

May 5, 2006

Mr. Jay K. Thayer
Site Vice President
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Brattleboro, VT 05302-0500

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - NRC INTEGRATED
INSPECTION REPORT 05000271/2006002

Dear Mr. Thayer:

On March 31, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vermont Yankee Nuclear Power Station. The enclosed report documents the inspection findings which were discussed on April 13, 2006, with 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, no findings of significance 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 (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/

Clifford J. Anderson, Chief
Projects Branch 5
Division of Reactor Projects

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

Enclosure: Inspection Report 05000271/2006002
w/Attachment: Supplemental Information

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Mr. J. Thayer

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-271

Licensee No.: DPR-28

Report No.: 05000271/2006002

Licensee: Entergy Nuclear Operations, Inc.

Facility: Vermont Yankee Nuclear Power Station

Location: 320 Governor Hunt Road
Vernon, Vermont 05354-9766

Dates: January 1, 2006 through March 31, 2006

Inspectors: David L. Pelton, VY Senior Resident Inspector
Beth E. Sienel, VY Resident Inspector
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Approved by: Clifford J. Anderson, Chief
Projects Branch 5
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SUMMARY OF FINDINGS

IR 05000271/2006002; 01/01/06 - 03/31/06; Vermont Yankee Nuclear Power Station; Routine Integrated Report.

This report covered a 13-week period of inspection by resident inspectors and announced inspections by regional engineering, health physics, operations, and emergency preparedness inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee Identified Findings

None.

REPORT DETAILS

Summary of Plant Status

Vermont Yankee (VY) Nuclear Power Station began the inspection period operating at or near full power. On February 2, 2006, Entergy performed a planned reactor power reduction to approximately 50% to support control rod pattern adjustment and feedwater regulating valve (FRV) maintenance then returned to full power. On March 2, the NRC granted Entergy a license amendment increasing VY's licensed maximum power level from 1593 megawatts thermal (MWth) to 1912 MWth. On March 4, operators increased power to approximately 105% of VY's original licensed limit in accordance with the approved power ascension test procedure. This equated to a reactor power of approximately 87% of the newly-licensed power level. Power was maintained at approximately 87% for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Seasonal Susceptibilities

a. Inspection Scope (one sample)

The inspectors reviewed measures established by Entergy for ensuring cold weather availability and operability of the alternate cooling system (ACS) including inspections of the accessible portions of the ACS piping heat tracing and system alignment used to de-ice the West cooling tower deep basin. The inspectors performed walkdowns of the accessible portions of these systems and compared the current system alignments and operation to the requirements of Vermont Yankee Operating Procedure (OP) 2196, "Preparations for Cold Weather Operations," OP 3127, "Natural Phenomena," OP 0150, "Conduct of Operations and Operator Rounds," OP 2181, "Service Water/Alternate Cooling Operating Procedure," OP 2180, "Circulating Water/Cooling Tower Operation," and Technical Specifications (TS). Additionally, the inspectors reviewed condition reports (CRs) related to cold weather to ensure issues associated with ACS piping heat tracing and the West cooling tower deep basin were properly addressed for resolution.

b. Findings

No findings of significance were identified.

.2 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope (two samples)

On February 17, the inspectors reviewed actions taken by Entergy following the receipt of switchyard annunciator alarms coincident with high winds and thunderstorm activity in the vicinity of the plant. During this weather event, control room operators observed

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seven alarms related to a disturbance on the Northfield 345 kilovolt (KV) off-site power line and entered OP 3127, "Natural Phenomena," Appendices B, "Lightning Damage Indicator Walkdown Check Sheet," and E, "Considerations When Severe Natural Phenomena is Imminent." The inspectors performed independent walkdowns of the switchyard and 345 KV relay house.

On February 28, the inspectors reviewed actions taken by Entergy due to severe cold weather in the vicinity of the plant. The inspectors reviewed procedure OP 3127, Appendix D, "Extreme Low Temperature Walkdown Check Sheet," and performed independent walkdowns of systems listed in Appendix D, including the high pressure coolant injection (HPCI), reactor core isolation cooling (RCIC), and the emergency diesel generator (EDG) systems, to determine the impact of severe cold weather on these systems. The inspectors also performed a walkdown of the condensate storage tank (CST) enclosure to verify the temperature in the vicinity of the CST level instrumentation and associated HPCI and RCIC suction automatic transfer instrumentation remained above the temperature required by the environmental qualification program.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Equipment Alignment

a. Inspection Scope (four samples)

The inspectors performed four partial system walkdowns of risk-significant systems to verify system alignment and to identify any discrepancies that could impact system operability. Observed plant conditions were compared to the standby alignment of equipment specified in Entergy's system operating procedures. The inspectors also observed valve positions, the availability of power supplies, and the general condition of selected components to verify there were no obvious deficiencies. The inspectors verified the alignment of the following systems:

- The "A" train of the residual heat removal (RHR) system while the "B" train was out of service for planned maintenance;
- The safety-related portions of the service water (SW) system while the "C" SW pump was out of service for planned maintenance;
- The HPCI system while the RCIC system was out of service for planned maintenance;
- The "A" train of the standby liquid control (SLC) system and the alternate rod insertion system during emergent repair of the "B" SLC pump suction isolation valve, SLC-12B.

b. Findings

No findings of significance were identified.

.2 Complete Equipment Alignment (71111.04S)

a. Inspection Scope (one sample)

The inspectors performed a complete equipment alignment inspection of the accessible portions of the RCIC system. The inspectors walked down the RCIC system and compared actual equipment alignment to approved piping and instrumentation drawings (P&IDs), the updated final safety analysis report (UFSAR), the RCIC design basis document (DBD), and operating procedures. The inspectors reviewed RCIC system health reports, open corrective maintenance and modification work orders, and a sample of CRs related to the RCIC system.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q)

.1 Quarterly Fire Area Inspections

a. Inspection Scope (nine samples)

The inspectors identified fire areas important to plant risk based on a review of Entergy's Vermont Yankee Safe Shutdown Capability Analysis, the Fire Hazards Analysis, and the Individual Plant Examination External Events (IPEEE). The inspectors toured plant areas important to safety in order to verify the suitability of Entergy's control of transient combustibles and ignition sources, and the material condition and operational status of fire protection systems, equipment, and barriers. The following combustion free zones (CFZs), fire areas (FAs) and fire zones (FZs) were inspected.

- Torus Room, 213 foot elevation, North (FZ RB1);
- Torus Room, 213 foot elevation, South (FZ RB2);
- Reactor Building, 252 foot elevation, North (FZ RB3);
- Reactor Building, 252 foot elevation, South (FZ RB4);
- Reactor Building, 252 foot elevation, S1 cable trays (CFZ 3/4);
- Reactor Building, 252 foot elevation, S2 cable trays (CFZ 3/4);
- Reactor Building, 280 foot elevation, recirculation motor generator area (SZ RB-MG);
- Reactor Building, 303 foot elevation (FZ RB7); and
- Turbine Building, all areas (FA TB).

b. Findings

No findings of significance were identified.

.2 Annual Fire Drill Observation

a. Inspection Scope (one sample)

On February 7, the inspectors observed the performance of a fire drill involving simulated smoke and arcing in the cable vault nuclear instrumentation battery room. Also simulated was an injured, non-ambulatory individual at the same location. The inspectors evaluated the readiness of the fire brigade against the drill objectives and acceptance criteria established within the drill scenario including:

- Donning of protective clothing;
- Use of self-contained breathing apparatus equipment;
- Fire brigade control of the affected area;
- Use and availability of fire fighting equipment; and
- Communications between the fire brigade, the main control room, and security personnel.

The inspectors also observed debriefing activities between the drill evaluators and the fire brigade to ensure lessons learned were communicated to fire brigade members.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope (one sample)

The inspectors reviewed Entergy's established flood protection barriers for coping with internal flooding on the 252 foot elevation of the reactor building. The inspectors reviewed internal flooding design information contained in Entergy's IPEEE, the UFSAR, and in the Internal Flooding DBD. The inspectors also performed a walkdown of accessible portions of the area to ensure equipment and structures needed to mitigate an internal flooding event were as described in the IPEEE and the DBD.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q).1 Requalification Activities Review by Resident Staffa. Inspection Scope (one sample)

The inspectors observed a simulator as-found evaluation for one operating crew to assess the performance of the licensed operators and the ability of Entergy's Training and Operations Department staff to evaluate licensed operator performance. Crew performance was evaluated during simulated events involving a main steam line break and a loss of both startup transformers under extended power uprate conditions. The inspectors evaluated the crew's performance in the following areas:

- Clarity and formality of communications
- Ability to take timely actions
- Prioritization, interpretation, and verification of alarms
- Procedure use
- Control board manipulations
- Oversight and direction from supervisors
- Command and control

Crew performance in these areas was compared to Entergy management expectations and guidelines as presented in Vermont Yankee Administrative Procedure (AP) 0151, "Responsibilities and Authorities of Operations Department Personnel," AP 0153, "Operations Department Communication and Log Maintenance," and Vermont Yankee Department Procedure (DP) 0166, "Operations Department Standards." The inspectors also compared simulator configurations with actual control board configurations. For any weaknesses identified, the inspectors observed Entergy evaluators to verify that they also noted the issues to be discussed with the crew.

b. Findings

No findings of significance were identified.

.2 Training Provided to Licensed Operators Regarding Plant Response to a Condensate Pump Tripa. Inspection Scope (one sample)

The inspectors observed just in time (JIT) training provided to licensed operators on the expected plant response to a trip of either a feedwater pump or a condensate pump from the new 100% reactor power level (following implementation of the extended power uprate). Training included a discussion of expected plant response(s) and a series of simulator scenarios requiring operators to respond to simulated condensate pump and feedwater pump trips. The inspectors compared the operators' response to expected operator actions contained in the applicable operational transient procedures and Operations Department standards. Additionally, the inspectors observed the fidelity of

the plant-specific simulator and compared it to the plant response that had been predicted by Reactor Engineering and to the requirements of American National Standards Institute/American Nuclear Society (ANSI/ANS) 3.5-1998, "Nuclear Power Plant Simulators for Use in Operator Training and Examination."

b. Findings

During the observation of training provided to licensed operators on the expected plant response to a trip of a condensate pump from 100% reactor power, the inspectors noted that the simulated plant response differed from the predicted plant response indicated in Reactor Engineering's analysis for this event. The difference was in the final values of core thermal power and core flow immediately following the pump trip. This issue was of particular interest because the VY Extended Power Uprate Safety Evaluation Report requires Entergy to perform a condensate pump trip test once they reach the new extended power uprate 100% power level.

Following a trip of a condensate pump from 100% power, expected plant automatic responses include (but are not limited to) the trip of one of the three running feedwater pumps (in anticipation of reduced pump suction pressure due to the tripped condensate pump) and a recirculation pump runback (to reduce core flow and thus core thermal power to a point consistent with continued operation with two feedwater pumps running).

Entergy Reactor Engineering personnel had performed an analysis to predict the values for core thermal power and core flow immediately following a condensate pump trip from 100% power. This analysis indicated that the combination of final core thermal power and core flow would place the plant on a point on the power-to-flow map slightly above the established power-to-flow limit line which, by procedure, would require operators to insert control rods to reduce reactor power below the power-to-flow limit line.

While observing licensed operator training on the expected plant response to a trip of a condensate pump from 100% reactor power, the inspectors noted that the simulator response differed from Reactor Engineering's predicted plant response in that the combination of final core thermal power and core flow placed the plant on a point on the power-to-flow map below the established power-to-flow limit line, thus no rod insertion was required.

The inspectors discussed this issue with Entergy who then entered it into the corrective action program (CR 2006-0603). Additional actions taken by Entergy at that time included a memorandum, issued by the Operations Department, to alert operators to the results of Reactor Engineering's analysis and expected plant response to a condensate pump trip and plans by the Training Department to provide additional condensate pump trip training during upcoming licensed operator requalification training (LORT). This training will be in addition to existing plans to perform JIT training prior to the performance of the required condensate pump trip test.

In accordance with ANSI/ANS 3.5-1998, Entergy is expected to maintain the plant-specific simulator such that it accurately reflects actual plant response(s) to transients.

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This ensures that the simulator training provided to licensed operators best prepares them to respond to an event such as a trip of a condensate pump. To determine if the initial condensate pump trip training provided to licensed operators met the guidance outlined in ANSI/ANS-3.5-1998, the inspectors plan to observe the planned condensate pump trip training to be provided during upcoming LORT, observe the JIT training provided prior to the performance of the required condensate pump trip test, and observe the performance of the actual condensate pump trip test. This issue is considered to be an unresolved item (URI) pending determination of whether the training provided to the operators met the guidance outlined in ANSI/ANS-3.5-1998: URI 05000271/2006002-01, Training Provided to Licensed Operators Regarding Plant Response to a Condensate Pump Trip.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope (two samples)

The inspectors performed one issue/problem-oriented inspection of actions taken by Entergy in response to the failure of the "A" RHR/Core Spray (CS) system power monitoring relay, 10A-K3A. The inspectors also performed one system/function performance history-oriented inspection of the ACS freeze protection system, a system currently designated as a Maintenance Rule a(1). These inspections included a review of work practices that may have contributed to degraded system performance, Entergy's ability to identify and address common cause failures, the applicable maintenance rule scoping document for each system, the current classification of these systems in accordance 10 CFR 50.65 (a)(1) or (a)(2), and the appropriateness of the performance criteria and goals established for each system .

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Evaluation (71111.13)

a. Inspection Scope (five samples)

The inspectors evaluated online risk management for three planned maintenance activities and two emergent repair activities. The inspectors reviewed maintenance risk evaluations, work schedules, recent corrective actions, and control room logs to verify that other concurrent or emergent maintenance activities did not significantly increase plant risk. The inspectors compared reviewed items and activities to requirements listed in AP 0125, "Plant Equipment" and AP 0172, "Work Schedule Risk Management - Online." The inspectors reviewed the following work activities:

- Planned maintenance on the "B" train of the RHR system;
- Planned maintenance on the "C" SW system pump;
- Planned maintenance on the RCIC system;
- Emergent repair of SLC system valve SLC-12B; and

- Emergent repair of the “A” RHR/CS system power monitoring relay, 10A-K3A.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions (71111.14)

a. Inspection Scope (three samples)

The inspectors directly observed and assessed control room operator performance during the following non-routine evolutions:

- Performance of high flow testing on the “B” train of the residual heat removal service water (RHRSW) system on January 19, 2006;
- Power reduction to approximately 50% to support a planned control rod sequence exchange and FRV maintenance on February 2, 2006; and
- The first 5% power increase for the extended power uprate on March 4, 2006.

The adequacy of personnel performance, procedure compliance, and use of the corrective action process for all non-routine evolutions were evaluated against the requirements and expectations contained in TS and the following station procedures, as applicable:

- AP 0151, “Responsibilities and Authorities of Operations Department Personnel;”
- AP 0153, “Operations Department Communication and Log Maintenance;”
- DP 0166, “Operations Department Standards;”
- Engineering Request Special Test Instruction (ERSTI) 04-VY1-1409, “Power Ascension Test Procedure for Extended Power Conditions 1593 to 1912 MWth;”
- ERSTI-05-VY1-0003, “RHR Service Water Hi Flow Test;”
- OP 0105, “Reactor Operations;” and
- OP 2403, “Control Rod Sequence Exchange with the Reactor Online.”

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (four samples)

The inspectors reviewed four operability determinations prepared by Entergy. The inspectors evaluated the operability determinations against the guidance contained in NRC Inspection Manual, Part 9900, Technical Guidance, “Operability Determinations and Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety,” as well as Entergy procedure ENN-OP-104,

“Operability Determinations.” The inspectors verified the adequacy of the following evaluations of degraded or non-conforming conditions:

- Observed voltage increase on motor control center 89B;
- The “D” RHR pump breaker charging spring indicator did not indicate fully charged as expected;
- A CST low level signal to the logic for RCIC containment isolation valve V13-41 would override the ability of the valve to be manually closed from the main control room as described in the UFSAR; and
- Issues identified with RHRSW system piping while performing a system high flow test.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17A)

a. Inspection Scope (one sample)

The inspectors reviewed the permanent replacement of the RCIC system cooling water line pressure control valve to verify that the design bases, licensing bases, and performance capability of the RCIC system had not been degraded. The inspectors reviewed the modification package Engineering Request (ER) 04-1222, “Replace RCIC PCV-13-23 with One Direct Acting Pressure Control Valve and Install Restriction Orifice.” This modification was also selected to verify that the corrective actions taken by Entergy to address issues previously identified in NCV 05000271/2004008-05, “Cooling Water Supply Portion of RCIC Not Installed per Design Basis” and NCV 05000271/2004008-06, “Failure to Correct Non-Conforming RCIC Pressure Control Valve,” had been completed and were appropriate. The inspection also included a walkdown of the RCIC system, interviews with plant staff, and review of applicable documents including the modification package, procedures, calculations, drawings, and the UFSAR. A listing of documents reviewed is provided in the attachment to this report.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

b. Inspection Scope (seven samples)

The inspectors reviewed seven post-maintenance testing (PMT) activities on risk-significant systems. The inspectors either directly observed the testing or reviewed completed PMT documentation to verify that the test data met the required acceptance criteria contained in the TS, UFSAR, and inservice testing program. Where testing was

directly observed, the inspectors verified that installed test equipment was appropriate and controlled and that the test was performed in accordance with applicable station procedures. The inspectors also ensured that the test activities were adequate to ensure system operability and functional capability following maintenance, systems were properly restored following testing, and any discrepancies were appropriately documented in the corrective action program. The inspectors reviewed the PMTs performed for the following maintenance activities:

- Disassembly and inspection of “B” RHR pump discharge check valve V10- 48B, PMT in accordance with work order (WO) 05-3565 and OP 4124;
- “C” service water pump motor overhaul, PMT per WO 05-3760 and OP 4181;
- Installation of new RCIC system oil cooler pressure control valve and orifice assembly, PMT in accordance with ERT-04012222-01;
- Testing of RHR/CS system power monitoring relay following repair and replacement;
- RCIC system turbine overspeed trip testing following planned maintenance on the trip mechanism in accordance with OP-5296;
- “A” FRV positioner replacement, PMT per OP-4172; and
- Repair of SLC system valve SLC-12B, PMT per OP-4114.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (seven samples)

The inspectors observed surveillance testing to verify that the test acceptance criteria specified for each test was consistent with TS and UFSAR requirements, the test was performed in accordance with the written procedure, the test data was complete and met procedural requirements, and the system was properly returned to service following testing. The inspectors observed selected pre-job briefs for the test activities. The inspectors also verified that discrepancies were appropriately documented in the corrective action program. The inspectors verified that the following surveillance testing activities met the above requirements:

- “A” EDG monthly surveillance testing (routine test) in accordance with OP 4126, Section B;
- “A” RHR system quarterly surveillance testing (in-service test) in accordance with OP 4124, Section H;
- “A” RHRSW system quarterly surveillance testing (in-service test) in accordance with OP 4124, Section G;
- RHR system valves RHR-26A and 26B accumulator pressure test (routine test) in accordance with OP 4124, Section C;

- Drywell equipment and floor drain testing and drywell leakage calculation (reactor coolant system leak detection test) in accordance with OP 4152, Section A;
- HPCI system quarterly surveillance testing (routine test) in accordance with OP 4120, Section A; and
- Six Month EDG Fast Start Operability Test (routine test) in accordance with OP 4126, Section F.

b. Findings

No findings of significance were identified

1R23 Temporary Plant Modifications (71111.23)

z. Inspection Scope (one sample)

The inspectors reviewed a temporary alteration (TA) made to the position indication probe for control rod 26-07 to ensure that this alteration did not adversely affect the availability, reliability, or functional capability of any risk-significant structures, systems, or components. The inspectors compared the information in the TA package to Entergy's TA requirements contained in ENN-DC-136, "Temporary Alterations." The inspectors observed the installation of the TA and verified that required tags were applied and that the alteration was being properly maintained.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope (one sample)

The NRC received and acknowledged the changes made to the Vermont Yankee Emergency Plan and implementing procedures. Entergy made the changes in accordance with 10 CFR 50.54(q) and determined that the changes did not result in a decrease in effectiveness to the Plan and concluded that the changes continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR 50. During this in-office inspection on January 30 and March 6, 2006, the inspectors conducted a sampling review of the changes which could potentially result in a decrease in effectiveness. This review does not constitute an approval of the changes and, as such, the changes are subject to future NRC inspection. The requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)a. Inspection Scope (one sample)

On January 26, 2006, the inspectors observed an operating crew respond to a simulator-based event during licensed operator requalification training activities. The inspectors discussed the performance expectations and results with the lead instructor. The inspectors focused on the ability of licensed operators to perform event classifications and make proper notifications in accordance with the following station procedures and industry guidance:

- AP 0153, "Operations Department Communications and Log Maintenance;"
- AP 0156, "Notification of Significant Events;"
- AP 3125, "Emergency Plan Classification and Action Level Scheme;"
- DP 0093, "Emergency Planning Data Management;"
- OP 3540, "Control Room Actions During an Emergency;" and
- Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY**Cornerstone: Occupational Radiation Safety**2OS2 ALARA Planning and Controls (71121.02)a. Inspection Scope (twelve samples)

The inspectors reviewed the effectiveness of Entergy's program to maintain occupational radiation exposure as low as reasonably achievable (ALARA). The inspectors performed a selective examination of documents (as cited in the List of Documents Reviewed section) for regulatory compliance and for adequacy of control of radiation exposure. The review was against criteria contained in 10 CFR 20.1101 (Radiation Protection Programs), 10 CFR 20.1701 (Use of Process or Other Engineering Controls), and Entergy procedural requirements.

This inspection activity represents the completion of twelve (12) samples relative to this inspection area (i.e., inspection procedure sections 02.01.a, c, and d, 02.02.a thru c, and e*, f*, and I*, 02.03.a and 02.08.a and b*) in partial fulfillment of the biennial inspection requirements.

Planning (02.01.a, c, and d)

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the site specific trends in collective exposures and source-term (i.e., average contact dose rates with reactor coolant piping) measurements. The inspectors also reviewed the site specific procedures associated with maintaining occupational exposures ALARA. This review included a review of processes used to estimate and track work activity specific exposures. The review was against criteria contained in 10 CFR 20.1101 (Radiation Protection Programs).

Radiological Work Planning (02.02.a thru c, e*, f*, and I*)

The inspectors obtained a list of twenty-one ALARA refueling outage work activity packages with their exposure summaries, including the original exposure estimates and actual exposures. The inspectors reviewed the post-job ALARA reviews for six activities with actual exposures that were greater than five rem and exceeded the original exposure estimates by fifty percent. For these outage work activities, the inspector reviewed the pre-job ALARA work activity evaluations, exposure estimates, exposure mitigation requirements, radiation work permits, in-progress ALARA reviews, and revised exposure estimates based on the in-progress ALARA reviews. The inspectors reviewed grouping of the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances. The inspectors compared the results achieved (i.e., dose rate reductions, person-rem used) with the intended dose established in Entergy's ALARA planning for these work activities.

The inspectors reviewed the integration of ALARA requirements into the radiation work permit documents. While examining selected post-job ALARA review documents, the inspectors compared the person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements and evaluated the accuracy of these time estimates. During the review of selected post-job (work activity) review documents, the inspectors confirmed that identified problems and items for improvement were entered into Entergy's corrective action program.

Verification of Dose Estimates and Exposure Tracking Systems (02.03.a)

The inspectors reviewed the current annual collective exposure estimate for 2006 and the assumptions and basis for the estimate. The inspectors discussed the methodology used for estimating work activity-specific exposures and the intended dose outcome with the radiation protection manager and the ALARA supervisor. The review was against criteria contained in 10 CFR 20.1101 (Radiation Protection Programs).

Problem Identification and Resolution (02.08.a and b*)

The inspectors reviewed Entergy's last self-assessment of ALARA which was conducted in 2005 and the post-job ALARA reviews for six work activities in the 2005 refueling outage. The inspectors reviewed their methodology for meeting the requirements of 10 CFR 20.1101 to review the content and implementation of the radiation protection program on at least an annual basis. The inspectors discussed this requirement with the radiation protection manager and with a radiation protection support supervisor. The inspectors also reviewed Entergy's procedure used to implement this requirement. During the review of dose-significant post-job (work activity) reviews of exposure performance, the inspectors evaluated those identified problems that were entered into the corrective action program for resolution.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES4OA1 Performance Indicator Verification (71151)a. Inspection Scope (three samples)

The inspectors sampled Entergy submittals for the performance indicators (PIs) listed below for the period from January 2004 to December 2005. The inspectors reviewed selected operator logs, plant process computer data, CRs, and monthly operating reports. The PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," and AP 0094, "NRC Performance Indicator Reporting," were used to verify the accuracy and completeness of the PI data reported during this period.

Initiating Events Cornerstone

- Unplanned Power Changes per 7000 Critical Hours
- Unplanned Scrams per 7000 Critical Hours
- Scrams with Loss of Normal Heat Removal

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

The inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into Entergy's corrective action program at an appropriate threshold and that adequate attention was being given to timely corrective actions. Additionally, in order to identify repetitive equipment failures and/or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into Entergy's corrective action program. This review was accomplished by reviewing the description of each new CR and/or by attending daily CR screening meetings. A listing of CRs and other documents reviewed is included in the attachment to this report.

b. Findings

No findings of significance were identified.

.2 Annual Sample Review - Operator Workarounds

a. Inspection Scope (one sample)

The inspectors reviewed the cumulative effect of operator workarounds on the reliability, availability, and potential mis-operation of systems with particular focus on issues that had the potential to affect the ability of operators to respond to plant transients and events. The inspectors reviewed the Operator Aggregate Impact Index and Operations Performance Indicators for February 2006, as well as the related operator burdens, control room deficiencies, system lineup deviations, and disabled or illuminated control room alarms. For selected issues, the inspectors reviewed CRs and discussed the issues with responsible operations personnel to ensure they were appropriately categorized and tracked for resolution. In addition, control panel and in-plant walkdowns were performed to identify any potential workarounds that had not been previously identified in accordance with procedures DP 0166, "Operations Department Standards," and AP 0047, "Work Requests."

b. Findings and Observations

No findings of significance were identified. The inspectors found that Entergy ensured that appropriate attention was placed on conditions that could impact operator actions, including conditions that would require compensatory actions (workarounds and burdens), control room deficiencies and alarms, components tagged out-of-service or with caution tags, and component deviations, through periodic management review of performance indicators. At the time of the inspection, there were no open operator workarounds and corrective actions for other items were scheduled for completion commensurate with each item's significance.

4OA3 Event Followup (71153)

.1 (Closed) Licensee Event Report (LER) 05000271/2005002-00 Primary Containment Leak Rate Testing Program Second Barrier Valve Found Mis-Positioned

On October 4, 2005, Entergy identified that a 3/4 inch manual globe valve in a RHR system sample line (valve V10-198A) was found to be open versus its required position of closed. V10-198A is a second barrier that supports Entergy's primary containment integrity and is required to be closed per TS Surveillance Requirement 4.7.A.2 and Entergy's Primary Containment Leakage Rate Testing Program. Upon discovery, operators closed V10-198A, placed it under administrative control by applying a danger tag indicating the valve's required closed position, and entered the issue into their corrective action program (CR 2005-2879). Although V10-198A was open, Entergy verified that primary containment integrity was maintained by two normally-closed, air-operated chemistry sampling valves and an additional normally-closed, manually operated valve located downstream of V10-198A. Entergy determined that the root cause of this condition was the application of an inadequate design control process in 1996 during the implementation of the Qualified Closed Loop Outside Primary Containment modification. The process that was used lacked sufficient documentation and reviews to effectively implement required changes including changes to procedures and drawings. As a result, the valve lineups included in the RHR system operating procedure and the RHR P&ID were not updated to reflect the required closed position of V10-198A versus open. Corrective actions included improvements to the design control process, completion of required revisions to the RHR system operating procedure and P&ID, and the performance of extent of condition reviews. Although the fact that V10-198A was open with the reactor plant critical was a condition prohibited by TS, the inspectors concluded that this issue constituted a violation of minor significance. The inspectors based their conclusion on the fact that Entergy was able to verify that primary containment integrity was maintained regardless of the position of V10-198A and the fact that no new findings were identified during their review. As such, this finding is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. This LER is closed.

4OA5 Other Activities

.1 Power Uprate: Power Ascension Testing (71004)

a. Inspection Scope

The inspectors observed selected plant testing performed in accordance with attachments to test procedure ERSTI-04-VY1-1409, Power Ascension Test Procedure for Extended Power Conditions 1593 to 1912 MWth, following Entergy's initial 5 percent power increase to approximately 87% of the newly-licensed power level on March 4, 2006. The following activities were observed to ensure operators performed the tests in accordance with the approved procedures and plant TS, test results were appropriately evaluated, and plant systems were restored following testing.

- Attachment 7A, “Feedwater Level Changes 1673 MWth”; and
- Attachment 8A, “MHC [mechanical hydraulic control, i.e., pressure] Demonstration 1673 MWth.”

Following the power increase to 87%, the inspectors observed Entergy’s actions when they determined that a Level 2 Hold criterion was reached for strain gauge data on the “A” main steam line. CR 2006-0650 was written to document the condition.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Resident Exit

On April 13, the resident inspectors presented the inspection results to Mr. Bill Maguire and other members of the VY staff. The inspectors asked whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Entergy Personnel

J. Devinentis, Licensing Manager
J. Dreyfuss, Director of Engineering
M. Hamer, Licensing
W. Maguire, General Manager of Plant Operations
K. Pushee, Radiation Protection Manager
N. Rademacher, Director of Nuclear Safety
J. Thayer, Site Vice President

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000271/2006002-01	URI	Training Provided to Licensed Operators Regarding Plant Response to a Condensate Pump Trip (Section 1R11.2)
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Closed

05000271/2005002-00	LER	Primary Containment Leak Rate Testing Program Second Barrier Isolation Valve Found Mis-Positioned (Section 4OA3)
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Discussed

05000271/2004008-05	NCV	Cooling Water Supply Portion of RCIC not Installed per Design Basis (Section 1R17)
05000271/2004008-06	NCV	Failure to Correct Non-Conforming RCIC Pressure Control Valve (Section 1R17)

LIST OF DOCUMENTS REVIEWED

Section 1RO4.2: Complete Equipment Alignment

Procedures

OP 2121, Reactor Core Isolation Cooling System
OP 2145, Normal 125 VDC Operation
PP 7006, primary Containment Leakage Rate Testing Program

Condition Reports

2005-3199, RCIC-7 failed Appendix J Local Leakage Rate Testing
2005-3200, RCIC-6 failed Appendix J Local Leakage Rate Testing
2005-3204, V23-3 failed Appendix J Local Leakage Rate Testing

Work Orders

WO 05-000838-000, Replace Pressure Control Valve
WO 04-004892-000, Implement Mods to RCIC Auto Isolation Logic and Torus Suction Valves in accordance with Engineering Request 04-1272

Miscellaneous Documents

RCIC System 4th Quarter 2005 System Health Report

Section 1R11.2: Training Provided to Licensed Operators Regarding Plant Response to a Condensate Pump Trip

Procedures

OT 3113, Reactor Low Level
OT 3114, Reactor High Level
OT 3175, Recirculation Pump Runback due to Condensate or Feed Pump Trip
ERSTI-04-VY1-1409-000, Feedwater Level Change Demonstration 1912 MWth

Lesson Plans

LOR-25-203-1, Simulator Scenarios Related to Feed Pump Trip from 1912 MWth and Condensate Pump Trip from 1912 MWth
LOR-25-203-2, EPU Procedure Changes and Plant Modifications related to Recirculation Pump Runback due to Condensate or Feed Pump Trip

Miscellaneous Documents

Vermont Yankee Core Thermal/Hydraulics Upgrade Site Acceptance Test Plan Overview for Heat Balance Data Under EPU Conditions

CR 2006-00603, Simulated Plant Process Computer System Power to Flow Map did not Follow the EPU Power to Flow Map
Operations Department Memorandum Regarding Plant Response to Condensate Pump Trip Test
Reactor Engineering Predicted Power to Flow Response Following a Trip of a Condensate Pump
Vermont Yankee Simulator Discrepancy Report, Simulator Rod Line vs. Predictor Rod Line
General Electric SIL 653, MELLLA

Section 1R17: Permanent Plant Modifications

Calculations

VYC-0364, Evaluation of Nozzles Loads for Pumps, Tanks and Heat Exchangers
VYC-0555, Piping Analysis of RCIC Part 6 Problem 105 with PVRC ARS
VYC-2376, System Affects Due to Loss of 1A on RCIC-PCV-23

Engineering Evaluations

ER 04-1222, Replace RCIC PCV-13-23 with One Direct Acting Pressure Control Valve and Install Restriction Orifice
ERCN 02
ERT-04-1222-01-00, Loss of Instrument Air to RCIC PCV-13-23
ERTCN #01

Miscellaneous Documents

ER 04-1222, Replace RCIC PCV-13-23 with One Direct Acting Pressure Control Valve and Install Restriction Orifice
OP 4121, Reactor Core Isolation Cooling System Surveillance
WO 05-000838, Replace Pressure Control Valve, Implement ER-04-1222
Target Rock Seismic Qualification Certificate of Compliance, 11/30/05
Target Rock Hydrostatic Test Report, 11/29/05
Target Rock Material Certification Reports

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Vermont Yankee Emergency Plan
AP 3125, Emergency Plan Classification and Action Level Scheme
AP 3549, Off-Site Emergency Preparedness Support
AP 3553, Administration and Maintenance of the Alert and Notification System
OP 3511, Off-Site Protective Action Recommendations
OP 3533, Post Accident Sampling of Reactor Coolant
OP 3534, Post Accident Sampling of Plant Stack Gaseous Releases
OP 3535, Post Accident Sampling and Analysis of Primary Containment
OP 3550, Activation and Operation of the Joint News Center

OP 3551, Operation of the Joint News Center When the Alternate Joint News Center is Activated

OP 3552, Activation and Operation of the Alternate Joint News Center

Section 20S2: ALARA Planning and Controls

Procedures

AP 0502, Radiation Work Permits

AP 0536, ALARA implementation for design changes and work analysis

DP 0535, ALARA documentation, records, and reports

EN-RP-102, Radiological Control, Rev. 0

Post-Job ALARA Reviews for Refueling Outage Work Packages

Reactor disassembly, reassembly, and cavity decon

Instrumentation and control work

Miscellaneous drywell work

Insulation and support work

Shielding and support work

Strain gage installation on main steam lines in the drywell

Safety relief valve and relief valve removal and replacement

Staging and support

Apparent Cause Evaluation Reports

CR 2005-3376, Drywell dose rates for RFO-25 were higher than RFO-24 due to a crud burst which included high levels of cobalt-60, copper-64, and other corrosion products

CR 2005-3804, The ALARA dose estimate for RFO-25 of 94 rem was exceeded by 35 rem

Miscellaneous Documents

Vermont Yankee RFO 25 drywell dose control and contingency course of action

BRAC point measurements for RFOs 22, 23, 24, and 25

VY RFO-25 cobalt source term reduction project

PRC-2 powdered resin for RWCUs and FPDs, October 18 - November 10, 2005

Chemistry PRC-2 Project update as of 1600 on October 24, 2005

Interim report, PRC-2 resin evaluation, RFO-25, October 22 - November 11, 2005

VY dose estimate for 2006

Vermont Yankee five year ALARA plan (2006)

Entergy nuclear fleet five year ALARA plan (2006)

VY Focused self-assessment of the ALARA program, July 25 - 28, 2005

VY Quality assurance surveillance report/quality verification of RFO-25 dose estimate, September 19 - 22, 2005

Minutes of ALARA committee meeting on November 6, 2005

Section 40A2.1: Routine Review of Identification and Resolution of ProblemsCondition Reports

2004-2630 NRC inspectors point out potential procedure deficiency
 2006-0170 Reached termination criteria for RHRSW high flow test
 2006-0213 Operability recommendation for CR 2006-0170 refers to the incorrect corner room
 *2006-0250 Basis for part of TS LCO 3.7.A.9.b questioned by NRC resident
 2006-0293 "D" RHR pump breaker charging spring indicator not showing fully charged
 2006-0297 MCC 89B voltage increase
 2006-0330 MCC 89B voltage continues to drift up following voltage regulator adjustment on UPS 1B
 *2006-0475 Retired line printers outside cable vault present unnecessary interference to plant operations such as firefighting
 2006-0512 RCIC system test results at variance with acceptance criteria during the performance of pump post-maintenance testing
 2006-0520 RHR/CS "A" bus logic alarm
 *2006-0529 Fire hazards analysis discrepancy identified by senior resident inspector
 *2006-0603 Simulator power to flow map is not consistent with reactor engineering map and analysis
 2006-0622 Forced excessive overtime involving licensed operators and STA while attending just in time training
 *2006-0629 Visiting inspector identified that lube oil storage in CRD pump room is not consistent with procedural requirements
 2006-0631 APRM-B would not indicate in spec during meter zero check portion of calibration
 2006-0637 Unexpected annunciators following start of additional feed pump
 2006-0643 Discovery of an un-posted high radiation area in the waste sample pump room
 2006-0650 Steam Dryer Level 2 performance criteria exceeded during power ascension
 *2006-0715 Incorrect power level reported to the NRC during daily HOO update

* Inspector-identified issues.

Section 40A2.2: Annual Sample Review - Operator WorkaroundsProcedures

AP 0047, Work Requests
 DP 0166, Operations Department Standards
 OP 2116, Secondary Containment Integrity Control
 OP 4116, Secondary Containment Surveillance including completed surveillance test results dated 2/27/06

Condition Reports

2006-0103 Operator Burdens PI is Red
 2005-3991 Condition Report 2003-00212 Corrective Actions Not Timely; Not Effective; Inappropriately Closed

2005-3988	Fire Alarm End-of-Line Capacitor Failures
2005-1870	Operator Burdens Not Consistently Documented on Turnover Logs
2005-1446	Operator Burden Performance Indicator is Red
2004-1950	PT-1-125-3B-4 Failed Calibration
2004-1955	PT-1-125-3B-3 Failed Calibration
2004-1956	PT-1-125-3B-2 Failed Calibration
2003-0212	Adverse Trend Fire Alarm Capacitor Failures

Miscellaneous Documents

ER 04-1325	Obsolete GEMAC Transmitter Requires Mod for Replacement
WO 04-2550	Replace Transmitter PT-1-125-3B-4

LIST OF ACRONYMS

ANSI/ANS	American National Standards Institute/American Nuclear Society
ACS	Alternate Cooling System
ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
AP	Vermont Yankee Administrative Procedure
CFR	Code of Federal Regulations
CFZ	Combustion Free Zone
CR	Condition Report
CS	Core Spray
CST	Condensate Storage Tank
DBD	Design Basis Document
DP	Vermont Yankee Department Procedure
EDG	Emergency Diesel Generator
ER	Engineering Request
ERSTI	Engineering Request Special Test Instruction
FA	Fire Area
FRV	Feedwater Regulating Valve
FZ	Fire Zone
HPCI	High Pressure Coolant Injection
IPEEE	Individual Plant Examination External Events
JIT	Just In Time
KV	Kilovolt
LER	Licensee Event Report
LORT	Licensed Operator Requalification Training
MHC	Mechanical Hydraulic Control
MWth	Thermal Megawatts
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
OP	Vermont Yankee Operating Procedure

P&ID	Piping and Instrumentation Drawing
PARS	Publicly Available Records
PI	Performance Indicator
PMT	Post Maintenance Testing
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
SDP	Significance Determination Process
SLC	Standby Liquid Control
SW	Service Water
TA	Temporary Alteration
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VY	Vermont Yankee
WO	Work Order