



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

August 16, 2017

Docket No. 07200059

License No. DPR-28

Mr. Jack Boyle
Director, Nuclear Decommissioning
Entergy Nuclear Operations, Inc.
Vermont Yankee Nuclear Power Station
Vernon, VT 05354

SUBJECT: NRC INSPECTION REPORT NO. 07200059/2017001, ENTERGY NUCLEAR OPERATIONS, INC., VERMONT YANKEE NUCLEAR POWER STATION, VERNON, VERMONT

Dear Mr. Boyle:

On July, 21 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection of the permanently shut down Vermont Yankee Nuclear Power Station (VY) Independent Spent Fuel Storage Installation (ISFSI) activities. On-site inspections were performed on May 30-31, 2017, and July 17-21, 2017. The purpose of the inspections was to determine whether ISFSI activities were conducted safely and in accordance with NRC requirements. The inspections consisted of observations by the inspectors, interviews with personnel, and a review of procedures and records. The results of these inspections were discussed with you and other members of your staff on July 21, 2017, 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 Web site 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 Web site 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).

J. Boyle

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No reply to this letter is required. Please contact John Nicholson at 610-337-5236 if you have any questions regarding this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Raymond J. Powell".

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

Docket No: 07200059
License No: DPR-28

Enclosure: Inspection Report 07200059/2017001
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

J. Boyle

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No reply to this letter is required. Please contact John Nicholson at 610-337-5236 if you have any questions regarding this matter.

Sincerely,

/RA/

Raymond J. Powell, Chief
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DOCUMENT NAME: G:\WordDocs\D&TS_ISFSI_IRs\Memo ISFSI VY_2017001.docx

SUNSI Review Complete: JNicholson

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OFFICE	DNMS/RI	N	DNMS/RI	N	DNMS/RI	N		
NAME	OMasnyk-Bailey <i>RP for</i>		JNicholson <i>RP for</i>		RPowell <i>RP</i>			
DATE	<i>RP 8-15-17 via telecon</i>		<i>8-15-17 via email</i>		<i>8-16-17</i>			

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 072-00059

License No: DPR-28

Report No: 07200059/2017001

Licensee: Entergy Nuclear Operations, Inc. (Entergy)

Facility: Vermont Yankee Nuclear Power Station (VY)

Location: Vernon, VT 05354

Dates: May 30 – July 21, 2017

Exit Date: July, 21, 2017

Inspectors: Orysia Masnyk-Bailey, Health Physicist
Decommissioning and Technical Support Branch
Division of Nuclear Materials Safety, Region I

John Nicholson, Senior Health Physicist
Decommissioning and Technical Support Branch
Division of Nuclear Materials Safety, Region 1

Approved by: Raymond Powell, Chief
Decommissioning and Technical Support Branch
Division of Nuclear Materials Safety, Region I

Enclosure

EXECUTIVE SUMMARY

Entergy Nuclear Operations, Inc.
Vermont Yankee Nuclear Power Station
NRC Inspection Report No. 07200059/2017001

This report covered an on-site inspection by the Nuclear Regulatory Commission (NRC) regional based inspectors of activities related to Vermont Yankee Nuclear Power Station (VY) dry cask storage of spent fuel during the inspection period from May 30, 2017 to July 21, 2017. The inspection included a review and observation of the Independent Spent Fuel Storage Installation (ISFSI) pad construction and dry cask loading activities. The inspection consisted of observations by the inspectors, interviews with Entergy personnel, and a review of procedures and records. The NRC's program for overseeing the safe operation of dry storage of spent fuel at an ISFSI is described in Inspection Manual Chapter 2690, "Inspection Program for Dry Storage of Spent Reactor Fuel at Independent Spent Fuel Storage Installations and for 10 Code of Federal Regulations (CFR) Part 71 Transportation Packagings."

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

REPORT DETAILS

1.0 Independent Spent Fuel Storage Installation

1.1 On-site Fabrication of Components and Construction of an ISFSI (IP 60853)

a. Inspection Scope

On May 30-31, 2017 the inspector conducted a review of licensee and vendor activities in preparation for the concrete placement for the west pad of the ISFSI which will store spent fuel previously generated by the licensee using the Holtec International Storage Module (HI-STORM). The inspector walked down the construction area of the ISFSI pad and examined the rebar installation to verify that the rebar size, spacing, splice length, and concrete coverage on the top, side, and bottom complied with licensee-approved drawings, specifications, procedures, and other associated documents, and that compliance to applicable codes, the Certificate of Compliance (CoC), and Technical Specifications (TS) was met. The inspector also evaluated the concrete formwork installation for depth, straightness, and horizontal bracing to verify the overall dimensions and orientation for compliance with the licensee-approved drawings. The inspector interviewed licensee and contract personnel to verify knowledge of the planned work. Prior to the concrete placement, the inspector toured the batch plant and attended pre-job briefings. The inspector observed the actual concrete placement and vibration for the ISFSI slab and observed tests for concrete slump and air content, temperature measurements, and the collection/preparation of cylinder samples for compression tests to verify that the work was implemented in accordance with approved specifications and procedures. The inspector later returned to the freshly placed pad to verify that the pad was being finished in accordance with approved specifications and Code requirements. Following completion of the 7-day and 28-day compression tests that were completed by the independent laboratory, the inspector reviewed the results to verify that the acceptance criteria were met. The inspector noted that all tested samples met the acceptance criteria.

b. Findings

No findings of significance were identified.

1.2 Operation of an ISFSI at Operating Plants (IP 60855)

a. Inspection Scope

On July 17-21 the inspectors observed and evaluated VY's loading of Multi-Purpose Canister (MPC) #17 associated with their ISFSI dry cask campaign. The inspectors also reviewed the licensee's planned activities related to long-term operation and monitoring of the ISFSI. The inspectors verified compliance with the CoC, TS, and station procedures.

The inspectors observed fuel assemblies being loaded into the MPC. The inspectors also observed MPC processing operations including: installation of the automated welding system, welding, non-destructive weld examinations, blowdowns, pressure test, forced helium dehydration, helium backfill, and surveying. The inspectors observed the performance of the daily check of the overhead crane. The inspectors observed the HI-STORM being transported to and placed on the ISFSI pad. During performance of these activities, the inspectors verified that procedure use, communication, and coordination of ISFSI activities met established VY standards and requirements.

The inspectors reviewed VY's program associated with fuel characterization and selection for storage. The inspectors reviewed MPC #17 fuel selection package to verify that the licensee was loading fuel in accordance with the CoC, TS, and procedures. Inspectors reviewed a video recording of the fuel assemblies loaded into MPC #17 to ensure the loading was in accordance with VY's loading plan.

The inspectors observed radiation protection technicians as they performed surveys and provided job coverage for the cask loading workers. The inspectors reviewed survey data maps and radiological records from previous MPC loading to confirm that radiation survey levels measured were within limits specified by the TS and consistent with values specified in the Final Safety Analysis Report.

The inspectors performed a walk-down of the heavy haul path and toured the ISFSI pad to assess the material condition of the pad and the HI-STORMs. The inspectors also verified that transient combustibles were not being stored on the ISFSI pad or the vicinity of the HI-STORMs. The inspectors verified that the TSs for HI-STORM monitoring were being met and that the annual inventory of spent fuel in storage was being conducted.

The inspectors reviewed corrective action reports and the associated follow-up actions that were generated since the start of VY's dry cask loading campaign to ensure that issues were entered into the corrective action program, prioritized, and evaluated commensurate with their safety significance.

b. Findings

No findings of significance were identified.

2.0 Exit Meeting

On July, 21, 2017, the inspectors presented the inspection results to Mr. Jack Boyle, Director, Nuclear Decommissioning, 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

W. Aho	Nuclear Assessor, NIOS
F. Aldrich	Nuclear Assessor, NIOS
B. Aldridge	PCI Welding Supervisor
R. Anthis	Holtec Cask Load Supervisor
C. Barnes	Holtec Site Services Operations Manager
*J. Boyle	VY Director, Nuclear Decommissioning
J. Calchera	VY Project Manager
*C. Chappell	VY Manager, Design and Programs
R. Courtney	Holtec DFS Project Manager
M. Deschaine	VY Certified Fuel Handler
A. Drewes	Bond Construction Safety Manager
D. Eaton	Holtec RP Supervisor
B. Erickson	Holtec Senior RP Technician
J. Fleming	Project Coordinator/Oversight
K. Garrity	Entergy Oversight
M. Garland	Bond Project Manager
D. Holmquest	Holtec RP Supervisor
D. Humbert	PCI Project Manager
C. Jennings	Holtec FHD Technician
A. Johnson	Holtec Cask Load Supervisor
B. Jones	Holtec Cask Load Supervisor
C. Kaster	ACI Concrete Field Testing Technician
J. Kirchner	Holtec QC Engineer
*J. Laughney	VY NIOS Supervisor
*A. Leshinskie	Vermont State Nuclear Engineer
S. Lyford	VY Project Manager, Project Management
M. Mastaler	ACI Concrete Field Testing Technician
*M. McKenney	VY Technical Coordinator
*M. McNamara	Holtec Project Director
*S. Naeck	VY Emergency Plan Manager
J. Olszanowski	PAR
J. Paradis	VY Fuel Handler
J. Patterson	Holtec Construction Manager
W. Pettiford	QA Oversight
*M. Pletcher	VY Manager Chemistry/Radiation Protection
*P. Ryan	VY Manager, Security
*T. Silko	VY Lead Licensing Engineer
L. Smith	Holtec RP Technician
*K. Swanger	VY Project Manager
D. Taylor	Holtec Cask Load Technician
*G. Thomas	Sr. Project Manager
S. Veilleux	ACI Concrete Field Testing Technician
B. Vessels	Holtec Civil Field Engineer
D. Wiersma	PCI NDE/QC
S. Willett	PCI NDE/QC

* Denotes attendance at the ISFSI exit meeting held on July 21, 2017

ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Section 1.1 On-site Fabrication of Components and Construction of an ISFSI

Procedures

HPP-2569-056 R.2, Backfill Placement Procedure for Vermont Yankee, Engineered Backfill Testing Reports, Subgrade Densometer Testing and Backfill Test Strip Reports
HPP-2569-102 R. 2, ATT 9.1 Installation Critical Attribute Sign-off Sheet for ISFSI Pad Rebar, ATT 9.8 Inspection Coordinate Map for ISFSI Pad, and ATT 9.15 Field Inspection Location Data and Sampling Plan for ISFSI Pad Rebar
HSP-53 R. 3 ATT 8.1 Rebar Receipt and Inspection Reports
HSP-53 R.4 Procedure for Site Material Receiving, Receipt Inspection, and Storage
MTVN-10134 R. 0 Backfill Placement Procedure
MTVN-10135 R. 0 Concrete Surface Defect for Vermont Yankee
MTVN-10136 R. 2 Aggregate and Ready Mixed Concrete Testing Requirements
MTVN-10137 R. 2 Rebar Placement and Inspection Procedure for Vermont Yankee
V-EN-L1-100 R.19, ATT. 9.1, Process Applicability Determination Form, Activity: Design/Install an Expansion ISFSI Storage Pad

Drawings

SPEC-14-0001-V, Design Drawings for Concrete Pad: 5920-13400-EC-47794, 5920-13884-EC-47794, 5920-13406-EC-47794, 5920-13884-EC-47794, 5920-13885-EC-47794, and 5920-13893-RO-ECN-68449

Miscellaneous

Allied Testing Laboratories Concrete Cylinder Test Results
American Concrete Institute Training Records
Calibration Records for Carroll Concrete Scales
FCRs 2569-018, 022-024, 032, 034, 040, 059, 060, 062, CON-86, 89, 90, 96-98, 103, and 105
Holtec 9/28/2016 Surveillance Report S2016-85
Holtec Work Order 00372867 Implement EC 47794: Install Dry Fuel Storage Pad 2
ISFSI Expansion Pad Concrete Placement Plan R.2
Lessons Learned Issues and Mitigation Plan
Lessons Learned Risks and Mitigation Plan for Vermont Yankee
SPEC-14-0001-V RO, Purchase Specification for ISFSI Expansion Concrete Storage Pad, Apron, Access Ramp, and Connector
Surveillance Report QS-2017-VY-008, 4/05/2017
Surveillance Report QS-2017-VY-010, 4/10/2017
Surveillance Report QS-2017-VY-012, 4/18/2017
Vermont Highway Bureau 4/13/17 approval for 2017 construction season letter to Carroll Concrete

Section 1.2 Operation of an ISFSI at Operating Plants

Procedures

HOLTEC HPP-2569-200 R. 14 MPC Loading at Vermont Yankee
MMVN-DFS-10140 R. 5 MPC Loading At Vermont Yankee
MMVN-DFS-10141 R. 3 MPC Sealing of Loaded Casks 14-40 At Vermont Yankee
MMVN-DFS-10142 R.1 MPC Transfer (Stackup)
MMVN-DFS-10145 R.3 Responding to Adverse Conditions
OP-2530 R. 5, Radiological Monitoring For Dry Fuel Storage

Action Request

2128770 2131994 2132070 2132430

Condition Reports

CR-VTY-2015-02017	CR-VTY-2016-00175	CR-VTY-2016-00571
CR-VTY-2016-00583	CR-VTY-2017-00177	CR-VTY-2017-00216
CR-VTY-2017-00246	CR-VTY-2017-00249	CR-VTY-2017-00331
CR-VTY-2017-00386	CR-VTY-2017-00410	CR-VTY-2017-00429
CR-VTY-2017-00457	CR-VTY-2017-00465	CR-VTY-2017-00481
CR-VTY-2017-00510	CR-VTY-2017-00508	CR-VTY-2017-00529
CR-VTY-2017-00568	CR-VTY-2017-00675	

Miscellaneous

Certificate of Compliance No. 1014, Docket No. 72-1014, Amendment No. 10
Certificate of Compliance No. 1014, Appendix A, Technical Specifications for the HI-STORM
100 Cask System
Certificate of Compliance No. 1014, Appendix B, Technical Specifications for the HI-STORM
100 Cask System
Dry Fuel Storage Cask 1-15 Dose Data Pool to Pad
Entergy Quality Assurance Audit Report QA-20-2012-VTY-1
Entergy EN-NF-200, Rev. 12, Special Nuclear Material Control, Attachment 9.4, Content of
Annual Physical Inventory, 11/16/2016
Entergy V-EN-QV-108, Rev. 11, QA Surveillances and Assessments Attachment 9.2 Standard
Surveillance Report 02/23/2017 through 05/24/2017
Entergy V-EN-QV-108, Rev. 11, QA Surveillances and Assessments Attachment 9.1 Activity
Based Surveillance Report 03/01/2017 through 04/12/2017
Entergy WO 52664368-01 Mechanical/Electrical Periodic Inspection Reactor Building Crane
Entergy WO 52641320-01 Annual Inspection of HI-STORM Spent Fuel Casks
Final Safety Analysis Report 72-1014, Amendment 10, R.14 HI-STORM 100 MPC-68 and MPC-
68M
Fuel Compatibility and Loading Plan Report for Vermont Yankee, Holtec Report No. HI-2167202
Holtec WO 460818-34 CR-1-1A Perform 30 Day Tech Spec Required Crane Inspection
Letter, Entergy Nuclear Operations, Inc. to USNRC, "Exemption Request from Certain
Requirements of 10 CFR 72.212 and 10 CFR 72.214," BVS 16-030, dated November 9,
2016
Vermont Yankee, Nuclear Oversight 2012, ISFSI Standardized Audit Template Checklist
Vermont Yankee Nuclear Power Station 10CFR 72.212 Report, Docket 72-0059 HI-STORM 100
System Rev. 6
Vermont Yankee Spent Fuel Loading and Transfer Project Quality Plan PQP-VTY-2017-001

Miscellaneous (Cont'd)

VTY Daily ALARA Reports Jun2 19, 2017 through July 20, 2017

Work Order 0045910904 Pool to Pad Overpack 17

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
CoC	Certificate of Compliance
CFR	Code of Federal Regulations
Entergy	Entergy Nuclear Operations, Inc.
HI-STORM	Holtec International Storage Module
ISFSI	Independent Spent Fuel Storage Installation
MPC	Multi-Purpose Canister
NRC	U.S. Nuclear Regulatory Commission
TS	Technical Specifications
VY	Vermont Yankee Nuclear Power Station