



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PA 19406-2713

October 22, 2015

Docket No. 05000271

License No. DPR-28

Mr. Christopher Wamser  
Site Vice President  
Entergy Nuclear Operations, Inc.  
Vermont Yankee Nuclear Power Station  
Vernon, VT 05354

SUBJECT: NRC INSPECTION REPORT NO. 05000271/2015009, ENTERGY NUCLEAR OPERATIONS, INC., VERMONT YANKEE NUCLEAR POWER STATION, VERNON, VERMONT

Dear Mr. Wamser:

On September 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed its quarterly inspection under Inspection Manual Chapter 2561, "Decommissioning Power Reactor Inspection Program," at the permanently shut down Vermont Yankee Nuclear Power Station (VY). On-site inspections were performed on July 20-23, and September 14-17, 2015. In-office reviews of information supplied by Entergy Nuclear Operations, Inc. were also performed during the inspection period. The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations, and the conditions of your license. The inspection consisted of observations by the inspector, interviews with personnel, and a review of procedures and records. The results of the inspection were discussed with Mike Romeo, Plant Manager, and other members of the VY staff on October 5, 2015, and are described in the enclosed report. No findings of safety significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure(s), and your response, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC document system (ADAMS), accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Current NRC regulations and guidance are included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select Radioactive Waste; Decommissioning of Nuclear Facilities; then Regulations, Guidance and Communications. The current Enforcement Policy is included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents; then Enforcement Policy (Under 'Related Information'). You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

C. Wamser

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No reply to this letter is required. Please contact Steve Hammann, at 610-337-5399, if you have any questions regarding this matter.

Sincerely,

*/RA/*

Raymond Powell, Chief  
Decommissioning and Technical Support  
Branch  
Division of Nuclear Materials Safety

Enclosure: Inspection Report 05000271/2015009

cc w/encl: Distribution via ListServ

C. Wamser

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**SUNSI Review Complete:** SHammann

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Inspection No. 05000271/2015009  
Docket No. 05000271  
License No. DPR-28  
Licensee: Entergy Nuclear Operations, Inc. (Entergy)  
Facility: Vermont Yankee Nuclear Power Station (VY)  
Location: Vernon, VT 05354  
Inspection Dates: July 1, 2015 to September 30, 2015  
Inspector: Stephen Hammann, Senior Health Physicist  
Decommissioning and Technical Support Branch  
Division of Nuclear Materials Safety, Region I  
Bhasker P. Tripathi, Senior Structural Engineer  
Containment, Structural and Thermal Branch  
Division of Spent Fuel Management  
Office of Nuclear Materials Safety and Safeguards  
Approved By: Raymond Powell, Chief  
Decommissioning and Technical Support Branch  
Division of Nuclear Materials Safety, Region I

Inspection Report No. 05000271/2015009

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## **EXECUTIVE SUMMARY**

Entergy Nuclear Operations, Inc.  
Vermont Yankee Nuclear Power Station  
NRC Inspection Report No. 05000271/2015009

An announced quarterly inspection was completed at Vermont Yankee Nuclear Power Station (VY) on September 30, 2015. On-site inspections were conducted on July 20-23, and September 14-17, 2015. In-office reviews of information supplied by Entergy Nuclear Operations, Inc. (Entergy) were also performed during the inspection period. The inspection included a review of operations, management oversight, site radiological programs, Independent Spent Fuel Storage Installation (ISFSI), and decommissioning performance. The inspection consisted of observations by the inspectors, interviews with Entergy personnel, a review of procedures and records, and plant walk-downs. The NRC's program for overseeing the safe operation of a shut-down nuclear power reactor is described in Inspection Manual Chapter (IMC) 2561, "Decommissioning Power Reactor Inspection Program."

Based on the results of this inspection, no findings of safety significance were identified.

## **REPORT DETAILS**

### **1.0 Background**

On January 12, 2015, VY certified the permanent removal of fuel from the reactor vessel [Agencywide Document and Access Management System (ADAMS) Accession No. ML15013A426]. This met the requirements of 10 Code of Federal Regulations (CFR) 50.82(a)(1)(i) and 50.82(a)(1)(ii). On January 20, 2015, the NRC notified VY that the Operating Reactor Assessment Program would cease on January 24, 2015 and that implementation of the Decommissioning Power Reactor Inspection Program would begin on January 25, 2015 (ADAMS Accession No. ML15020A482). VY is currently in the "Post Operation Transition Phase" of decommissioning as described in IMC 2561.

### **2.0 Post Operation Transition Phase Performance and Status Review**

#### **a. Inspection Scope (Inspection Procedures (IPs) 37801, 60856, 83750, 84750)**

The inspectors performed on-site inspections the weeks of July 20-23, and September 14-17, 2015. In-office reviews of information supplied by Entergy were also performed during the inspection period. The inspection consisted of observations by the inspectors, interviews with Entergy personnel, a review of procedures and records, and plant walk-downs.

The inspectors observed chemistry technicians collect, prepare, and analyze spent fuel pool water samples; radiation protection (RP) technicians performing routine radiological inspections; and RP technicians performing source checks of instrumentation. The inspectors also toured the calibration lab and observed a demonstration of instrument calibration. The inspectors reviewed radiation work permits (RWPs), As Low As Reasonably Achievable (ALARA) committee meeting minutes, ALARA reports, and procedures associated with occupational exposure.

The inspectors performed a walk-down of groundwater monitoring wells and site effluent monitoring points, observed RP technicians collect and prepare environmental air samples, and toured the Sample Preparation Facility. The inspectors reviewed documentation associated with radioactive effluent control and site radiological environmental monitoring program (REMP) to determine the effectiveness of site radiological programs. The inspectors reviewed procedures, diagrams of effluent monitoring systems, annual REMP report, annual radioactive effluent report, and the Off-Site Dose Calculation Manual.

The inspectors reviewed the modifications to abandon the condensate storage tank (CST) and instead use the Torus for primary water storage during the SAFSTOR phase of decommissioning. The inspectors performed a walk-down of the modification, interviewed personnel, and observed work in-progress. The inspectors reviewed engineering change (EC) packages, condition reports, and plant drawings to determine if the Torus as CST project would fulfill its function as specified in the Final Safety Analysis

Report (FSAR), Technical Specifications, and plant procedures. The inspectors also reviewed post implementation functional test results to determine if the modification results were acceptable.

The inspectors performed an in-office review of ISFSI pad design documentation to determine if the storage pad would adequately support both static and dynamic loads, as required by 10 CFR 72.212(b)(5)(ii). The inspectors reviewed the assumptions the licensee used in the seismic and liquefaction analyses for the storage pad. The inspectors reviewed the licensee's conclusions about the acceptability of the storage pads design with respect to the site's hydrology, geology and seismology. The inspectors also determined if the various design loads were in accordance with Vermont Yankee FSAR.

b. Observations and Findings

The inspectors determined that survey records were clear and complete and RP staff and maintenance supervision effectively controlled work activities. The inspectors determined dose assessments were being performed in accordance with plant procedures and that ALARA dose reports indicate that Entergy is currently meeting their occupational dose projections for the year.

The inspectors verified that the annual radiological effluent and the annual REMP reports demonstrated that calculated doses were below regulatory dose criteria of 10 CFR 50, Appendix I. The inspectors also determined that waste treatment systems were maintained and operated in accordance with site procedures. The inspectors verified that effluent releases to the environment were being properly controlled, monitored, and quantified as required by NRC regulations.

The inspectors verified the Torus as CST modification was completed and the Torus was placed into service as the source of primary water storage. The inspectors also verified that the engineering changes (ECs) were performed in accordance with site procedures and safety reviews had been performed adequately. The inspectors determined Entergy effectively evaluated the post implementation functional test results of the modification.

The inspectors noted the construction of the ISFSI pad expansion is tentatively scheduled to start in 2016. The inspectors verified the second pad will be constructed directly west of the existing pad and will expand the Entergy dry cask storage capacity by allowing an additional 25 Holtec HI-STORM 100S, Version B (218) overpacks to be stored.

c. Conclusions

Based on the results of this inspection, no findings of safety significance were identified.

### **3.0 Exit Meeting Summary**

On October 5, 2015, the inspectors presented the inspection results, via teleconference, to Mike Romeo, Plant Manager, and other members of Entergy's staff. The inspectors confirmed that proprietary information was not removed from the site.



**PARTIAL LIST OF PERSONS CONTACTED**

Licensee

M. Ball, Mechanical Design Engineer  
J. Card, Mechanical Systems Engineer  
C. Chappell, Licensing and CA&A Manager  
S. Christmas, RP Technician  
P. Jerz, Work Week Manager  
J. Meyer, Licensing  
M. Morgan, RP Supervisor  
M. Odman, Sr. Chemistry Technician  
M. Pletcher, Radiation Protection and Chemistry Manager  
G. Roediger, Sr. Chemistry Technician  
J. Rogers, Design Engineering Manager  
M. Romeo, Decommissioning Plant Manager  
K. Whippie, Chemistry Supervisor  
A. Zander, Shift Manager

**ITEMS OPEN, CLOSED, AND DISCUSSED**

None

**LIST OF DOCUMENTS REVIEWED**

Condition Reports

CR-VTY-2015-00973, 01072, 01246, 01294, 01528

Audits and Reports

2014 Annual Radiological Environmental Operating Report  
Chemistry Audit, 2013, Standardized Audit Template, Checklist QA-2-6-2013-VY-1  
Radioactive Effluent Release Report for 2014  
Teledyne Brown Engineering, Inc., Report of Analysis/Certificate of Conformance, PO#  
10147241, 4/15/2015  
VTY Daily ALARA Report, September 17, 2015  
VTY Daily ALARA Report, July 21, 2015  
WMG 13-150-RE-193, Rev. 0, Vermont Yankee Dose Rate Assessment Using Monte Carlo  
Methodology

Calculations

VYC-3176, Development of Response Spectra Consistent Time Histories for ISFI Expansion  
Concrete Storage Pad, Rev.1.  
VYC-3177, Development of Strain Dependent Soil Properties for ISFSI Expansion Concrete  
Storage Pad, Rev.1.  
VYC-3178, Soil-Structure Interaction Analysis and Cask/Stability Sliding of ISFSI Expansion  
Concrete Storage Pad, Rev.0  
VYC-3179, Liquefaction Potential for ISFSI Expansion Concrete Storage Pad, Rev.1  
VYC-3181, Structural concrete design for ISFSI Expansion Concrete Storage Pad, Rev. 0

Drawings

Drawing Nos. G-191148, G-191169, G-191173, G-191175, G-191176 SH.3

Evaluations

EC No. 48595, Rev. 0

Procedures

DP 4580, Operation of Whole Body Counting System, Rev. 8  
EN-RP-203, Dose Assessment, Rev. 6  
EN-RP-206, Dosimeter of Legal Record Quality Assurance, Rev. 5  
EN-RP-301, Radiation Protection Instrument Control, Rev. 7  
EN-RP-302, Operation of Radiation Protection Instrumentation, Rev. 2  
EN-RP-303, Source Checking of Radiation Protection Instrumentation, Rev. 4  
EN-RP-303-01, Automated Contamination Monitor Performance Testing, Rev. 0  
EN-RW-102, Radioactive Shipping Procedure, Rev. 11  
FO-OP-025, Dewatering Procedure for EnergySolutions 24 Inch Diameter Disposable Pressure Vessels, Rev. 6  
OP 0631, Appendix B, Alpha and Gamma Determinations, Rev. 28  
OP 0631, Appendix C, Tritium Measurement, Rev. 28  
OP 0634, Operation of the Dionex Ion Chromatograph, Rev. 20  
OP 4605, Environmental Radiation Sampling and Analysis, Rev. 47

Procedures-Completed Surveillance Procedures

EN-DC-117 R007, Attachment 9.6, ECT-48595-01, Torus as CST Post Implementation Functional Test  
EN-RP-203, Attachment 9.3, Dosimetry Investigation Report, 8/18/15

Miscellaneous

ALARA Committee Meeting Minutes, 4/2/15  
Decommissioning ALARA Planning Data and ALARA Plan, Rev. 0  
-Torus as CST mod – EC 48595  
-Transfer and Processing of RWCU resin from CUPS to Cask  
Gaseous Effluent Filter Sample and Analysis, 6/29/15  
GEL Laboratories LLC, Analytical Results for samples received May 29, 2015 and June 4, 2015  
Main Stack Grab Sample and Analysis, 6/15/15  
Plan of the Day Meeting/OPS Focus Agenda, 7/21/2015  
RSCS, A Summary of Sr-90 Levels in the Environment, April 15, 2015  
RWP, 20150621, Revs. 00,01,02, Transfer and Processing of RWCU Resin from CUPS to Cask  
Stack Tritium Analysis, 6/29/15  
System Abandonment Spreadsheet  
Vermont Yankee Offsite Dose Calculation Manual (ODCM) Revisions for Decommissioning, prepared by RSCS, July 7, 2015

**LIST OF ACRONYMS USED**

ADAMS	Agencywide Document and Access Management System
ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
CST	Condensate Storage Tank
EC	Engineering Change
Entergy	Entergy Nuclear Operations, Inc.
FSAR	Final Safety Analysis Report
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
NRC	U.S. Nuclear Regulatory Commission
REMP	Radiological Environmental Monitoring Program
RWP	Radiation Work Permit
VY	Vermont Yankee Nuclear Power Station