

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-271/88-10

Docket No. 50-271

License No. DPR-28

Licensee: Vermont Yankee Nuclear Power Corporation
RD 5, Box 169
Brattleboro, Vermont 05301

Facility: Vermont Yankee Nuclear Power Station

Inspection At: Vernon, Vermont

Inspection Conducted: July 1, 1988 - August 22, 1988

Inspectors: Geoffrey E. Grant, Senior Resident Inspector
John B. Macdonald, Resident Inspector
Joseph E. Carrasco, Reactor Engineer, Materials and Processes
Section (MPS), Engineering Branch (EB), Division of Reactor
Safety (DRS)
Robert A. McBrearty, Reactor Engineer, MPS, EB, DRS

Approved by:

Donald R. Haverkamp
Donald R. Haverkamp, Chief
Reactor Projects Section No. 3C

9/15/88
Date

Inspection Summary: Inspection on July 1, 1988 - August 22, 1988
(Report No. 50-271/88-10)

Areas Inspected: Routine inspection on daytime and backshifts by two resident inspectors of: actions on previous inspection findings; operational safety; security; plant operations; maintenance and surveillance; licensee event reports; licensee response to NRC initiatives; and, periodic reports.

Results:

1. General Conclusions on Adequacy, Strength or Weakness in the Licensee's Program

The licensee response to the reactor trip of July 3, 1988 was a noteworthy strength. The review process was much improved over recent performance in this area. The review and PORC analysis were excellent and provided a number of internal commitments for various corrective actions. However, the event itself highlighted a number of potential weaknesses including: lack of adequate training or understanding of reactor pressure regulator operation and response, and indications that operators failed to utilize all available plant parameter indications in their analysis of the pressure transient portion of the event (Section 6.1).

The licensee identified violation concerning failure to post a required fire watch demonstrated several potential weaknesses including an inability to adequately distinguish the difference between Technical Specification (TS) and non-TS related portions of fire protection system surveillance and a failure to correctly determine the safety significance of a maintenance action associated with the TS-related portion of the system (Section 6.4).

2. Violations

The licensee identified a violation of a TS requirement to post a fire watch when a portion of a fire protection system was inoperable. No Notice of Violation was issued (Section 6.4).

TABLE OF CONTENTS

	<u>PAGE</u>
1. Persons Contacted.	1
2. Summary of Facility Activities	1
3. Status of Previous Findings (IP 92701)	2
3.1 (Closed) Unresolved Item 88-08-07: Licensee to Revise LER 88-05.	2
3.2 (Closed) Unresolved Item 88-08-01: Establish a Fuel Oil Sampling Program in Accordance with ASTM D975-68 and TS	2
3.3 (Closed) Unresolved Item 86-10-12: Standby Liquid Control System (S _L C) TS Submittal. . .	2
3.4 (Closed) Unresolved Item 86-18-02: Degraded Block Walls.	2
3.5 (Closed) Violation 86-17-01: Lack of Procedure for Original 1980 Masonry Wall Survey.	2
3.6 (Closed) Violation 86-17-02: QA Audit of 1980 Masonry Wall Activities Not Documented for Evidence of Completion	3
3.7 (Closed) Deviation 86-17-03: Masonry Wall Design Used Unverified, Non-Conservative Mortar Strength.	3
3.8 (Closed) Unresolved Item 86-17-04: YAEC Evaluation of Wall 22 Using Strain Criteria Required Verification Based on NRC-Approved Stress Criteria.	3
3.9 (Closed) Unresolved Item 86-17-05: Inadequate Data on Extent and Cause of Crack Observed by the NRC in Three Unreinforced Walls and Calculation Revised to Account for Cracks	3
4. Operational Safety (IP 71707, 71710,).	3
4.1 Plant Operations Review	3
4.2 Safety System Review.	4
4.3 Feedwater Leak Detection System	4
4.4 Inoperable Equipment.	5
4.5 Review of Lifted Leads, Jumpers and Mechanical Bypasses.	5
4.6 Review of Switching and Tagging Operations.	5
4.7 Operational Safety Findings	5

Table of Contents (Continued)

	<u>PAGE</u>
5. Security (IP 71707).	5
5.1 Observations of Physical Security	5
5.2 Fitness for Duty Testing.	6
6. Plant Operations (IP 71707, 93702, 82201, 94703)	6
6.1 Reactor Trip: July 3, 1988	6
6.2 Loss of Wind Speed Indication	8
6.3 Steam Leak from "2A" High Pressure Feedwater Heater	8
6.4 Failure to Establish a TS-Required Fire Watch	8
7. Maintenance/Surveillance (IP 71710, 61726, 62703, 61700)	9
8. Licensee Event Reporting (LER) (IP 90712, 92700)	10
8.1 LER 88-06	10
8.2 LER 88-07	10
8.3 LER 88-08	10
9. Review of Licensee Response to NRC Initiatives: (IP 92703)	11
9.1 Generic Letter 84-11.	11
9.2 NRC Bulletin 88-07: Power Oscillations in Boiling Water Reactors.	13
10. Review of Periodic and Special Reports (IP 90713).	13
11. Management Meetings (IP 30703, 40700).	13

* The NRC Inspection Manual inspection procedure (IP) or temporary instruction (TI) or the Region I temporary instruction (R1 TI) that was used as inspection guidance is listed for each applicable report section.

DETAILS

1. Persons Contacted

Interviews and discussions were conducted with members of the licensee staff and management during the report period to obtain information pertinent to the areas inspected. Inspection findings were discussed periodically with the management and supervisory personnel listed below.

- Mr. P. Donnelly, Maintenance Superintendent
- * Mr. R. Grippardi, Quality Assurance Supervisor
- Mr. S. Jefferson, Assistant to Plant Superintendent
- Mr. G. Johnson, Operations Supervisor
- Mr. R. Lopriore, Maintenance Supervisor
- * Mr. R. Pagodin, Technical Services Superintendent
- * Mr. J. Pelletier, Plant Manager
- * Mr. R. Wanczyk, Operations Superintendent
- Mr. T. Watson, I & C Supervisor

*Attendee at post-inspection exit meeting conducted on September 12, 1988.

2. Summary of Facility Activities

Vermont Yankee Nuclear Power Station (VYNPS) was recovering from a two-week maintenance outage at the beginning of this inspection period. The reactor was taken critical on July 2, 1988 and power ascension was commenced. On July 3, with plant power at 58% a reactor shutdown was initiated following the discovery of a through-wall leak in the "3B" low pressure feedwater heater steam extraction inlet piping. During the shutdown a reactor scram occurred from approximately 5% power due to a malfunction in the mechanical hydraulic control (MHC) system which was exacerbated by procedural weakness and personnel error (Section 6.1). The heater repairs were completed and the reactor was taken critical on July 7. On July 14 power was reduced to facilitate the isolation of a leaking sight glass on the "2A" high pressure feedwater heater (Section 6.3). The licensee performed an emergency preparedness (EP) practice drill on August 5 in preparation for the EP exercise later this month.

NRC Region I specialists performed a confirmatory measurements inspection during the period August 7-12, 1988 (Inspection Report 88-12). An emergency preparedness inspection was performed by Region I specialists during the period August 16-19, 1988 (Inspection Report 88-11).

3. Status of Previous Inspection Findings

- 3.1 (Closed) Unresolved Item 88-08-07: Licensee to Revise LER 88-05.
The licensee submitted LER 88-05 to report a potential loss of the standby gas treatment system. Inspector review of the LER noted areas requiring correction or clarification. The licensee subsequently revised LER 88-05. This item is closed.
- 3.2 (Closed) Unresolved Item 88-08-01: Establish a Fuel Oil Sampling Program in Accordance with ASTM D975-68 and Technical Specifications.
The licensee fuel oil sampling program performed per TS 4.10.C.2 did not fully conform to ASTM D975-68 Table 1 requirements. The licensee has modified the sampling program to expand the analyses to include all of the ASTM D975-68 Table 1 criteria. Additionally, in order to increase the quality assurance of the John Deere and fire pump diesels, the licensee has expanded the new analysis program to include these diesels as well. This item is closed.
- 3.3 (Closed) Unresolved Item 86-10-12: Standby Liquid Control System (SLC) TS Submittal. This item remained open pending submittal of a TS amendment to clarify and upgrade SLC squib valve trigger assembly surveillance testing. As noted in IR 50-271/87-02, Proposed Change No. 136 was submitted by the licensee on January 16, 1987 and is under review by NRC:NRR. This item is closed.
- 3.4 (Closed) Unresolved Item 86-18-02: Degraded Block Walls. Several deficiencies were noted in safety related masonry block walls in IR 50-271/86-17 and 86-18. Justifications for continued operations were reviewed and found acceptable in IR 50-271/86-22. Licensee plans to correct block wall deficiencies were reviewed and found acceptable in IR 50-271/87-04. Work to correct the deficiencies was performed during the 1987 refueling outage. The specialist inspection during this report period that reviewed and closed out IR 50-271/86-17 open items related to block wall deficiencies also reviewed the effectiveness of the physical repairs and found no deficiencies. This item is closed.
- 3.5 (Closed) Violation 86-17-01: Lack of Procedure for Original 1980 Masonry Wall Survey. The inspector verified the existence of procedures to ensure the adequate scoping and implementation of bulletin IEB 80-11. In addition, the four turbine building walls that had been omitted were modified to prevent any damage of adjacent safety related equipment during a postulated event. This item is closed.

- 3.6 (Closed) Violation 86-17-02: QA Audit of 1980 Masonry Wall Activities not Documented for Evidence r ompletion. The inspector determined that revised control and implementing procedures provided retrievable documentation of activities associated with the IEB 80-11 program. This item is closed.
- 3.7 (Closed) Deviation 86-17-03: Masonry Wall Design Used Unverified, Non-conservative Mortar Strength. The inspector verified that mortar samples were obtained and independently tested. The samples exhibited the following results: the minimum mortar strength for any mortar sample tested was equal to 2000 pounds per square inch (psi). Since this exceeded the value which was used in the calculation (1800 psi), the mortar used was appropriate and acceptable. This item is closed.
- 3.8 (Closed) Unresolved Item 86-17-04: YAEC Evaluation of Wall 22 Using Strain Criteria Required Verification Based on NRC Approved Stress Criteria. The inspector verified that this wall was re-analyzed using stress criteria consistent with the ACI 531-79 code. The analysis results showed that the subject masonry wall structural integrity was adequate for all loading conditions. This item is closed.
- 3.9 (Closed) Unresolved Item 86-17-05: Inadequate Data on Extent and Cause of Crack Observed by the NRC in Three Unreinforced Walls and Calculation Revised to Account for Cracks. The inspector determined that the calculation was approached conservatively by assuming the worst case (i.e. the effective shear area was taken as the width of only one nominal block flange width). Based on this assumption, the resulting shear stress was below the allowable. The licensee agreed to maintain the structural integrity of this wall and to take the proper corrective and preventive actions required. This item is closed.

4. Operational Safety

4.1 Plant Operations Review

The inspector observed plant operations during regular and backshift tours of the following areas:

Control Room	Cable Vault
Reactor Building	Fence Line (Protected Area)
Diesel Generator Rooms	Intake Structure
Vital Switchgear Room	Turbine Building

Control Room instruments were observed for correlation between channels, proper functioning, and conformance with Technical Specifications. Alarm conditions in effect and alarms received in the control room were reviewed and discussed with the operators. Operator awareness and response to these conditions were reviewed. Operators were found cognizant of board and plant conditions. Control room and shift manning were compared with Technical Specification requirements. Posting and control of radiation, contaminated and high radiation areas were inspected. Use of and compliance with Radiation Work Permits and use of required personnel monitoring devices were checked. Plant housekeeping controls were observed including control of flammable and other hazardous materials. During plant tours, logs and records were reviewed to ensure compliance with station procedures, to determine if entries were correctly made, and to verify correct communication of equipment status. These records included various operating logs, turnover sheets, tagout and jumper logs, and Potential Reportable Occurrence Reports. Inspections of the control room were performed on weekends and backshifts including July 5-8, 18-22, 25, 26, and August 22, 1988. Operators and shift supervisors were alert, attentive and responded appropriately to annunciators and plant conditions.

4.2 Safety System Review

The emergency diesel generators (EDG's), core spray, residual heat removal, residual heat removal service water, and high pressure coolant injection systems were reviewed to verify proper alignment and operational status in the standby mode. The review included verification that: (i) accessible major flow path valves were correctly positioned, (ii) power supplies were energized, (iii) lubrication and component cooling was proper, and (iv) components were operable based on a visual inspection of equipment for leakage and general conditions. No violations or safety concerns were identified.

4.3 Feedwater Leak Detection System Status

The inspector reviewed the feedwater leakage detection system and the monthly performance summary provided by the licensee in accordance with VYNPC letter FVY 82-105. The licensee reported that, based on the leakage monitoring data for July 1988, there were some deviations in excess of 0.10 from the steady state value of normalized thermocouple readings, and no failures in the sixteen thermocouples installed on the four feedwater nozzles. The deviations are related to the plant shutdowns and startups experienced in late June and early July and do not appear to be abnormalities. The inspector had no further questions in this area.

4.4 Inoperable Equipment

Actions taken by plant personnel during periods when equipment was inoperable were reviewed to verify that technical specification limits were met, alternate surveillance testing was completed satisfactorily, and equipment return to service upon completion of repairs was proper. This review was completed for the following items: traversing incore probe drive ball valve, "A" EDG, Service Water radiation monitor, stack air flow monitor, and fire deluge valve (see Section 6.4).

4.5 Review of Lifted Leads, Jumpers and Mechanical Bypasses

Lifted lead and jumper (LL/J) requests and mechanical bypasses were reviewed to verify that controls established by AP 0020 were met, no conflict with the technical specifications were created, the requests were properly approved prior to installation, and a safety evaluation in accordance with 10 CFR 50.59 was prepared if required. Implementation of the requests was reviewed on a sampling basis.

4.6 Review of Switching & Tagging Operations

The switching and tagging log was reviewed and tagging activities were inspected to verify plant equipment was controlled in accordance with the requirements of AP 0140, Vermont Local Control Switching Rules. Implementation of the requests was reviewed on a sampling basis.

4.7 Operational Safety Findings

Licensee administrative control of off-normal system configurations by the use of LL/J, mechanical bypass, and switching and tagging procedures, as reviewed in Sections 4.4, 4.5, and 4.6 was in compliance with procedural instructions and was consistent with plant safety with the exception of a failure to station a fire watch for the inoperable fire deluge valve. Licensee efforts to minimize active lifted leads, jumpers and mechanical bypasses is noteworthy.

5. Security

5.1 Observation of Physical Security

Selected aspects of plant physical security were reviewed during regular and backshift hours to verify that controls were in accordance with the security plan and approved procedures. This review included the following security measures: guard staffing; vital and protected area barrier integrity; maintenance of isolation zones; and, implementation of access controls, including authorization, badging, escorting, and searches. No inadequacies were identified.

5.2 Fitness for Duty Testing

On August 12, 1988, the licensee received information from a local law enforcement agency which implicated two site contractors in the usage of illegal controlled substances. The licensee immediately escorted the individuals offsite, suspended their site access and subjected them to drug testing in accordance with the VYNPC fitness for duty program. The individuals submitted to the testing. On August 15, 1988, test results for both individuals came back positive and their site access was permanently suspended. The two contractors are employed by TTI Engineering and had worked within the maintenance department primarily in support of stores/procurement and work package preparation activities. All projects in which the individuals were involved received several levels of management review. The inspectors had no further questions.

6. Plant Operations

6.1 Reactor Trip: July 3, 1988

The plant experienced an automatic reactor trip on July 3, 1988 due to high flux rate on the intermediate range monitors. The plant was in the process of shutting down to repair a feedwater heater leak and was at less than 1% power at the time of the trip. Just prior to the trip, operators had observed a decrease in reactor pressure from 930 to 872 psig. In response to the pressure decrease, the operators attempted to establish the mechanical pressure regulator (MPR) mode of the mechanical hydraulic control (MHC) system to control reactor pressure. This effort continued for approximately five minutes with little apparent MPR setpoint response. During this period of time reactor pressure had decreased to 850 psig. The operators then attempted to establish reactor pressure control with the bypass valve opening jack (BPOJ). Because the BPOJ regulator was not set for the lowest demanded pressure, the BPOJ could not assume pressure control at the desired pressure. When the BPOJ did assume pressure control, the setpoint manipulations resulted in greater bypass valve opening, a further reduction in reactor pressure, and subsequent reactor pressure and level oscillations. The single operating feedwater pump tripped on a high reactor water level signal resulting from a high water level oscillation. Reactor water level then decreased until a standby feedwater pump started and delivered relatively cold water to the vessel, resulting in a rapid neutron flux and power increase sufficient to cause the IRM high flux scram from less than 1% power. All systems performed as required following the trip.

Several concerns were identified in review of this event. During the period when the operators were attempting to establish pressure control with the MPR (and subsequently the BPOJ), two IRM high flux half scrams were received as a result of reactor pressure induced power oscillations. The inspectors believe that, based on the uncertainty as to the effectiveness of the actions the operators had taken to control pressure as well as the pressure, level and flux oscillations experienced at less than 5% power, a more prudent operator action might have been to manually trip the reactor. Existing plant procedures did not address operator response to a low reactor pressure condition with the reactor mode switch not in "RUN" as was the case in this event. Further, the operators on shift did not realize that the use of any MHC pressure regulating mode during the decreasing pressure trend would have further reduced reactor pressure. It also appeared that the operators did not utilize all of the plant operating parameter indicators available when interpreting the impact of their actions with regard to pressure control.

The PORC reviews of the event and post trip report were thorough and comprehensive. The committee discussions of the event and causal analysis were perceptive and probing. Significant licensee internal actions and commitments resulting from the PORC review included:

- I&C replacement of the IRM recorders with more reliable units less prone to recorder pen hang ups.
- Operations assurance that operators were made aware of the above recorder problems.
- Operations assurance that operators utilize all plant parameter indicators available when diagnosing transient conditions.
- Operations implementation of appropriate procedure revisions to address this event.
- Operations to attempt to reproduce this event on the site specific simulator.
- Training to determine the fidelity of the site specific simulator with respect to this event and MHC pressure control in general.

The content and completeness of the post trip report improved markedly from recent similar reports. The increased quality of the report enabled PORC members to perform an exhaustive review of the event and to propose comprehensive actions to improve operator and equipment performance and response with respect to the transient experienced in this event. Inspectors previously documented concerns about deficiencies in post trip reports. The unresolved item (50-271/88-08-03) which addressed this issue remains open pending completion of licensee corrective actions. The inspectors had no further questions.

6.2 Loss of Wind Speed Indication

On July 21, 1988, at 3:00 a.m., the shift supervisor determined that an emergency assessment capability had been compromised when a loss of all wind speed indication was discovered. All appropriate notifications were made at that time. The primary meteorological (MET) tower parameter printer was out of service since a lightning strike on July 16. Local indication of primary MET tower wind speed was discovered out of service on July 21. The back-up wind speed indicator was judged inoperable by the shift supervisor because it had an outstanding maintenance/inoperable equipment sticker on it. Subsequent I&C investigation revealed that the back-up wind speed indicator was previously repaired and the sticker was not yet authorized for removal. The back-up wind speed indicator was declared operable at 5:00 a.m. on July 21, 1988.

The shift supervisor properly reported this event based on the information available to him. Failure of I&C to remove the maintenance/inoperable equipment sticker was an isolated instance of personnel inattentiveness. It was not indicative of a programmatic deficiency. The inspectors had no further questions.

6.3 Steam Leak from "2A" High Pressure Feedwater Heater

On July 15, 1988, the licensee performed a power reduction in order to isolate a steam leak that had been discovered on the "2A" high pressure feedwater heater sight glass. Once the heater was isolated operators entered the heater bay area and closed the sight glass isolation valves. The sight glass will probably not be repaired until the 1989 refueling outage. Local heater level indication will be lost during this period. The inspectors had no further questions.

6.4 Failure to Establish a TS-Required Fire Watch

The VYNPS Technical Specification (TS) 3.13.F.2 requires that from and after the date that one of the sprinkler systems specified in Table 3.13.F.1 is inoperable, a fire watch shall be established within one hour to inspect the location with the inoperable sprinkler system at least once every hour.

Contrary to the above, from July 28 to August 2, 1988, the licensee failed to establish a one-hour fire watch of the area served by the cable penetration area sprinkler system after the system failed surveillance testing on July 28. On August 2, a management review of the surveillance identified this situation and a one-hour fire watch was immediately established.

During routine surveillance testing of the cable penetration area sprinkler system, deluge valve DV-301 failed to open and the system was therefore rendered inoperable. A maintenance request (MR) was issued to initiate repairs to the valve. However, the shift supervisor review of the MR failed to identify the system as being inoperable and thus did not establish a fire watch.

The immediate root cause of this event was personnel error, in that the initial shift supervisor and Operations Supervisor review of the MR failed to identify the cable penetration area sprinkler system as inoperable. The inspectors addressed an additional concern to the licensee that the fire protection system surveillance procedure controls testing of TS- and non-TS related portions of the system without distinction. Although not a contributor to this event, procedures written in this style increase the probability of TS requirements not being properly implemented following a failed surveillance.

The licensee reviewed this event with each operating shift. Emphasis was placed on proper equipment operability determinations. Because the failure to establish a TS-required fire watch was identified by the licensee, was of a low severity level, had prompt corrective actions, was reported in LER 88-10, and was not related to corrective actions for a previous violation, no notice of violation will be issued in this instance. However, long term review of licensee actions to ensure proper operability determinations are made and review of clarifications to the surveillance procedure remains an open issue (50-271/88-10-01).

7. Maintenance/Surveillance

On July 11, 1988, the #3 traversing incore probe (TIP) drive machine ball valve failed to close following withdrawal of the probe. The ball valve failure occurred during the reactor startup from a two-week mini outage. Because the TIP machines must be readily available to perform traces as required by reactor engineering procedure and the probes must be in the shields for 24 hours prior to entry into the TIP room, the valve was not replaced until the reactor attained a steady power level. On July 14, 1988, I&C personnel removed the 3/8 inch ball valve and its actuator, and leak rate tested and installed a replacement valve under the direction of MR 88-1649. The maintenance effort was well supervised and coordinated. The engineering support department (ESD) provided technical guidance to the I&C department for testing and installation requirements for the valve and actuator. This was a routine example of typical support provided to the maintenance department by ESD.

The inspectors had no further questions.

8. Licensee Event Reporting (LER)

The inspector reviewed the below licensee event reports (LER's) to determine that with respect to the general aspects of the event: (1) the report was submitted in a timely manner; (2) description of the event was accurate; (3) root cause analysis was performed; (4) safety implications were considered; and (5) corrective actions implemented or planned were sufficient to preclude recurrence of a similar event.

8.1 LER 88-06

The LER 88-06, "Source Inventory and Leak Test" addressed a licensee identified failure to adequately document a sealed source survey in accordance with TS 6.5.F. The details of the missed survey were previously reviewed as documented in IR 50-271/88-06, Section 9.1. The LER fulfilled the above criteria with the exception of timeliness. The licensee had originally intended on making a special report to the NRC to describe this licensee identified violation. On that basis, a notice of violation was not issued and item 88-06-02 was considered closed. The licensee subsequently determined that a special report was not appropriate but a voluntary LER would be submitted. This determination took an excessive amount of time and resulted in an LER submittal four months after the event date. Expedited submittal of the LER occurred after inspector inquiry of the status.

8.2 LER 88-07

The LER 88-07, "Main Turbine Trip and Reactor Scram from Feedwater Flow Controller Malfunction" addressed a plant trip from a high reactor water level caused by a component failure in the feedwater flow controller. The details of the scram were previously reviewed as documented in IR 50-271/88-08, Section 6.1. The LER fulfilled the above criteria and no deficiencies were noted. Additionally, the LER was a good example of detailed and thorough event analysis and reporting.

8.3 LER 88-08

The LER 88-08, "Unanticipated Scram Due to Malfunction of Turbine Vibration Probe" addressed a plant trip due to an end-of-life failure of the #10 main turbine bearing vibration monitoring probe. The LER fulfilled the above criteria and no deficiencies were noted. Licensee event description, analysis, and corrective actions detailed in the LER were comprehensive.

9. Review of Licensee Response to NRC Initiatives

9.1 Generic Letter 84-11

Inspections conducted at several boiling water reactors (BWR's) revealed intergranular stress corrosion cracking (IGSCC) in large - diameter recirculation and residual heat removal piping. Based on the results of those inspections which were conducted pursuant to IE Bulletins 82-03, Revision 1 and 83-02, and the NRC August 26, 1983 Orders, the Commission concluded that an ongoing program for similar reinspections at all BWRs was needed. Generic Letter (GL) 84-11 was issued on April 19, 1984 to provide licensees with NRC recommended actions to accomplish the aforementioned reinspections. The GL listed the following actions as an acceptable response to the IGSCC concerns:

- Inspections should include 20% of the welds in each pipe size of IGSCC sensitive welds not inspected previously (but no less than four welds) and reinspection of 20% of the welds in each pipe size inspected previously (but not less than two welds) and found not to be cracked. This sample should be selected primarily from weld locations shown by experience to have the highest propensity for cracking.
- Inspection of all unrepaired cracked welds.
- Inspection of all weld overlays on welds where circumferential cracks longer than 10% of circumference were measured.
- Inspection of any weld treated by induction heating stress improvement which had not been post treatment UT acceptance tested.
- In the event that cracks or significant growth of old cracks are identified, expand the inspection scope in accordance with IEB 83-02.
- All Level II and Level III UT examiners should demonstrate competence in accordance with IEB 83-02, and Level I examiners should demonstrate field performance capability.
- Leak detection and leakage limits should be sufficiently restrictive to ensure timely investigation of unidentified leakage.

The inspector reviewed licensee actions in response to IE Bulletin 83-02 and Generic Letter 84-11 to ascertain that regulatory requirements regarding IGSCC concerns were met.

Bulletin 83-02 required that licensees of BWR facilities identified in Table 1 of the Bulletin perform a demonstration of the effectiveness of the ultrasonic testing (UT) methodology used to examine welds in recirculation system piping. The demonstrations were to be performed at the EPRI NDE Center at Charlotte, North Carolina on service induced cracked pipe samples made available for this purpose.

In response to the above mentioned requirement, on March 10-11, 1983, the licensee sent a five member team of Magnaflux Quality Services personnel, its inservice inspection ISI vendor, to the EPRI NDE center to perform the required demonstration. The team included one Level III examiner, three Level II examiners and one Level I trainee. Scanning and data recording were performed by the Level II examiners aided by the Level I trainee, and the Level III team member was responsible for data evaluation and classification of the findings into two categories, "crack" or "no crack."

The team performance was found to be acceptable in that eighty percent of the total number of cracks were detected within the six hour time limit and the number of false calls was within the pre-established limit.

The licensee's letter dated June 5, 1984 to the NRC compared the licensee's Generic Letter 84-11 reinspection program to the staff's recommendations listed in GL 84-11 and provided additional information requested by the NRC. The licensee's reinspection program was found, with two exceptions, to meet the Generic Letter. The licensee's June 5, 1984 letter identified the exceptions to the GL taken by the licensee which involved the number of weld overlays to be inspected on welds of identical joint geometry in the same system, and the definition of "effective overlay thickness." The NRC Inspection Report No. 271/84-13 identified the exceptions as an unresolved item. The item was closed in NRC Inspection Report No. 271/85-32 based on licensee actions in 1985 regarding the replacement of recirculation and residual heat removal piping which eliminated the basis for the unresolved item.

Prior to the replacement of the recirculation and residual heat removal system piping, the licensee initiated the use of moisture sensitive tape as a leak detection method for the early detection of leaking pipe joints. Since the completion of the replacement program the tape is no longer used. The licensee is bound by its Technical Specification 3.6.C requirements regarding leak rate limits and leak detection methods.

The inspector determined that IGSCC inspections at Vermont Yankee have met the requirements contained in IE Bulletin 83-02, and Generic Letter 84-11.

No violations were identified.

9.2 NRC Bulletin 88-07: Power Oscillations in Boiling Water Reactors

The inspectors reviewed the initial licensee actions in response to NRC Bulletin 88-07, which documented the LaSalle dual recirculation pump trip and power oscillation event. Operations management placed Bulletin 88-07, previously issued NRC Information Notice 88-39, and INPO SER 14-86 in the control room night orders book for all licensed individuals to read. During shift turnovers, an assistant to the operations supervisor held discussions and addressed questions relating to the event.

The VYNPS TS requires that in the event of a dual recirculation pump trip, power be immediately reduced to below TS limits and the plant be in hot shutdown within the next twelve hours. These requirements are implemented in plant procedure OT-3118, "Recirculation Pump Trip - Procedure."

Inspector discussions with several operators determined that they were familiar with the LaSalle event and also that, if a similar event were to have occurred at VYNPS, the operators would have properly executed the above requirements and avoided the power oscillations experienced at LaSalle. The inspector had no further questions regarding immediate licensee actions in response to this bulletin.

10. Review of Periodic and Special Reports

Upon receipt, the inspector reviewed periodic and special reports submitted pursuant to Technical Specifications. This review verified, as applicable: (1) that the reported information was valid and included the NRC-required data; (2) that test results and supporting information were consistent with design predictions and performance specification; and (3) that planned corrective actions were adequate for resolution of the problem. The inspector also ascertained whether any reported information should be classified as an abnormal occurrence. The following report was reviewed:

-- Monthly Statistical Report for plant operations for the month of July 1988.

No violations or safety concerns were identified.

11. Management Meetings

At periodic intervals during this inspection, meetings were held with senior plant management to discuss the findings. A summary of findings for the report period was also discussed at the conclusion of the inspection and prior to report issuance. No proprietary information was identified as being included in the report.