
Enclosure (1)

cc: Mr. Richard B. Ennis, Project Manager
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop O 8 B1
Washington, DC 20555

Mr. Samuel J. Collins (w/o attachments)
Regional Administrator, Region 1
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

USNRC Resident Inspector (w/o attachments)
Entergy Nuclear Vermont Yankee, LLC
P.O. Box 157
Vernon, Vermont 05354

Mr. David O'Brien, Commissioner (w/o proprietary information)
VT Department of Public Service
112 State Street – Drawer 20
Montpelier, Vermont 05620-2601