

January 31, 2008

LICENSEE: Entergy Nuclear Operations, Inc.  
FACILITY: Vermont Yankee Nuclear Power Station  
SUBJECT: SUMMARY OF MEETING HELD ON JANUARY 8, 2008, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION STAFF AND ENTERGY NUCLEAR OPERATIONS, INC., REPRESENTATIVES TO DISCUSS THE RESPONSE TO A REQUEST FOR ADDITIONAL INFORMATION PERTAINING TO THE VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION

On January 8, 2008, the Nuclear Regulatory Commission staff (the staff) met with members of Entergy Nuclear Operations, Inc., (the applicant) in a public meeting to discuss the response to a request for additional information (RAI) made by the staff pertaining to the Vermont Yankee Nuclear Power Station (VYNPS) license renewal application. The applicant had an opportunity to comment on this summary.

A list of attendees is provided in Enclosure 1. The meeting agenda is provided in Enclosure 2. Comments made by the public during the meeting are provided in Enclosure 3. A copy of the slides presented by the applicant is provided as Enclosure 4. A summary of the meeting follows:

#### Background

In a letter dated November 27, 2007, the staff issued RAI 4.3.3-2 to the applicant. The purpose of the request was to gather additional information on the calculations used at VYNPS to reanalyze their time-limited aging analysis (TLAA) that addresses environmentally-assisted fatigue. In a letter dated December 11, 2007, the applicant provided its response to RAI 4.3.3-2 to the staff. The staff reviewed the response and further questioned the methodology described in the submittal, including the statement that "shear stresses are negligible," during a conference call with the applicant on December 18, 2007. During the call, the applicant indicated that some terminology misunderstanding may exist between the staff and Entergy. The applicant requested a face-to-face meeting to ensure that this highly technical issue could be properly and effectively communicated.

#### Discussion

During the meeting, the applicant made a slide presentation on the revised environmental fatigue analyses of reactor vessel nozzles for license renewal at VYNPS. The applicant reiterated its response to RAI 4.3.3-2 in an attempt to clarify the terminology used and to explain the methodology that was followed. The applicant presented the analyzed vessel nozzle configurations to identify where the shear stresses in the nozzles were negligible, where they were not, and the effects on the fatigue analysis at the locations where shear stresses were not negligible.

The applicant explained that they used nozzle corner, blend radius, and inner radius interchangeably for locations with geometrical discontinuities. The applicant explained that the methodology employed incorporates the use of axisymmetric model configurations rather than an exact 3-dimensional (3-D) or 2-dimensional (2-D) modeling. They explained that axisymmetric modeling is virtually a 3-D model except that the nozzle/vessel interface is modeled as a sphere with a multiplier to the radius to account for stress effects. With the aid of colored graphs, the applicant demonstrated that for VYNPS, some shearing stresses do not need to be considered at some nozzles. The applicant also discussed the various conservatisms used in their analysis.

### Conclusion

Based on the interaction during the meeting, the applicant agreed to perform additional confirmatory analyses and submit the results to the staff for review. The analyses will include:

- 1) Performing benchmarking calculations on the VYNPS feedwater nozzle, which is the most limiting component, using the axisymmetric finite element model (FEM), taking fully into account all stress components on the nozzle and using the ANSYS FEM computer code to model all defined transients;
- 2) Demonstrating that the Vermont Yankee specific benchmarking calculations bound the results for the Core Spray and Recirculation outlet nozzles;
- 3) Calculating fatigue cumulative usage factors (CUFs) using the NRC-approved ASME Section III NB-3200 methodology; and
- 4) Comparing the resulting CUFs to the previous environmental assisted fatigue calculations to establish whether the previous calculations are adequate.

***/RA/***

Jonathan G. Rowley, Project Manager  
Projects Branch 2  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-271

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**/RA/**

Jonathan G. Rowley, Project Manager  
Projects Branch 2  
Division of License Renewal

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OFFICE	LA:DLR	PM:RPB2:DLR	BC:RPB2:DLR
NAME	SFiguroa	JRowley	RFranovich
DATE	01/24/08/	01/31/08	01/31/08

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Memorandum to Entergy from J. Rowley, dated January 31, 2008

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SUBJECT: SUMMARY OF MEETING HELD ON JANUARY 8, 2008, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION STAFF AND ENTERGY NUCLEAR OPERATIONS, INC., REPRESENTATIVES TO DISCUSS THE RESPONSE TO A REQUEST FOR ADDITIONAL INFORMATION PERTAINING TO THE VERMONT YANKEE NUCLEAR POWER STATION LICENSE RENEWAL APPLICATION

HARD COPY:

DLR RF

E-MAIL:

PUBLIC

SSmith (srs3)

SDuraiswamy

RidsNrrDir

RidsNrrDirRlra

RidsNrrDirRlrb

RidsNrrDirRlrc

RidsNrrDirReba

RidsNrrDirRebb

RidsNrrDciCvib

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RidsNrrDeEeeb

RidsNrrDssSrxb

RidsNrrDssSbpb

RidsNrrDssScvb

RidsOgcMailCenter

-----  
JRowley

RLaufer

JShea

RPowell, RI

DScrenci, RI

MModes, RI

DPelton, SRI

MYoung

RidsOpaMail

Vermont Yankee Nuclear Power Station

cc:

Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406-1415

Mr. David R. Lewis  
Pillsbury, Winthrop, Shaw, Pittman, LLP  
2300 N Street, N.W.  
Washington, DC 20037-1128

Mr. David O'Brien, Commissioner  
Vermont Department of Public Service  
112 State Street  
Montpelier, VT 05620-2601

Mr. James Volz, Chairman  
Public Service Board  
State of Vermont  
112 State Street  
Montpelier, VT 05620-2701

Chairman, Board of Selectmen  
Town of Vernon  
P.O. Box 116  
Vernon, VT 05354-0116

Operating Experience Coordinator  
Vermont Yankee Nuclear Power Station  
320 Governor Hunt Road  
Vernon, VT 05354

G. Dana Bisbee, Esq.  
Deputy Attorney General  
33 Capitol Street  
Concord, NH 03301-6937

Chief, Safety Unit  
Office of the Attorney General  
One Ashburton Place, 19th Floor  
Boston, MA 02108

Ms. Carla A. White, RRPT, CHP  
Radiological Health  
Vermont Department of Health  
P.O. Box 70, Drawer #43  
108 Cherry Street  
Burlington, VT 05402-0070

Mr. David Mannai  
Manager, Licensing  
Entergy Nuclear Operations  
Vermont Yankee Nuclear Power Station  
P.O. Box 500  
185 Old Ferry Road  
Brattleboro, VT 05302-0500

Resident Inspector  
Vermont Yankee Nuclear Power Station  
U. S. Nuclear Regulatory Commission  
P.O. Box 176  
Vernon, VT 05354

Director, Massachusetts Emergency  
Management Agency  
ATTN: James Muckerheide  
400 Worcester Road  
Framingham, MA 01702-5399

Jonathan M. Block, Esq.  
Main Street  
P.O. Box 566  
Putney, VT 05346-0566

Mr. John F. McCann  
Director, Licensing  
Entergy Nuclear Operations, Inc.  
440 Hamilton Avenue  
White Plains, NY 10601

Mr. John T. Herron  
Sr. Vice President  
Entergy Nuclear Operations, Inc.  
1340 Echelon Parkway  
Jackson, MS 39213

cc:

Mr. Oscar Limpias  
Vice President, Engineering  
Entergy Nuclear Operations, Inc.  
1340 Echelon Parkway

Jackson, MS 39213  
Mr. Christopher Schwartz  
Vice President, Operations Support  
Entergy Nuclear Operations, Inc.  
440 Hamilton Avenue  
White Plains, NY 10601

Mr. Michael J. Colomb  
Director of Oversight  
Entergy Nuclear Operations, Inc.  
440 Hamilton Avenue  
White Plains, NY 10601

Mr. William C. Dennis  
Assistant General Counsel  
Entergy Nuclear Operations, Inc.  
440 Hamilton Avenue  
White Plains, NY 10601

Mr. Theodore Sullivan  
Site Vice President  
Entergy Nuclear Operations, Inc.  
Vermont Yankee Nuclear Power Station  
P.O. Box 500  
185 Old Ferry Road  
Brattleboro, VT 05302-0500

Mr. James H. Sniezek  
5486 Nithsdale Drive  
Salisbury, MD 21801

Mr. Garrett D. Edwards  
814 Waverly Road  
Kennett Square, PA 19348

Ms. Stacey M. Lousteau  
Treasury Department  
Entergy Services, Inc.  
639 Loyola Avenue  
New Orleans, LA 70113

Mr. Norman L. Rademacher  
Director, NSA  
Vermont Yankee Nuclear Power Station  
P.O. Box 0500  
185 Old Ferry Road  
Brattleboro, VT 05302-0500

Mr. Raymond Shadis  
New England Coalition  
Post Office Box 98  
Edgecomb, ME 04556

Mr. James P. Matteau  
Executive Director  
Windham Regional Commission  
139 Main Street, Suite 505  
Brattleboro, VT 05301

Mr. William K. Sherman  
Vermont Department of Public Service  
112 State Street  
Drawer 20  
Montpelier, VT 05620-2601

Mr. Michael D. Lyster  
5931 Barclay Lane  
Naples, FL 34110-7306

Diane Curran, Esq.  
Harmon, Curran, Spielberg &  
Eisenberg, L.L.P  
1726 M Street, NW, Suite 600  
Washington, DC 20036

Ronald A. Shems, Esq.  
Shems, Dunkiel, Kassel & Saunders, PLLC  
91 College Street  
Burlington, VT 05401

Karen Tyler, Esq.  
Shems, Dunkiel, Kassel & Saunders, PLLC  
91 College Street  
Burlington, VT 05401

cc:

Sarah Hofmann, Esq.  
Director of Public Advocacy  
Department of Public Service  
112 State Street - Drawer 20  
Montpelier, VT 05620-2601

Jennifer J. Patterson, Esq.  
Office of the New Hampshire Attorney  
General  
33 Capitol Street  
Concord, NH 03301

Matias F. Travieso-Diaz, Esq.  
Pillsbury, Winthrop, Shaw, Pittman, LLP  
2300 N Street, NW  
Washington, DC 20037-1128

Matthew Brock, Esq.  
Assistant Attorney General  
Office of the Massachusetts Attorney  
General  
Environmental Protection Division  
One Ashburton Place, Room 1813  
Boston, MA 02108-1598

Anthony Z. Roisman, Esq.  
National Legal Scholars Law Firm  
84 East Theford Road  
Lyme, NH 03768

John Sipos, Assistant Attorney General  
Office of the Attorney General  
The Capitol  
State Street  
Albany, NY 12224

MEETING BETWEEN THE NRC STAFF AND ENTERGY NUCLEAR OPERATIONS, INC.  
VERMONT YANKEE NUCLEAR POWER STATION  
LICENSE RENEWAL APPLICATION

6003 EXECUTIVE BOULEVARD  
ROOM EBB1B15  
ROCKVILLE, MARYLAND

MEETING ATTENDANCE LIST  
JANUARY 8, 2008

PARTICIPANTS

AFFILIATIONS

Jonathan Rowley	U.S. Nuclear Regulatory Commission (NRC)
Samson Lee	NRC
John Fair	NRC
Kenneth Chang	NRC
PT Kuo	NRC
Rani Franovich	NRC
Robert Sun	NRC
Qi Gan	NRC
Kaihwa Hsu	NRC
Ricardo Rodriguez	NRC
Mary Baty	NRC
Perry Buckberg	NRC
Evelyn Gettys	NRC
Yeon-Ki Chung	NRC
Peter Wen	NRC
On Yee	NRC
Gary Hammer	NRC
David Mannai	Entergy Nuclear Operations, Inc. (Entergy)
John McCann	Entergy
Jay Thayer	Entergy
Matias Travieso-Diaz	Entergy
Michael Metell	Entergy
Garry Young	Entergy



PARTICIPANTS

Norm Rademacher

Alan Cox

James Fitzpatrick

Scott Goodwin

John Dreyfuss

Joe Hopensfeld

David Lochbaum

**THE FOLLOWING PARTICIPATED**

Sarah Hoffman

John Sipos

Paul Eddy

Joan Leary Matthews

Blaise Constantakes

Rudolf Hausler

Raymond Shadis

Claire Chang

Ulrich Witte

Ed Anthes

Rich Schaller

Chalmer Myer

Bob Audette

Susan Smallheer

Sally Shaw

Fred Mogolesko

AFFILIATIONS

Entergy

Entergy

Entergy

Entergy

Entergy

New England Coalition (NEC)

Union of concerned Scientist

**VIA TELEPHONE BRIDGELINE**

Vermont Department of Public Service

New York Office of the Attorney General

New York Office of the Attorney General

New York Office of the Attorney General

New York Office of the Attorney General

New York Office of the Attorney General

NEC

NEC

NEC

Nuclear Free Vermont

Strategic Teaming and Resource Sharing

Southern Nuclear Operating Company

The Brattleboro Reformer

The Rutland Herald

Entergy

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VERMONT YANKEE NUCLEAR POWER STATION  
LICENSE RENEWAL APPLICATION

6003 EXECUTIVE BOULEVARD  
ROOM EBB1B15  
ROCKVILLE, MARYLAND

AGENDA  
JANUARY 8, 2008

- |      |   |            |
|------|---|------------|
| I.   | Introduction and Opening Remarks  | 10 minutes |
| II.  | Discussion of Response to Request for Additional Information<br>(Response to RAI 4.3.3-2) | 80 minutes |
| III. | Public Comments   | 30 minutes |
| IV.  | Adjourn   |            |