



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

May 8, 2015

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

SUBJECT: NRC INSPECTION REPORT NO. 05000271/2015007, ENTERGY NUCLEAR OPERATIONS, INC., VERMONT YANKEE NUCLEAR POWER STATION, VERNON, VERMONT

Dear Mr. Wamser:

On March 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed its first inspection under Inspection Manual Chapter 2561, "Decommissioning Power Reactor Inspection Program," at the permanently shut down Vermont Yankee Nuclear Power Station (VY). Inspection activities were performed between January 25 and March 31, 2015, and included in-office reviews of information supplied by Entergy Nuclear Operations, Inc. 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 inspectors, interviews with personnel, and a review of procedures and records. The results of this inspection were discussed with Mr. J. Boyle, Engineering Director, and other members of your staff on April 15, 2015, and are described in the enclosed report. No findings of safety significance were identified.

In accordance with 10 Code of Federal Regulations (CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) 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; 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; 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 Sarah Rich at 802-257-4310 if you have any questions regarding this matter.

Sincerely,

/RA/

Marc Ferdas, Chief
Decommissioning and Technical Support
Branch
Division of Nuclear Materials Safety

Docket No: 50-271
License No: DPR-28

Enclosure: Inspection Report 05000271/2015007
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

C. Wamser

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Docket No: 050-00271

License No: DPR-28

Report No: 05000271/2015007

Licensee: Entergy Nuclear Operations, Inc. (Entergy)

Facility: Vermont Yankee Nuclear Power Station (VY)

Location: Vernon, VT 05354

Dates: January 25, through March 31, 2015

Inspectors: S. Rich, Acting Senior Resident Inspector,
Division of Reactor Projects

S. Hammann, Senior Health Physicist,
Division of Nuclear Materials Safety

Approved by: Marc Ferdas, Chief
Decommissioning and Technical Support Branch
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Entergy Nuclear Operations, Inc.
Vermont Yankee Nuclear Power Station
NRC Inspection Report No. 05000271/2015007

An announced quarterly inspection was completed at VY on March 31, 2015. On-site inspections and in-office reviews of information supplied by Entergy were performed during the inspection period from January 25 to March 31, 2015. The inspection included a review of: organizational and management controls, design changes, plant modifications, self-assessments, corrective action program (CAP), site operations, maintenance, surveillance testing, and spent fuel pool (SFP) safety. The inspection consisted of observations by the inspectors, interviews with Entergy personnel, a review of procedures and records, and plant walk-downs.

The U.S. Nuclear Regulatory Commission's (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." VY is currently in the "Post Operation Transition Phase" of decommissioning as described in IMC 2561.

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 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

2.1 Organization, Management, and Cost Controls at Permanently Shutdown Reactors [Inspection Procedure (IP) 36801]

a. Inspection Scope

The inspectors conducted document reviews, performed observations, and interviewed plant personnel to verify the following:

- Entergy established procedures and processes to resolve employee and safety concerns and effectively resolved identified problems;
- Entergy implemented a cost and personnel reduction strategy that did not adversely challenge public health and safety;
- Entergy appropriately implemented the Technical Specifications, Technical Requirements Manual, and Fire Protection Plan requirements and commitments;
- Regulatory requirements were properly implemented with respect to the site organization, staffing and staff qualifications;
- Certified fuel handler and employee training programs were implemented in accordance with Entergy procedures and NRC requirements; and
- Entergy's decommissioning activities were initiated, sequenced and performed in a manner consistent with the Post Shutdown Decommissioning Activities Report (PSDAR).

The inspectors also observed an emergency response drill conducted by Entergy on March 11, 2015.

b. Observations and Findings

Entergy appropriately implemented organizational and management controls in accordance with regulatory requirements, license conditions and the Technical Specifications. Entergy's transition activities were in accordance with the PSDAR. The inspectors noted that Entergy retained sufficient staff after the certification of fuel removal to meet the requirements of their emergency plan. During the emergency response drill, Entergy was able to demonstrate its response capability. Items identified by Entergy as areas for improvement were placed in their CAP.

c. Conclusions

No findings of significance were identified.

2.2 Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors (IP 37801)

a. Inspection Scope

The inspectors conducted document reviews and interviews with plant personnel to verify the following:

- Entergy procedures and processes conform to the regulations and guidance associated with 10 CFR 50.59;
- Procedures that control and implement design changes and modifications provide adequate guidance for implementation, review and approval;
- Procedures and controls were followed and the applicable changes were effectively implemented in the field and in plant procedures, drawings and training programs;
- Changes made by Entergy under 10 CFR 50.59 did not require prior NRC approval; and
- Changes to preventive maintenance, corrective maintenance and operational procedures for required equipment were implemented in accordance with Entergy's processes and procedures.

The inspectors reviewed the change of the standby fuel pool cooling system classification from safety-related to non-safety-related, as well as the associated changes to the service water, residual heat removal and residual heat removal service water systems.

b. Observations and Findings

The inspectors determined that the changes made to plant systems did not require prior NRC approval. Entergy adequately implemented safety reviews, design changes and modifications in accordance with applicable regulatory requirements, license conditions and the Technical Specifications.

c. Conclusions

No findings of significance were identified.

2.3 Self-Assessment, Auditing, and Corrective Actions at Permanently Shutdown Reactors (IP 40801)

a. Inspection Scope

The inspectors conducted document reviews and interviews with plant personnel to verify the following:

- Entergy management performed observations of maintenance and surveillance activities, operations evolutions, and training;
- Administrative procedures prescribed actions for the identification, evaluation and resolution of problems; and
- Issues or problems were identified and corrected in accordance with the CAP.

The inspectors reviewed CAP documents on a daily basis to determine:

- If a sufficiently low threshold for problem identification existed;
- If follow-up evaluations were of sufficient quality, including extent of condition; and
- If Entergy assigned timely and appropriate prioritization for issue resolution commensurate with the significance of the issue.

The inspectors verified that Entergy evaluated issues with the potential for safety or regulatory consequence for apparent and/or common causes. The inspectors observed a sample of condition report review group meetings. The inspectors also reviewed the ongoing actions by Entergy regarding samples of groundwater analyzed for the presence of Strontium-90 (Sr-90) (CAP Condition Report 2014-4033).

b. Observations and Findings

The inspectors determined that issues were identified by Entergy at an appropriate threshold and entered into the CAP. Issues were effectively screened, prioritized and evaluated commensurate with safety significance during condition report review group meetings. Entergy's evaluations determined the significance of issues and included appropriate corrective actions. The inspectors noted that Entergy management attended pre-job briefs and surveillances at an appropriate frequency and retained their oversight role.

In January 2015, Entergy received information that several of their on-site groundwater monitoring wells showed indication of trace amounts of Sr-90. The highest concentration of Sr-90 in any of the groundwater samples taken was 3.5 pCi/L, which is below the U.S. Environmental Protection Agency's safe drinking water standard of 8 pCi/L. The inspectors confirmed that the results were also below the minimum detectable limits established in VY's groundwater monitoring program. The inspectors also confirmed that sampling did not detect the presence of Sr-90 in the Connecticut

River. Entergy continues to evaluate this issue and actions taken are being tracked in their CAP.

c. Conclusions

No findings of significance were identified.

2.4 Spent Fuel Pool Safety at Permanently Shutdown Reactors (IP 60801)

a. Inspection Scope

The inspectors verified the safe wet storage of spent fuel in the SFP. The review included: SFP siphon and drain down protection; SFP chemistry and cleanliness controls; and SFP system operation and electrical power supply adequacy. The inspectors also reviewed the engineering change that reclassified the standby fuel pool cooling system from safety related to non-safety-related.

The inspectors reviewed the design drawings for the service water system, standby fuel pool cooling system, and SFP. The inspectors performed a walk down of the SFP and accessible portions of the standby fuel pool cooling system. The inspectors reviewed SFP weekly chemistry sample results that Entergy had performed between April 2014 and March 2015 in order to verify SFP chemistry parameters were within the limits of Entergy's renewed license commitments. The inspectors also reviewed the data from the quarterly standby fuel pool cooling system surveillances to verify that the system was operating within the expected parameters. The inspectors also reviewed the surveillance procedure to verify that no significant changes had been made since the plant shutdown.

b. Observations and Findings

The inspectors determined that Entergy was safely storing spent fuel in wet storage. Entergy maintained adequate process and program to protect the SFP from a siphon or drain down event. Entergy maintained procedures which provided adequate guidance to restore SFP water level and mitigate the adverse effects from a drain down event, if required. Spent fuel pool chemistry and cleanliness controls were being adequately implemented. SFP cooling system electrical power supplies were reliable and SFP operational strategies being implemented by Entergy were consistent with those used during refueling outage operations.

The inspectors noted that due to the high heat load associated with the full core offload, the standby fuel pool cooling system was in operation for the duration of the inspection period, instead of the normal fuel pool cooling system. As a result, no demineralizers were available to remove ions from the SFP water. The inspectors verified that the increasing trends in chemicals normally removed by the demineralizer system would not result in SFP chemistry limits being exceeded prior to site plans to place a demineralizer back in service.

c. Conclusions

No findings of significance were identified.

2.5 Maintenance and Surveillance at Permanently Shutdown Reactors (IP 62801)

a. Inspection Scope

The inspectors conducted plant tours throughout the inspection period to observe the impact of work activities on site operations, and how worker safety was being maintained. During these walkdowns, the inspectors evaluated housekeeping and the material condition of structures and components that support decommissioning. The inspectors also assessed area radiological condition and radiological access controls, including posting and labeling.

The inspectors observed surveillances conducted on the emergency diesel generators and verified that when they were taken out of service for surveillance, Entergy assessed the impact on plant risk. The inspectors also reviewed the changes to maintenance rule scoping documents for the systems that remained in the scope of the maintenance rule following the plant shutdown.

b. Observations and Findings

The inspectors noted that throughout the inspection period housekeeping and plant material condition standards were being maintained. Changing radiological conditions were addressed in a prompt and timely manner by Entergy. Workers followed work plans, surveillance procedures and industrial safety protocols and were aware of job controls specified in work instructions.

Entergy appropriately prioritized corrective maintenance on the remaining systems required for permanent cessation of operations. The inspectors verified that when equipment issues occurred, Entergy staff implemented the appropriate troubleshooting procedures to identify and correct the equipment deficiency identified. The inspectors also verified that all systems that supported spent fuel safety continued to be appropriately scoped in to the maintenance rule and that the performance criteria established were acceptable.

c. Conclusions

No findings of significance were identified.

2.6 Decommissioning Performance and Status Reviews at Permanently Shutdown Plants (IP 71801)

a. Inspection Scope

The inspectors observed site meetings which were used by Entergy to plan, review, assess, and schedule site activities. The inspectors reviewed portions of Entergy's activities

associated with the abandonment of systems and equipment not needed to support decommissioning operations. The inspectors also reviewed impacts on site operations from cold weather conditions.

The inspectors conducted document reviews, observations and interviews with plant personnel to verify:

- Activities were in accordance with license conditions and docketed commitments, as well as within the bounds of the docketed PSDAR;
- Appropriate plant staffing was maintained and management oversight of licensee and supplemental activities were performed;
- Pre-job briefs were conducted for facility operations including maintenance, surveillance, operations and decommissioning activities;
- Plant material condition of structures, systems and components was maintained at a high level to ensure safe storage of spent fuel;
- The storage of combustibles and flammables were in accordance with plant procedures and the Fire Protection Plan for the subject location; and
- Installed fire detection and suppression systems were effectively maintained, surveillances performed, and systems were capable of performing their intended function.

The inspectors assessed operability and functionality of systems necessary for safe decommissioning through control room and plant walkdowns of the following systems: radioactive effluent monitoring, spent fuel pool cooling (including level and temperature control), and radiation protection monitors and alarms. The inspectors also assessed the operability and functionality of equipment that was important to emergency preparedness or provided normal and standby electrical power. The inspectors reviewed ongoing in-plant work activities to ensure they were evaluated for risk and potential plant impacts. The inspectors verified that operations shift turnovers appropriately communicated pertinent plant status.

The inspectors reviewed the work plans, procedures, and radiological survey data associated with the removal of the on-site storage container (OSSC) Modules, ALARA/Radwaste Office Building, Multiple Gas Bottle Shed, South Warehouse Building, Maine Yankee Building, Power Up-Rate Building, Turbine Rotor Building, and Pipe Storage Building. The inspectors also observed Entergy performing portions of the radiological surveys performed as part of the removal of these structures and buildings.

b. Observations and Findings

Entergy conducted activities in accordance with the regulatory requirements and plant procedures. During severe cold weather, on February 6, 2015 (outside air temperature at -14 degrees Fahrenheit), the inspectors walked down areas of the site that contained important-to-safety equipment and verified the temperatures in those areas was being maintained at an appropriate level to maintain the equipment's functionality.

The inspectors noted that on March 3, 2015, Entergy started the B service water pump and secured the normally-running D service water pump. The B pump was unable to maintain service water header pressure and the D pump restarted automatically.

Entergy performed troubleshooting and determined that the A and B service water pumps had been affected by ice forming in the service water bay (CAP Condition Report 2014-0403). The inspectors reviewed Entergy's extent of condition and verified that the ice had not affected the C and D service water pumps, or the fire pumps. The inspectors also verified that only one service water pump was needed in the current plant configuration, and therefore determined that the loss of the pumps was not a significant reduction in plant safety margin.

c. Conclusions

No findings of significance were identified.

3.0 Exit Meeting

On April 15, 2015, the inspectors presented the inspection results to Mr. J. Boyle, Engineering Director, and other members of the Entergy staff who acknowledged the inspection results. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Vermont Yankee Personnel

C. Wamser, Site Vice President
M. Romeo, Decommissioning Plant Manager
J. Boyle, Engineering and Technical Director
P. Paradis, Decommissioning Director
E. Harms, Operations Manager
R. Felumb, Performance Improvement Manager
M. McKenney, Emergency Preparedness Manager
P. Ryan, Security Manager
C. Chappell, Licensing and CA&A Manager
J. Rogers, Design Engineering Manager
J. Laughney, QA Supervisor
H. Breite, Senior Engineer
M. Flynn, Senior Engineer
J. Stasolla, System Engineer
R. Hall, Operations Instructor
C. Dissinger, Senior Emergency Planner

ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

2.1 Organization, Management, and Cost Controls at Permanently Shutdown Reactors (IP 36801)

Procedures

V-EN-OP-102, "Protective and Caution Tagging"
AP 0140, "Vermont Yankee Local Control Switching Rules"

Miscellaneous

March 11 Drill Handbook

2.2 Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors (IP 37801)

Procedures

V-EN-LI-100, "Process Applicability Determination," Revision 18

Condition Reports

CR-VTY-2015-0382

Miscellaneous

NEI 96-07, "Guidelines for 10 CFR 50.59 Evaluations," Revision 1
EC 49156, "Reconfiguration of the Service Water System for SAFSTOR"
EC 48457, "RHR and RHRSW Abandonment"
EC 52410, "Partial Abandonment of the Service Water System"
EC 48422, "Standby Fuel Pool Cooling System Reclassification for SAFSTOR"

2.3 Self-Assessment, Auditing, and Corrective Actions at Permanently Shutdown Reactors (IP 40801)

Procedures

V-EN-LI-102, "Performance Improvement Program," Revision 24

2.4 Spent Fuel Pool Safety at Permanently Shutdown Reactors (IP 60801)

Procedures

OP 2179, "Standby Fuel Pool Cooling," Revision 16
OPOP-SW-2181, "Service Water/Alternate Cooling Operating Procedure," Revision 11

Condition Reports

CR-VTY-2015-0438

Drawings

G-191173 Sheet 2, "Flow Diagram Fuel Pool Cooling and Clean-up System," Revision 10
G-191173 Sheet 1, "Flow Diagram Fuel Pool Cooling and Clean-up System," Revision 40

Isometric Drawings

VYI-MISC-PART 4A Sheet1/1, "Miscellaneous," Revision 1
VYI-RHR-PART 16 Sheet 5/6, "8" CST-21 Line to Fuel Pool Filling," Revision 0
VYI-RHR-PART 16 Sheet 4/6, "2nd Floor East Side Fuel Pool Heat Exchanger FPC Pump Intake," Revision 0
VYI-MISC-Part 4 Sheet VI, "Miscellaneous," Revision 0

Miscellaneous

EC 50086, "Standby Fuel Pool Cooling System Reclassification"

VY-OPF-4179.02, "Standby FPCS Pump Operability and Discharge Check Valve Test Data Sheet," completed 3/5/15
Spent Fuel Pool Weekly Chemistry Results, April 2014-March 2015
EC 50083, "Abandonment of Normal Fuel Pool Cooling System"

2.5 Maintenance and Surveillance at Permanently Shutdown Reactors (IP 62801)

Procedures

V-EN-DC-209, "Maintenance Rule Scope and Basis," Revision 3

Maintenance Rule Scoping Documents

115 kV, "115KV Volts Electrical," Revision 6
120 VAC, "120 Volts AC and Vital AC," Revision 5
125 Volt VDC, "125 Volts DC Electrical," Revision 10
208 AC, "208 Volts AC Electrical," Revision 4
24 VDC, "24 Volts DC Electrical," Revision 7
345 kV, "345 K Volts AC Electrical," Revision 7
480 VAC, "480 Volts AC Electrical," Revision 7
4 kV, "4 K Volts AC Electrical," Revision 5
ARM, "Area Radiation Monitoring," Revision 3
COMM, "Plant Communications," Revision 4
DG, "Emergency Diesel Generator and Auxiliaries," Revision 4
FO, "Fuel Oil," Revision 5
FPC, "Fuel Pool Cooling," Revision 3
FPP, "Freeze Protection," Revision 5
HOIST, "Hoists," Revision 3
RBCCW, "Reactor Building Closed Cooling Water," Revision 7
RPI, "Refuel Platform and Instrumentation," Revision 6
SBFPC, "Standby Fuel Pool Cooling," Revision 3

Miscellaneous

OPST-EDG-4126-02B, "Monthly "B" EDG Slow Start Operability Test," Revision 6

2.6 Decommissioning Performance and Status Reviews at Permanently Shutdown Plants (IP 71801)

Procedures

OP 4393, "Test of the Cable Volt CO₂ Switchgear Room CO₂, and Intake Structure M200 Systems," Revision 24
EN-RP-106, "Radiological Survey Documentation," Rev. 5
EN-RP-121, "Radioactive Material Control," Rev. 9
OP 2505, "Rad Material Storage Locations," Rev. 22, Figure 5

Condition Reports

CR-VTY-2015-0403

Miscellaneous

Material Release Work Plan, February 4, 2015, ALARA/Radwaste Office Building, Multiple Gas Bottle Shed, South Warehouse Building, Maine Yankee Building, Power Up-Rate Building, Turbine Rotor Building, and Pipe Storage Building
Material Release Work Plan, February 3, 2015, OSSC Modules
Survey Data: ALARA/Radwaste Office Building, OSSC Vaults, South Warehouse
Vermont Yankee Nuclear Power Station, Radiological Historical Site Assessment

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
Entergy	Entergy Nuclear Operations, Inc.
IMC	Inspection Manual Chapter
IP	Inspection Procedure
NRC	U.S. Nuclear Regulatory Commission
OSSC	On-Site Storage Container
PSDAR	Post Shutdown Decommissioning Activities Report
SAFSTOR	Safe Storage of Spent Fuel
SFP	Spent Fuel Pool
VY	Vermont Yankee