



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

August 2, 2012

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

**SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION – NRC EVALUATION OF
CHANGES, TESTS, OR EXPERIMENTS AND PERMANENT PLANT
MODIFICATIONS TEAM INSPECTION REPORT 05000271/2012007**

Dear Mr. Wamser:

On June 21, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vermont Yankee Nuclear Power Station. The enclosed inspection report documents the inspection results, which were discussed on June 21, 2012, with you, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. In conducting the inspection, the team reviewed selected procedures, calculations and records, observed activities, and interviewed station personnel.

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

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system, Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

Lawrence T. Doerflein, Chief
Engineering Branch 2
Division of Reactor Safety

C. Wamser

2

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

Enclosure:
Inspection Report 05000271/2012007
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION – NRC EVALUATION OF
CHANGES, TESTS, OR EXPERIMENTS AND PERMANENT PLANT
MODIFICATIONS TEAM INSPECTION REPORT 05000271/2012007

Dear Mr. Wamser:

On June 21, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vermont Yankee Nuclear Power Station. The enclosed inspection report documents the inspection results, which were discussed on June 21, 2012, with you, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. In conducting the inspection, the team reviewed selected procedures, calculations and records, observed activities, and interviewed station personnel.

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

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system, Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Lawrence T. Doerflein, Chief
Engineering Branch 2
Division of Reactor Safety

DOCUMENT NAME: G:\DRS\Engineering Branch 2\Arner\VY Mod 50.59 inspection 2012007\VermontYankeeModsReport2012007.docx
ADAMS ACCESSION NUMBER: ML12216A097

<input checked="" type="checkbox"/> SUNSI Review		<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive		<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available	
OFFICE	RI/DRS	RI/DRP	RI/DRS		
NAME	FArner	RBellamy	LDoerflein		
DATE	8/1/12	7/25/12	8/2/12		

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-271

License No.: DPR-28

Report No.: 05000271/2012007

Licensee: Entergy Nuclear Operations, Inc.

Facility: Vermont Yankee Nuclear Power Station

Location: Vernon, VT 05354-9766

Inspection Period: June 4, 2012 through June 21, 2012

Inspectors: F. Arner, Senior Reactor Inspector, Division of Reactor Safety (DRS),
Team Leader
J. Schoppy, Senior Reactor Inspector, DRS
J. Patel, Reactor Inspector, DRS

Approved By: Lawrence T. Doerflein, Chief
Engineering Branch 2
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000271/2012007; 6/4/2012 - 6/21/2012; Vermont Yankee Nuclear Power Station;
Engineering Specialist Plant Modifications Inspection.

This report covers a two week on-site inspection period of the evaluations of changes, tests, or experiments and permanent plant modifications. The inspection was conducted by three region based engineering inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

No findings were identified.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications (IP 71111.17)

.1 Evaluations of Changes, Tests, or Experiments (20 samples)

a. Inspection Scope

The team reviewed one safety evaluation to determine whether the change to the facility or procedures, as described in the Updated Final Safety Analysis Report (UFSAR), had been reviewed and documented in accordance with 10 CFR 50.59 requirements. In addition, the team evaluated whether Entergy had been required to obtain NRC approval prior to implementing the change. The team interviewed plant staff and reviewed supporting information including analyses, design change documentation, procedures, the UFSAR, the Technical Specifications (TS), and plant drawings to assess the adequacy of the safety evaluation. The team compared the safety evaluation and supporting documents to the guidance and methods provided in Nuclear Energy Institute (NEI) 96-07, "Guidelines for 10 CFR 50.59 Evaluations," as endorsed by NRC Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," to determine the adequacy of the safety evaluation.

The team also reviewed a sample of nineteen 10 CFR 50.59 screenings for which Entergy had concluded that no safety evaluation was required. These reviews were performed to assess whether Entergy's threshold for performing safety evaluations was consistent with 10 CFR 50.59. The sample included design changes, calculations, and procedure changes.

The team reviewed the safety evaluation that Entergy had performed and approved during the time period covered by this inspection (i.e., since the last modifications inspection) not previously reviewed by NRC inspectors. The 10 CFR 50.59 screenings were selected based on the safety significance, risk significance, and complexity of the change to the facility.

In addition, the team compared Entergy's administrative procedures used to control the screening, preparation, review, and approval of safety evaluations to the guidance in NEI 96-07 to determine whether those procedures adequately implemented the requirements of 10 CFR 50.59. The safety evaluations and screenings reviewed by the team are listed in the Attachment.

b. Findings

No findings were identified.

Enclosure

.2 Permanent Plant Modifications (11 samples)

.2.1 Fuel Oil Storage Tank Liner Application

a. Inspection Scope

The team reviewed engineering change (EC) 24404 that applied a spray-on protective liner to the bottom of fuel oil storage tank (FOST) TK-40-1A. The FOST provides diesel fuel makeup to the emergency diesel generator (EDG) day tanks via the fuel oil transfer pumps (FOTPs). The liner covered the inside bottom of the tank and extended 24 inches vertically on the inside wall of the tank. Entergy applied the liner to simplify future tank bottom inspections and to facilitate effective corrosion control in the FOST as recommended by the American Petroleum Institute (API).

The team reviewed EC 24404 to verify that the design basis, licensing basis and performance capability of the EDG fuel oil system had not been degraded by the modification. The team reviewed calculations, industry operating experience (OE), nondestructive examination (NDE) and liner inspection results, and liner product specifications to verify that the applied liner would not adversely impact EDG fuel oil quality or delivery. The team reviewed the associated work order instructions and documentation to verify that Entergy implemented the modification as designed. The team reviewed the associated post-modification test (PMT) results, system health and walkdown reports, fuel oil sample results, and corrective action condition reports (CRs) to verify proper fuel oil system operation and to determine if there were reliability or performance issues that may have resulted from the modification. The team performed a walkdown of the FOST, FOTPs, fuel oil day tanks, and EDGs to independently assess Entergy's configuration control and the material condition of the EDG fuel oil system. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.2 High Pressure Coolant Injection Turbine Auxiliary Oil Pump Replacement

a. Inspection Scope

The team reviewed modification EC 26967 that replaced the high pressure coolant injection (HPCI) system turbine auxiliary oil pump (AOP). The AOP automatically starts on HPCI initiation, to provide hydraulic power to the turbine stop valve and turbine control valves (which open to start the turbine) and to provide lubrication during startup until the shaft driven oil pump reaches sufficient speed to supply this function. Entergy initiated this modification to upgrade the HPCI AOP based on mechanical seal leakage, potential pump re-build issues (availability of spare parts), and as a proactive measure in response to industry OE. Entergy determined that the replacement pump was nearly identical to the existing pump with a few differences (port size, shaft length, gasket

material, and mounting flange reinforcement). Entergy engineering evaluated these differences within EC 26967 and translated the required design changes to the EC implementing work order (51070740) instructions.

The team reviewed EC 26967 to verify that the design basis, licensing basis and performance capability of the HPCI system had not been degraded by the modification. The team reviewed the associated work order instructions and documentation to verify that Entergy implemented the modification as designed. The team reviewed the associated PMT results, system health and walkdowns reports, HPCI surveillance test results, and corrective action CRs to verify proper HPCI system operation and to determine if there were reliability or performance issues that may have resulted from the modification. On June 5, 2012, the team observed portions of the quarterly HPCI in-service test to verify proper HPCI AOP performance. The team performed several walkdowns of the HPCI system, including control room instrumentation, to ensure that Entergy implemented the modification in accordance with design instructions and to independently assess HPCI AOP operability, Entergy's configuration control, and the material condition of the HPCI system. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.3 Service Water System Supply Header Inspection Port Installation

a. Inspection Scope

The team reviewed modification EC 30317 that installed inspection ports in the A and B service water (SW) supply headers. Entergy committed to inspect internal sections of the piping within the SW system prior to Vermont Yankee Nuclear Power Station's period of extended operation (March 21, 2012). In order to facilitate visual examinations of the internal surfaces of SW system supply headers and evaluate their condition, Entergy installed inspection ports on the A and B SW supply headers in the intake structure. Entergy implemented the A and B SW supply header inspection port installation under associated ECs 30318 and 30319, respectively. Entergy used the associated ECs to track installation, testing, return to service, and update of configuration documents for each separate train because the return to service was completed at different times.

The team reviewed EC 30317 and EC 30318 for the A SW supply header to verify that the design basis, licensing basis and performance capability of the SW system had not been degraded by the modification. The team reviewed the work order instructions and documentation to verify that Entergy implemented the modification as designed. The team reviewed the associated PMT results, system health and walkdowns reports, and corrective action CRs to verify proper SW system operation and to determine if there were reliability or performance issues that may have resulted from the modification. The team performed several walkdowns of the SW piping in the intake structure to ensure that Entergy implemented the modification in accordance with design instructions and to

Enclosure

independently verify that the modified SW system configuration did not adversely affect the structural integrity of the piping, pipe supports, and system pressure boundary. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.4 Seismic Monitor Replacement

a. Inspection Scope

The team reviewed modification EC 21268 that replaced the seismic monitor. The function of the seismic instrumentation system is to provide timely evaluation of a seismic event. In March 2010, Entergy identified reliability concerns with the communication between the installed seismic instrumentation and the control room workstation. Entergy determined that the installed seismic monitor was obsolete and spare parts were not available. Modification EC 21268 replaced the installed seismic monitor with an upgraded model, upgraded the associated modems used for communication between the monitor and the control room workstation, and upgraded the control room workstation with a new computer and printer.

The team reviewed EC 21268 to verify that the design basis, licensing basis and performance capability of the seismic instrumentation system had not been degraded by the modification. The team reviewed the associated work order instructions and documentation to verify that Entergy implemented the modification as designed. The team interviewed operators and reviewed the associated PMT results, recent functional tests, associated operating and event response procedures, and corrective action CRs to verify proper seismic instrumentation system operation and to determine if there were reliability or performance issues that may have resulted from the modification. The team performed several walkdowns of the seismic instrumentation system, including the control room seismic monitor workstation, to independently assess seismic instrumentation system standby readiness, the seismic monitor's operating environment, and the material condition of the system. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.5 Restoration of Fire Barrier for DG-1-1A

a. Inspection Scope

The team reviewed modification EC 33731 that sealed several open electrical conduit floor penetrations in the 'A' Emergency Diesel Generator (EDG) room floor fire barrier 21. The modification was performed because Entergy identified in condition report CR-VTY-2011-05507 that EDG-1A electrical conduit penetrations were not sealed with

Enclosure

the required fire rated material. The Vermont Yankee Fire Hazard Analysis (FHA) and Safe Shutdown Capability Analysis (SSCA) require these floor openings to be sealed with 3-hour fire rated material to mitigate the hazard presented by an EDG room fire. Penetrations through these barriers, including conduit and piping, need to be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself.

The team assessed if the modification was consistent with requirements in the design and licensing bases. The team conducted interviews with the responsible engineer and performed a walkdown of the area and fire barriers affected by this modification. The team reviewed calculations and the associated technical evaluation to assess whether the modification was consistent with design assumptions. Additionally, the team reviewed the Fire Protection Engineering Evaluation to verify the material used to seal the open penetrations met the minimum required three hour fire rating. The team verified the requirement for de-rating cable ampacity for cables routed through fire barriers was evaluated in Entergy's analysis and cable ampacity was not adversely affected. The team also verified that affected plant design drawings and calculations were properly updated. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.6 RHR Shutdown Cooling Inboard Isolation Valve Motor Magnesium Rotor Replacement

a. Inspection Scope

The team reviewed modification EC 23301 that replaced the motor for motor operated valve (MOV) V10-18, residual heat removal (RHR) shutdown cooling inboard isolation valve. The seismically qualified and safety-related V10-18 motor is located in the containment structure and is credited to close the valve for primary containment and reactor vessel isolation actuation signals. The modification was initiated because Entergy had identified motor degradation during the RF028 refueling outage inspection and determined that motor replacement was required. During RFO29, the motor was replaced with an equivalent motor that was refurbished and certified by a qualified vendor that met the quality assurance program requirements of 10 CFR Part 50, Appendix B.

The team reviewed the modification to verify that the design and licensing bases of the RHR valve had not been degraded by the motor change. The team conducted interviews with the engineering staff and reviewed the design modification package to ensure that the replacement motor had similar electrical characteristics of the previously installed motor. The team verified that the impact of the change was adequately evaluated for power consumption, cable protection, voltage drop, and overload condition protection and short circuit protection requirements. The team also verified that affected plant design drawings and calculations were properly updated. Finally, the team reviewed post maintenance testing to determine if the motor and valve would operate as

required and to verify that the replacement motor did not affect the minimum closing rate for the valve as specified in the VY Updated Final Safety Analysis Report (UFSAR). The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.7 Replacement of Large Power Cables

a. Inspection Scope

The team reviewed modification EC 13130 that replaced two large power cables, each cable consisting of three single conductors (350 MCM), feeding 4160V Bus 4 from the 'A' Diesel Generator, DG-1-1A. The diesel generators and auxiliary systems provide class 1E electrical power to the emergency buses in a loss-of-normal power (LNP) condition or a loss-of-coolant accident (LOCA) coincident with LNP/degraded grid voltage at the emergency buses. The modification was performed as a result of analysis of an identified damaged condensate pump motor cable (condition report CR-VTY-2008-02929), which determined that it had reached end of life. Entergy determined that the diesel generator cables were installed approximately the same time as the damaged condensate pump motor cable. Although equipment run-time and environment conditions were not similar, Entergy conservatively decided to replace all 4KV cables as equipment became available.

The team reviewed the modification to verify it was consistent with design and licensing bases requirements. The team reviewed the replacement cable properties, such as cable insulation ratings, cable current carrying capacity, cable resistance and reactance, and reviewed the associated short circuit calculation to ensure that changes were adequately incorporated into the design analysis and bounded by the current design. The team verified that seismic loading of existing raceways was not affected by this modification. The team conducted interviews with the engineering staff and performed a walkdown of the affected components. The team reviewed the implementing work order to ensure that it was consistent with the change package, and to ensure that proper post maintenance testing was performed and that the documented results were acceptable. The team also verified that affected plant design drawings and calculations were properly updated. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.8 RCIC MOV V13-30 Motor Replacement

a. Inspection Scope

The team reviewed modification EC17858 that replaced the motor for MOV V13-30, reactor core isolation cooling (RCIC) system test return valve to the condensate storage

Enclosure

tank (CST). The modification was performed to resolve a 60VDC ground concern associated with the valve motor circuitry. Entergy identified within condition report, CR-VTY-2009-02680, that an electrical ground associated with the 250 VDC supply panel (DC-2) had been traced to the motor for the valve. The RCIC system performs a function to supply makeup water to the reactor vessel to maintain sufficient inventory. This ensures that adequate core cooling is provided following a reactor vessel isolation event accompanied by a loss of feedwater, or following a loss of all auxiliary power. The RCIC test return valve is normally closed and if opened for system testing, automatically closes on a RCIC system initiation to allow full injection flowrate back to the vessel. During the review of the EC to replace the motor, the team also reviewed the associated operability evaluation performed by Entergy to address the degraded ground condition. This included review of the interim compensatory measures established by Entergy at the time to ensure the valve remained closed to ensure rated RCIC flow to the reactor upon an initiation signal.

The team reviewed the modification to verify that the design and licensing bases of the valve had not been degraded by the motor change. The team conducted interviews with the engineering staff and reviewed the design modification package to ensure that the replacement motor had similar electrical characteristics to the previously installed motor. The team verified that the impact of the change was adequately addressed for power consumption, voltage drop, cable protection, and overload condition and short circuit protection requirements. The team also verified that affected plant design drawings and calculations were properly updated. Finally, the team reviewed post maintenance testing results to verify the motor and valve would operate as required. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

2.9 Replacement of the C RHRSW Pump Rotating Assembly, P-8-1C

a. Inspection Scope

The team reviewed modification EC 15733 which replaced the 'C' residual heat removal service water (RHRSW) pump rotating assembly. The modification was performed to replace the carbon steel pump rotating assembly with microbiologically influenced corrosion (MIC) resistant material to assist in improving pump performance and overall reliability. The RHRSW pump performance had previously shown some deterioration due to corrosion attack from MIC due to exposure to raw river water. Entergy had determined that the new RHRSW rotating assembly had an associated maximum horsepower which exceeded the previously installed coupled motor nameplate horsepower rating. The team reviewed the increase in horsepower rating to ensure Entergy had appropriately revised calculations associated with diesel generator loading and the increased heat load added to the emergency core cooling system (ECCS) corner rooms. The team reviewed the calculations to ensure that design and licensing bases requirements associated with the equipment were maintained.

Enclosure

The team reviewed affected procedures such as alarm response sheets which were impacted due to the potential for higher operating RHRSW pump motor currents to ensure they were adequately revised. The team reviewed the post modification pump test results to ensure that pump performance remained above the minimum required flowrate and pressure established in design calculations. Additionally the team reviewed the associated in-service testing results to ensure the pump performed within established acceptance criteria. The team reviewed the replacement pump rotating assembly minimum flow requirements to ensure that operational procedures ensured this minimum flow requirement would be maintained during RHRSW pump operation. The team reviewed post modification testing to ensure that the assumed increase in motor electrical loading had been conservative. The team reviewed the implementing work order for the modification to ensure that the replacement pump assembly had been installed consistent with the engineering change assumptions. The team performed a walkdown of the pump to ensure the installed configuration was consistent with the EC requirements. Additionally, the 10 CFR 50.59 screening determination associated with this modification was also reviewed as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

.2.10 Vent Valve Installation in 'A' RHR Torus Suction Line

a. Inspection Scope

The team reviewed modification EC 13969 that installed an air vent valve in the 'A' RHR torus suction line. This modification was performed to allow for venting air that can be entrained in the inverted U piping configuration between the torus and the pump suction isolation valve. A single isolation, locked closed and capped vent valve was installed as part of the 'A' RHR to torus suction piping pressure boundary.

The team reviewed Entergy's method used to install the vent assembly to ensure the welding procedures and pressure testing were in accordance with code requirements. The team reviewed the process requirements contained within the design package to ensure installation of the valve using the hot tap procedure was consistent with engineering requirements. The team reviewed the structural calculation associated with the change to ensure the new branch line and valve were adequately evaluated for loading conditions and pipe stresses remained within code requirements. The team reviewed affected procedures and drawings to ensure they were adequately revised to reflect the modification. The team performed a walkdown to ensure the installed valve configuration was consistent with the engineering change package. Additionally, the 10 CFR 50.59 screening determination associated with this modification was also reviewed as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

Enclosure

b. Findings

No findings were identified.

.2.11 Replace Service Water Return Valve for Steam Tunnel Air to Water Cooler

a. Inspection Scope

The team reviewed modification EC 13467 that replaced service water gate valve V70-207, an isolation valve in the service water return piping from the steam tunnel air to water cooler. The modification was installed to resolve erosion issues and ensure that the valve disc does not separate from the stem and block the cooling water flowpath out of the cooler. The previously installed gate valves had been found to have internal erosion on the gates and in some cases were difficult to operate.

The team reviewed the modification to verify that the design basis, licensing basis and performance capability of the main steam tunnel cooling water system had not been degraded by the modification. The team reviewed the associated piping analysis performed to ensure that pipe stresses were not adversely impacted by the modification. The team reviewed the work order instructions and documentation to verify that the modification was implemented as designed, and welding and repair instructions were performed to code requirements. The team reviewed the work package to ensure appropriate post modification test instructions had been developed to ensure in-service leak testing was performed. The team reviewed corrective action CRs to verify proper SW system operation and to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the 10 CFR 50.59 screening determination associated with this modification was also reviewed as described in section 1R17.1 of this report. The documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (IP 71152)

a. Inspection Scope

The team reviewed a sample of CRs associated with 10 CFR 50.59 and plant modification issues to determine whether Entergy was appropriately identifying, characterizing, and correcting problems associated with these areas, and whether the planned and/or completed corrective actions were appropriate. In addition, the team reviewed CRs written on issues identified during the inspection to verify adequate problem identification and incorporation of the problem into the corrective action system. The CRs reviewed are listed in the attachment.

Enclosure

b. Findings

No findings were identified.

4OA6 Meetings, including Exit

The team presented the inspection results to Mr. C. Wamser, Site Vice President, and other members of Entergy's staff, at an exit meeting on June 21, 2012. The team returned the proprietary information reviewed during the inspection and verified that this report does not contain proprietary information.

Enclosure

ATTACHMENT
SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Entergy Personnel

M. Anderson, Fire Protection Engineer
M. Ball, Senior System Engineer
G. Brede, Senior Mechanical Design Engineer
J. Devincentis, Senior Licensing Engineer
G. Gibbs, System Engineer
J. Mully, System Engineer
B. Naeck, Senior System Engineer
A. Robertshaw, Senior Mechanical Design Engineer
J. Rogers, Design Engineering Manager

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

10 CFR 50.59 Evaluations

2010-01, Safety Evaluation to Change Containment Isolation Valve Designation for V10-39A/B,
Rev. 0

10 CFR 50.59 Screened-out Evaluations

AP 0894, Staffing Limits Revision 14 Process Applicability Determination, dated 10/28/10
EC 11794, Fault Tolerant Turbine Trip Logic for Stator Water Initiating Event, Rev. 0
EC 13467, Replace Valve V70-207, Rev. 0
EC 13969, Install Vent Valve RHR Torus Line, Rev. 0
EC 15733, RHRSW Pump C Replacement, Rev. 0
EC 18907, HPCI Lube Oil Pump Flexible Hose & Fittings Replacement Equivalent Change
Evaluation, Rev. 0
EC 23206, Add Fuses Relay Circuits in Recirc MG Panels, Rev. 0
EC 31133, Remove Internal Component Check Valve for Fuel Pool Cooling, Rev. 0
ON 3156, Loss of Shutdown Cooling, Rev. 13
ON 3171, Loss of Bus 3, Rev. 8
OP 2120, HPCI System Revision 60 Process Applicability Determination, dated 10/17/11
OP 2126, Diesel Generators Revision 59 Process Applicability Determination, dated 2/29/12
OP 4142, Vernon Tie and Delay Access Power Source Backfeed Surveillance, Rev. 16
OPOP-4KV-2142, 4KV Electrical System, Rev. 2
OPST-ADS-4126-01A, Daily A EDG Readiness Check Revision 0 Process Applicability
Determination, dated 4/22/11

OPST-EDG-4122-01, Auto Blowdown System Surveillance from the Control Room Revision 1
Process Applicability Determination, dated 10/28/11

OPST-FO-4195-04, Portable Fuel Oil Transfer Pump Equipment Surveillance, Rev. 1

OPST-RCIC-4121, Reactor Core Isolation Cooling System Surveillance, Rev. 2

Revision to EOP-1 to Incorporate New Table 3.2.2 Main Steam Line, RCIC and HPCI Area High
Temperature Setpoints to Reflect Tech Spec Amendment #236 Process Applicability
Determination, dated 1/1/10

Modification Packages

EC 13130, Replacement of Critical Large Power Cable, Rev. 0

EC 13467, Replace Valve V70-207, Rev. 0

EC 13969, Install Vent Valve RHR Torus Line, Rev. 0

EC 15733, RHRSW Pump C Replacement, Rev. 0

EC 17858, RCIC MOV V13-30 has a +60V DC Ground, Rev. 0

EC 21268, Seismic Monitor Replacement, Rev. 0

EC 23301, Magnesium Rotor Replacement, Rev. 0

EC 24404, Liner Repair Fuel Oil Storage Tank Bottom, Rev. 0

EC 26967, Replacement of HPCI Aux Oil Pump (P-85-1A), Rev. 0

EC 30317, SW System Supply Headers A & B Inspection Ports (Base EC), Rev. 0

EC 33731, Restoration of Fire Barrier for DG-1-1A Room, Rev. 0

Calculations, Analysis, and Evaluations

FPEE 40, Installation of Silicone Based Fire Penetration Seal Details in Barriers Less than
12 inches thick, Rev. 0

TE 2003-047, MOV Design Input for Stroke Time, FLA and LRA

VYC-611, SW Discharge, Rev. 0

VYC-0685G, Diesel Fuel Oil Storage Tank Level Monitoring Uncertainty, Rev. 2

VYC-0830, Voltage Drop Calculation for VY Distribution Panels DC-1 and DC-2, Rev. 2

VYC-836, DG Loading, Rev. 15

VYC-1053, MOV Voltage Analysis, Rev. 9

VYC-1087, 4160V AC and 480V AC Relay and Breaker Coordination, Rev. 2

VYC-1088, 4160/480 Volt Short Circuit/Voltage Study, Rev. 4

VYC-1171, Electrical Design Bases Review of Safety Related MOVs for GL 89-10, Rev. 9

VYC-1183, Thermal Overload Heater Sizing for SR MOVs, Rev. 5

VYC-1296, Circuit Breaker Sizing and Settings for Safety Related MOVs, Rev. 4

VYC-1322, ECCS Corner Room Heatup and Sensitivity, Rev. 1

VYC-1404, Emergency Diesel Generator Fuel Oil Usage and Storage Capacity, Rev. 2

VYC-1854, Determination of Ampacity for Safety Related Power Cables for the AC Auxiliary
Power Distribution System, Rev. 5

VYC-3033, Service Water Pump Discharge Pipe Valve Replacement, Rev. 1

Condition Reports

1998-1916	2010-4098	2011-4489	2012-2715*	2012-2853*
2007-3054	2010-5491	2011-4530	2012-2716*	2012-2878*
2008-0979	2011-1402	2012-2315	2012-2717*	2012-2813*
2008-2195	2011-2553	2012-2545*	2012-2757*	2012-2640*
2010-0890	2011-3797	2012-2588*	2012-2759*	2012-2752*
2010-1738	2011-3823	2012-2666*	2012-2842*	2012-2761*

(* denotes NRC identified during this inspection)

Design & Licensing Bases

Amendment No. 236 to License No. DPR-28, Instrumentation Technical Specifications (TAC No. MD8111), dated 6/12/09

Design Basis Document for Emergency Diesel Generators and Auxiliary Systems, Rev. 23

Design Basis Document for High Pressure Coolant Injection System, Rev. 34

Design Basis Document for Service Water, Residual Heat Removal Service Water, Alternate Cooling System, Rev. 31

Topical Design Basis Document for External Events Earthquakes (Seismic), Tornadoes, External Flooding, Low Water, Rev. 2

Drawings

5920-3914, Fuel Oil Storage Tank, EC 24404 Mark-up to Rev. 1

5920-9284, Isometric Dwg for RHR Part 5, Rev. 4

5920-11255, Seismic Monitor Workstation, EC 21268 Mark-up to Rev. 0

5920-11256, Seismic Monitor Enclosure, EC 21268 Mark-up to Rev. 0

B-191300, Sht. 25A, 480V MCC-8B Power Distribution and Motor Data, Rev. 54

B-191300, Sht. 68, 125V MCC 2B Power Distribution and Motor Data, Rev. 20

B-191301, Sht. 1309, Control Wiring Diagram RHR Reactor Shutdown Cooling Isolation Valve V10-18 (inboard), Rev. 14

B-191301, Sht. 331, Cable and Conduit List, Rev. 8

B-191500, Sht. 240, Fire Barrier Seal Drawing, Rev. 1

G-191159, Service Water System Flow Diagram, Rev. 82

G-191172, Flow Diagram RHR System, Rev. 66

G-191233, Intake Structure Piping Plans & Sections, Rev. 18

G-191300, Sht. 2, 480V Auxiliary One Line Diagram MCC-8B, 8E, 89B, Rev. 34

G-191301, Sht. 2, 480V Auxiliary One Line Diagram MCC-9B, 9D, 89A, Rev. 33

SK-5920-M-85, Fuel Oil Storage Tank TK-40-1A, Rev. 2

VY1-SW-Part 3 Sh. 1, Service Water Intake Structure Piping Isometric, Rev. 2

Functional, Surveillance and Modification Acceptance Testing

ICRP-4396, Seismic Monitoring System Functional Test, performed 9/22/11 & 5/3/12

OPST-EDG-4126-02A, Monthly A EDG Slow Start Operability Test, performed 5/14/12

OPST-EDG-4126-02B, Monthly B EDG Slow Start Operability Test, performed 5/21/12

OPST-FO-4195-02A, Fuel Oil Transfer Pump (P92-1A) and Discharge Check Valve (FO-28A) Operability Test (Quarterly), performed 4/9/12

OPST-FO-4195-02B, Fuel Oil Transfer Pump (P92-1B) and Discharge Check Valve (FO-28B) Operability Test (Quarterly), performed 4/16/12

OPST-FO-4195-03B, Fuel Oil Transfer Pump (P92-1B) and Discharge Check Valve (FO-28B) Operability Test (CYC), performed 1/16/12

OPST-HPCI-4120-02, HPCI Pump Operability Test (Quarterly), performed 11/3/11 & 2/15/12

OPST-HPCI-4120-04, HPCI Valve Operability Test (Quarterly), performed 11/3/11 & 2/15/12

Miscellaneous

21268, Seismic Monitor Replacement Return to Service Form, dated 9/26/11

24404, Liner Repair Fuel Oil Storage Tank Bottom Return to Service Form, dated 10/29/11

26967, Replacement of HPCI Aux Oil Pump (P-85-1A) Return to Service Form, dated 5/27/11

30318, Service Water System Supply Header A Inspection Port (Child EC) Return to Service Form, dated 9/10/11

API Standard 652, Lining of Above Ground Petroleum Storage Tank Bottoms, December 1997

API Standard 653, Tank Inspection, Repair, Alteration, and Reconstruction, December 1999

A SW Inspection Port (WO 256119-13) Foreign Material Exclusion Component Close-Out Data Sheet, performed 9/10/11

ASTM D975 Table 1, Detailed Requirements for Diesel Fuel Oils, Revs. 2, 9, & 10

Aux Oil Pump Pipes (WO 51070740) Foreign Material Exclusion Component Close-Out Data Sheet, performed 5/24/11

NRC Regulatory Guide 1.12, Nuclear Power Plant Instrumentation for Earthquakes, Rev. 2

NRC Regulatory Guide 1.54, Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants, Rev. 2

NRC Regulatory Guide 1.114, Guidance to Operators at the Controls and to Senior Operators in the Control Room of a Nuclear Power Unit, Rev. 3

NRC Regulatory Guide 1.166, Pre-Earthquake Planning and Immediate Nuclear Power Plant Operator Post-Earthquake Actions, Rev. 0

UESI QA Records Package for the Vermont Yankee Nuclear Plant FOST Interior Re-Lining Project, dated 11/9/11

Non-Destructive Examinations and Inspection Reports

EGVN-FOST-10056, Fuel Tank Maintenance (FTM) Abrasive Blasting, Tank Lining and Inspection, dated 10/28/11

Evaluation of the Service Water Piping Condition, Based on Internal Visual Inspections During RFO-29 (Autumn 2011), dated 1/30/12

ITI Inspection Summary FOST Tank TK40-1A, dated 11/1/11

NUC2011116-N-CAIR-001, UESI Coating Application Inspection Record (CAIR) Page 1 Vermont Yankee FOST Relining, performed 10/25/11

NUC2011116-N-DCIR-001-007, UESI Daily Coating Inspection Record (DCIR) Vermont Yankee FOST Relining, dated 10/24/11 - 10/27/11

NUC2011116-N-DFTR-001-002, UESI Dry Film Thickness Record (DFTR) Vermont Yankee FOST Relining, performed 10/26/11

NUC2011116-N-SPR-001, Surface Preparation Record (SPR) Vermont Yankee FOST Relining, performed 10/24/11

NUC2011-N-CAIR-2-002, UESI Coating Application Inspection Record (CAIR) Page 2 Vermont Yankee FOST Relining, performed 10/27/11

NUC2011-N-CATR-1, UESI Coating Adhesion Test Record (CATR) Vermont Yankee FOST Relining, performed 10/27/11

Structures Monitoring RFO28 Inspection Summary Report, dated 6/30/10

A-5

VY BOP-11-MT-011, 24" SW-1A (3" SW Welds 3 & 4) Magnetic Particle Examination, performed 9/7/11
VY BOP-11-PT-007, 24" SW-1A (3" SW Latrolet Weld 1) Liquid Penetrant Examination, performed 9/9/11
VY BOP-11-PT-008, 24" SW-1A (3" SW Latrolet Weld 2) Liquid Penetrant Examination, performed 9/10/11
VY BOP-11-VT-001, 24" SW-1A (Piping, Valve Installed per EC 30317) Visual Examination System Leakage (VT-2), performed 9/10/11
VYNEF 8064.05, Vermont Yankee Non-Code Leak-Check Examination Report (P-85-1A Pump and Replaced Pipe), performed 5/24/11

Normal and Special (Abnormal) Operations Procedures

ARS 21003, SLC Squib Valve Continuity Loss CRP 5-A-1 Alarm Response Sheet, Rev. 12
ARS 21005, Seismic Monitoring CRP 9-7 Alarm Response Sheet, Rev. 21
EOP-1, RPV Control, Rev. 4
OP 2120, High Pressure Coolant Injection System, Rev. 60
OP 2126, Diesel Generators, Rev. 59
OPOP-PHEN-3127, Natural Phenomena, Rev. 8
OPST-ADS-4126-01A, Daily A EDG Readiness Check, Rev. 0
OPST-EDG-4122-01, Auto Blowdown System Surveillance from the Control Room, Rev. 1

Procedures

AP 0894, Staffing Limits, Rev. 14
AP 3125, Emergency Plan Classification and Action Level Scheme, Rev. 22
ARS 21001, CRP 9-3 Alarm Response Sheets, Rev. 21
CHOP-DIES-4613-01, Sampling and Testing of Diesel Fuel Oil, Rev. 2
EN-DC-115, Engineering Change Process, Rev. 12
EN-DC-117, Post Modification Testing and Special Instructions, Rev. 5
EN-DC-126, Engineering Calculation Process, Rev. 4
EN-DC-132, Control of Engineering Documents, Rev. 5
EN-DC-152, Preparation, Revision, Review, and Approval of Design Basis Documents, Rev. 7
EN-LI-100, Process Applicability Determination, Rev. 11
EN-LI-101, 10 CFR 50.59 Evaluation Program, Rev. 9
EN-OP-115-02, Control Room Conduct and Access Control, Rev. 0
ENN-SEP-APJ-009, Table 2 Penetrations, Rev. 7
ICRP-4396, Seismic Monitoring System Functional Test, Rev. 2
UESI Procedure QCP-10-2-VTY-NUC2011116, Coating Inspection of FOST Lining, Rev. 0
OP 0046, Installation and Repair of Fire Barriers, Penetration seals, Fire Breaks and Flood Seals, Rev. 14
OP 4019, Surveillance of Plant Fire Barriers and Fire Rated Assemblies, Rev. 31
OP 5219, Diagnostic Testing of Motor Operated Valves, Rev. 17
OP 5220, Limitorque operator PM, Rev. 32
OPOP-RHR-2124, RHR System, Rev. 6
OPST-RHR-4124-12C, RHR SW Pump/Valve Operability and Full Flow Test, Rev. 1
VYS-040, Guidelines for Protection and Coordination of Electrical System, Rev. 4

System Health Reports, Walkdown Reports, & Trending

Aux Oil Pump (P-85-1A) Amperage Trend Data, dated 5/1/09 - 2/15/12

Aux Oil Pump (P-85-1A) Pressure Trend Data, dated 2/20/08 - 2/15/12

CHOP-DIES-4613-01 Attachment 1, Diesel Fuel Oil Analyses Results per ASTM D975-09, dated 1/12/11 - 5/15/12

Fuel Oil System Health Report, Q1-2012

Fuel Oil System Walkdown Report, performed 4/3/12 & 5/15/12

Fuel Oil Transfer Pump A & B IST Data (Flow - Pressure - Vibes), dated 7/24/06 - 1/9/12

High Pressure Coolant Injection System Health Report, Q4-2011 & Q1-2012

High Pressure Coolant Injection System Walkdown Report, performed 4/23/12 & 5/21/12

Main Computer/ERFIS System Health Report, Q2-2012 (updated 6/4/12)

Service Water System Health Report, Q1-2012

Service Water Walkdown Report, performed 4/18/12 & 5/24/12

Vendor Technical Manuals and Specifications

301803, Condor System Software Manual User's Guide, February 2007

301877, Seismic Monitoring System Model Condor Calibration Record, January 2011

302208, QuickTalk & QuickLook Communications Software for Altus Recorder Systems, August 1997

5920-S8, Ebasco Specification - Miscellaneous Tanks, Rev. 3

Performance Data for L/C Series Pump Model 5C, dated 11/30/00

SM 22, Tuthill Installation and Service Instructions C2 Series Pumps, dated 4/1/09

VYEM No. 0120, HPCI Turbine Operation and Maintenance - Instruction Manual, Rev. 12

Work Orders

00184551	00237196	00246319	00299490	51070740
00205629	00242475	00256119	52189034	
00237196	00242475	00299488	50043629	

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
AOP	Auxiliary Oil Pump
API	American Petroleum Institute
CFR	Code of Federal Regulations
CR	Condition Report
CST	Condensate Storage Tank
DC	Direct Current
DRS	Division of Reactor Safety
EC	Engineering Change
EDG	Emergency Diesel Generator
Entergy	Entergy Nuclear Northeast
EPRI	Electric Power Research Institute
FHA	Fire Hazard Analysis
FOST	Fuel Oil Storage Tank
FOTP	Fuel Oil Transfer Pump

HPCI	High Pressure Coolant Injection
LNP	Loss of Normal Power
LOCA	Loss of Coolant Accident
MOV	Motor-Operated Valve
NDE	Nondestructive Examination
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OE	Operating Experience
PARS	Publicly Available Records
PMT	Post-Modification Test
RCIC	Reactor Core Isolation Cooling
SSCA	Safe Shutdown Capability Analysis
SW	Service Water
TS	Technical Specifications
UESI	Underwater Engineering Services, Inc.
UFSAR	Updated Final Safety Analysis Report