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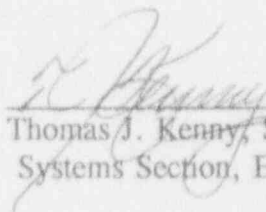
LICENSEE: Vermont Yankee Nuclear Power Corporation
RD 5, Box 169
Ferry Road
Brattleboro, Vermont 05301

FACILITY: Vermont Yankee Nuclear Power Station

INSPECTION AT: Vernon, Vermont and NRC Region I office

INSPECTION DATES: January 24-27, 1994
February 10-11, 1994
January 5 - February 15, 1994 (NRC Region I office)


INSPECTORS: Fred L. Bower, III, Reactor Engineer
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3/4/94
Date

APPROVED BY:



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3/4/94
Date

EXECUTIVE SUMMARY

Vermont Yankee is in the process of upgrading their Surveillance Program, both in the execution and administration of the program. The surveillance program consists of technical specification surveillance, IST testing and Appendix J testing (Section 4). The upgrade was implemented in September of 1993 and the Appendix J portion is still to be completed.

Vermont Yankee is satisfactorily implementing the IST program to meet the requirements of ASME/ANSI OMa-1988 Addenda to ASME/ANSI OM-1987 (Section 2), with the exception of certain manual valves in the alternate cooling system that were not included in the IST program and were not being tested in accordance with code requirements.

The licensee's service water system self-assessment was detailed, it met all but two inspection attributes in NRC's Temporary Inspection (TI) 2515/118, and it identified several significant safety concerns. The licensee's immediate action to address the identified concerns were initially slow. However, upon identification of this apparent lack of promptness by the NRC, the licensee took actions to demonstrate interim operability of both the service water system and alternate cooling system and to address immediate hardware and safety concerns.

DETAILS

1.0 INTRODUCTION

This announced inspection was performed to assess Vermont Yankee's (VY) conformance to their third 10 year interval inservice testing submittal, dated November 30, 1992. The inspector also reviewed the NRC's safety evaluation for the submittal and the acceptability of the second interval extension to August 31, 1993. The new program added over 100 additional components, seven additional relief requests while deleting 37 old ones, cold shutdown and refueling outage justification, and clearer test directions.

In letters dated September 2, 1992, and August 13, 1992, the NRC accepted VY's request to use ASME/ANSI OMa-1988 Addenda to ASME/ANSI OM-1987, hereafter, referred to as the "Code." Appendix A to the SER identified that seven tests were not consistent with previously established NRC positions. Vermont Yankee was conducting evaluations to resolve these anomalies at the time of this inspection. The results of the evaluations are scheduled to be submitted to the NRC in mid-1994.

2.0 INSPECTION DETAILS (TI 2515/114)

The inspector used temporary instruction 2515/114 Inspection Requirements for Generic Letter 89-04 "Acceptable Inservice Testing Program," to assess the licensee's current IST program. The inspector chose components in the residual heat removal (RHR), core spray (CS), and reactor core isolation cooling (RCIC) systems to assess the adequacy of program implementation, as detailed below.

2.1 General IST Program Review

Within the above listed systems the inspector verified that:

- All ASME Code Class 1, 2, and 3 pumps and valves with safety-related functions were in the program, except as noted in Section 5.0.
- The testing being performed on the pumps and valves met the Code test methods and frequency.
- Non-Code pumps within the systems evaluated are being tested to the same frequency as required by the code.

The inspector also verified that: the cold shutdown justification basis is consistent with the Code, the administrative control for tracking cold shutdown tests is acceptable, and the program controls and IST procedures for reverifying or establishing a reference value are in compliance with the Code. The inspector found that the procedures for testing new or refurbished equipment adequately established the new reference values, when required.

2.2 Test Results

The inspector reviewed results of the IST pump and valve tests completed during the last twelve months for the above-selected systems. Test results that were outside of Code acceptance criteria were being evaluated in accordance with the Code, including those in the Alert and Action ranges.

The inspector reviewed VY's method for evaluating failed or degraded equipment and concluded that root cause analyses were being conducted adequately and appropriate actions were taken to correct the identified concerns. The inspector confirmed that TS action statement requirements were adhered to, when appropriate.

2.3 Valve Testing

The inspector verified the test methods, acceptance criteria, and corrective actions for stroke timing power-operated and rapid-acting valves were in compliance with the Code. It is noted that valve stroke time testing is performed in the as found condition. The inspector also confirmed that check and relief valves within the systems were tested to Code requirements.

The inspector reviewed OP 4030, Rev. 21, "B&C Primary Containment Leak Rate Testing," and confirmed that containment isolation valves listed in technical specifications (TS) are in the program and are being leak rate tested and evaluated individually where required by the Code. The leak rate requirements are listed in the procedure and dispositioned in accordance with the VY containment test program. The program describes Code standards and is performed at every refueling outage. The 10 CFR Appendix J testing at VY is currently under review for upgrade. Vermont Yankee intends to submit the upgraded program to the NRC in the summer of 1994. This upgrade is scheduled to be in place prior to the March 1995 refueling outage.

2.4 Pump Testing

The inspector reviewed the licensee's program for testing safety-related pumps and verified the following:

- Test methods, acceptance criteria and corrective actions requirements are delineated in the test procedures and that they comply with the Code.
- The testing of individual pumps in systems with multiple pumps are evaluated separately prior to proceeding to the next pump.

- Ranges and calibration accuracies of the test instruments are documented in VY's instrument testing program.
- Pumps are declared inoperable if the test results are in the "Required Action Range."
- A Corrective Action Report (CAR) is written whenever a pump enters the Alert range.

The Operating Procedure, AP 0164, Rev. 03, "Operations Department Inservice Testing," contains notices to perform certain parts of the CAR prior to the next running of the pump. These include review of a graph of the parameters in the Alert range from the last runs of the pump to current, a review of the margin available or instrument malfunctions, an apparent root cause determination, the immediate and short-term corrective actions and additional actions to be performed during the next test. However, after interviews with the operations personnel the inspector noted that there was no formal mechanism to inform the operations department when the above actions were taken. Upon identification of this concern, the licensee incorporated the required measures to notify the Operations Department into the above procedure being upgraded. This upgraded procedure has been implemented.

3.0 CHECK VALVE TESTING (TI 2515/110)

The inspector reviewed the safety-related check valves in the above-listed systems and found that all safety-related check valves were included in the IST program or had been added to the latest revision of the program. The IST program ensures operability of the check valves through partial and full flow testing in accordance with the ASME Boiler and Pressure Vessel Code 1983 edition. Those valves that cannot be full flow tested were disassembled or x-ray examined during the refueling outages in accordance with the IST program.

Full flow testing included verification of the flow. The inspector verified that procedures included acceptance criteria to verify the design requirements. Important check valves are tested for reverse flow closure.

4.0 INSERVICE TEST PROGRAM ENHANCEMENT

Based on program weaknesses identified by the OSTI report and additional program weaknesses identified by Yankee Nuclear Services Division (YNSD) in audit report VY 93-06B, Vermont Yankee restructured the IST organization and was in the process of rewriting the surveillance testing program including MOV testing, IST testing and Appendix J program testing. The revised program was established in September 1993.

The IST testing portion of the program had been completed and was assessed during this inspection. A multi-disciplinary team charged with the IST program implementation included engineering and implementing department personnel. The VY IST Coordinator is the IST Program "Owner" and has primary responsibility for the program plan development and maintenance. He also approves all component baseline parameters and implementing procedures and provides technical assistance to the implementing departments. The implementing department coordinators ensure that the required testing and corrective actions are performed and provide department experience in the program and procedure development. The program is controlled by AP 0164 and AP 0211 (listed in Appendix A).

The implementing procedure update has enhanced operability identification, actions to be taken when equipment is found in the "alert" or "action required" stages and identified increased surveillance when equipment enters the alert stage. During Inspection 50-271/93-31, the inspector identified a weakness for the tracking of safety-related pumps that required the increase frequency surveillance testing. Operations personnel used an informal document to ensure the required surveillance frequency. The inspector confirmed that VY has taken steps to correct this weakness and has drafted a letter to inform the NRC of this action. The implementing procedure was changed to document the increased frequency required by the Code, when a pump enters the "alert" range.

The inspector confirmed immediate actions taken for two instances where the test results were out of specifications. The first was when the control valve on the HPCI went into alert because the stroke time was two seconds faster than required. The second was when vibration on "B" core spray pump were out of specifications. Vermont Yankee implemented the proper corrective actions in accordance with their program. The inspector noted that these items were tracked on the open issues portion of the plant managers' daily meeting minutes.

5.0 CONCLUSIONS

The inspector found that the IST program was being implemented adequately. Pumps and valves in the systems observed were being tested and trended in accordance with the Code. Personnel performing tests, and engineers who perform analysis and trending were adequately trained. The IST program was current and on schedule. The most recent submittal of the program showed improvements, including additional tests to further enhance the program. The latest revision to the IST program implementing procedure, and the restructured personnel assignments on the program, improved the administration and the implementation of the program, especially when component test results were outside the acceptance criteria. Additional guidance was delineated in the procedure to more formally document the test results and to specify required actions to address problems encountered during tests. A list of the documents reviewed is provided in Appendix A.

6.0 REVIEW OF LICENSEE SERVICE WATER SYSTEM SELF-ASSESSMENT ACTIVITIES (40501)

The inspectors reviewed VY's service water system self-assessment team's activities during the week of January 24, 1994. VY's multi-person team evaluated the design, operation, testing, surveillance, and maintenance aspects of the service water system, and the alternate cooling system, using the guidance contained in NRC Temporary Instruction (TI) 2515/118, Service Water System Operational Performance Inspection, and industry documents that amplified the inspection attributes of the TI. VY had formed a response team to address the self-assessment team's concerns promptly. The inspectors also observed the self-assessment team's final meeting on February 10, 1994, and the exit meeting with the plant staff and the VY Vice President on February 11, 1994.

The self-assessment team developed 114 questions/concerns which were issued to the plant response team for resolution. These issues were being tracked for resolution at the time of this inspection. Sixteen issues required potential reportable occurrence reports in accordance with plant procedures. Initially, VY's interim action to resolve the assessment findings were slow and not comprehensive. The inspectors discussed these items and their collective significance to the operational performance of the service water system with VY management after the self-assessment team's exit on February 11, 1994. Also, telephone discussions between NRC and VY management were held on February 14 and 16, 1994, to assure that the license was addressing the self-assessment team's concerns in a timely manner and VY had sufficient bases to conclude that the alternate cooling system was operable in the interim. VY provided the necessary assurance to demonstrate operability of the systems in the interim and discussed the overall approach to address each finding.

As required by NRC Inspection Procedure 40501, a presentation of the final results of VY's service water self-assessment, including the short and long term corrective actions to VY self-assessment team's concerns, is scheduled to be held in March 1994. Subsequent to this meeting, the NRC will finalize and schedule a service water inspection at Vermont Yankee in accordance with NRC TI 2515/118 and Inspection Procedure 40501, "Review of Licensee Self-Assessments."

7.0 ALTERNATE COOLING SYSTEM MANUAL VALVE CYCLING

During an Enforcement Conference on December 2, 1993, questions were raised regarding the operability of the VY alternate cooling system. VY responded to these questions in a letter from Mr. R. J. Reid to the NRC, dated December 16, 1993. A review of this letter, licensing basis documents, and inspection reports dating back to 1990, was conducted in the Region I offices from January 5 to February 15, 1994. Based on this review, it was concluded that the actions taken by VY to assure the alternate cooling system operability were not adequate.

In August 1990, NRC's Safety System Functional Inspection, 50-271/90-80, of the service water portion of the residual heat removal system (RHRSW) identified an unresolved item, URI 90-80-06, to address the lack of a valve operability test. Specifically, VY did not have a periodic test program to ensure the operability of the RHRSW manual isolation valves. Some of these valves were intentionally kept closed to preclude the introduction of oxygen. Also, none of the manual valves in the safety-related alternate cooling system were in the inservice test program. NRC Inspection 50-271/92-81, conducted in July and August 1992, closed this item based on VY's assertion that these valves were not required to be in the IST program as they did not meet the accident/shutdown criteria in ASME Section XI.

Based on a review of licensing basis documents and 10 CFR 50.55a, we have concluded that the basis for closing this item was inadequate. The safety-related RHRSW manual isolation valves and certain large manual valves in the safety-related alternate cooling system are ASME Class 2 or 3 valves that are required to be in the IST program of ASME Section XI, as mandated by 10 CFR 50.55a because they have a design basis function to bring the reactor to a cold shutdown condition in the unlikely event of the loss of the Vernon Pond. It should also be noted that VY Technical Specifications 4.5.D and 4.6.E require the valves in the alternate cooling system to be tested in accordance with the IST program. Since these valves were not in the IST program, the technical specification requirements for testing were not being fulfilled. On February 17, 1994, VY representatives stated that the manual valves in the alternate cooling system would be incorporated in the IST program and tested in accordance with NRC positions for such components. Therefore, URI 50-271/90-80-06 is reopened pending verification that these valves have been added to the IST program and verification that they are being adequately surveilled.

8.0 EXIT MEETING

On January 27, 1994, the inspector met with VY representatives and discussed the findings of the IST portion of the inspection. The preliminary findings regarding VY service water system self-assessment were discussed by the inspectors on February 11, 1994. Appendix B denotes the personnel that attended these exit meetings. Additional telephone conference calls were held between VY representatives and the NRC staff on February 15, and 16, 1994, to discuss VY's basis for demonstrating the operability for the service water system and to provide VY's decision to include the manual isolation valves of the alternate cooling systems in the IST program for periodic testing. VY representatives acknowledged the findings as discussed in this report.

APPENDIX A

Documents Reviewed

1. Vermont Yankee Technical Specifications
2. AP 0164, Rev. 3, Operations Department Inservice Testing
3. OP 0211, Rev. 0, Predictive Maintenance Program
4. OP 4030, Rev. 21, Type B & C Containment Leak Rate Testing
5. Inservice Testing Program Plan, Rev. 14
6. NRC Safety Evaluation Report, dated May 12, 1992
7. OP 4121, Rev. 33, Residual Heat Removal (RHR) and RHR Service Water System Surveillance
8. OP 4123, Rev. 23, Core Spray (CS) System Surveillance
9. OP 4121, Rev. 30, Reactor Core Isolation Cooling System Surveillance (RCIC)
10. Vermont Yankee Component Testing Program, January 1993.
11. Drawings: G-191174 RCIC
G-181168, G-191174 CS
G-191172 RHR
12. Vermont Yankee letter BVY #93-143 from Mr. R. J. Reid to USNRC, dated December 16, 1993.

ATTACHMENT

LIST OF ATTENDEES

Vermont Yankee Nuclear Power Plant

+ G. Cappuccio	Mechanical Engineer, Construction Manager
+ S. Jefferson	Assistant to the Plant Manager
* H. Michael Metell	Principal Engineer/Response Team Leader
+ R. Pagodin	OPS Superintendent, Vermont Yankee
* A. Parker	SWOPI Team Leader, Yankee Atomic
* J. Pelletier	Vice President, Engineering
+ M. Stello	Mechanical Engineer, Engineering Support Department
+ T. Trask	Senior Mechanical Engineer
+ R. Wanzyk	Plant Manager

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* P. K. Eapen	Chief, System Section
+* H. Eichenholz	Senior Resident Inspector
+ P. Harris	Resident Inspector

State of Vermont

+ W. Sherman	Nuclear Engineer
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*Denotes those present at the exit meeting on February 11, 1994.

+Denotes those present at the exit meeting on January 27, 1994.