

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

TERA 50-271
820928

Report No. 82-18
Docket No. 50-271
License No. DPR-28 Priority -- Category C

Licensee: Vermont Yankee Nuclear Power Corporation
1671 Worcester Road
Framingham, Massachusetts 01701

Facility Name: Vermont Yankee Nuclear Power Station

Inspection at: Vernon, Vermont

Inspection Conducted: -August 31-October 4, 1982

Inspectors: William J. Raymond
W. J. Raymond, Senior Resident Inspector

10/15/82

Approved by: Robert M. Gallo
R. M. Gallo, Chief, Reactor Projects
Section 1A, Projects Branch #1

10/20/82

Inspection Summary:

Inspection On August 31-October 4, 1982 (Report No. 50-271/82-18)

Areas Inspected: Routine, announced inspection on day time and backshift by the resident inspector of: previous inspection findings; plant operations, including plant status and operational activities; operational surveillance; maintenance activities; safeguard system operability; licensee organization changes; followup of Information Notices 82-40; followup of LER 82-20; containment purge and vent valve operability; license Amendment No. 72; Emergency Plan and procedure revisions; control room human factors design review; scram discharge volume support modifications; and, plant physical security. The onsite inspection involved 103 hours by the resident inspector.

Results: No violations were identified by the inspector in the areas reviewed.

1. Persons Contacted

The below listed technical and supervisory level personnel were among those contacted:

Vermont Yankee Nuclear Power Corporation

Mr. R. Branch, Operations Supervisor
Mr. B. Buteau, Reactor Engineering and Computer Supervisor
Mr. R. Kenny, Engineer, Assessment Coordinator
Mr. D. Girrior, Mechanical Engineer
Mr. W. Murphy, Vice President and Manager of Operations
Mr. R. Pagodin, Engineering Support Supervisor
*Mr. J. Pelletier, Plant Manager
Mr. W. Penniman, Security Supervisor

Yankee Atomic Electric Company

Mr. J. Haseltine, Manager, Plant Engineering
Mr. H. Shaffer, Engineer

*denotes those present at management meetings held periodically during the inspection

2. Status of Previous Inspection Findings

- a. (Closed) Followup Item (50-271/81-02-04): Review Corrective Actions for LERs 80-20 and 80-17. Plant Design Change Request (PDCR) 82-02 is scheduled for implementation during the next refueling shutdown and will result in the replacement of existing Aktomatic 15800 series valves in the primary containment sample system with Target Rock valves not susceptible to the failure mechanism. Aktomatic valves in the primary containment atmosphere control system will be disassembled, inspected and cleaned each operating cycle. NRC Region I Inspection Report 50-271/82-16 (paragraph 10.c.) documents further NRC staff review of this area. This item is closed.
- b. (Closed) Unresolved Item (50-271/81-11-01): Air Sample Pump Evaluation. Results from a licensee evaluation of sample pump performance were documented in a File 14.3 memorandum dated August 13, 1982. New pumps were purchased and field tested. After approximately 15 months of continuous field use, no failures occurred, which was a significant improvement over the deteriorating performance of the previous manufacturer's model. Based on the above results, the licensee plans to install the new Gast Model V112AA pumps at all sample stations as replacements to the present pump become necessary. This item is closed.
- c. (Closed) Unresolved Item (50-271/81-15-02): RHR/CS System Procedure Discrepancies. Procedural discrepancies listed in Inspection Report 81-15 have been corrected. Licensee actions on this item were noted by review of Drawing G191172, Revision 20 and G191159, Revision 13, and

procedure OP 2124, Revision 15. Valve identification tags were installed per Maintenance Work Request 81-1046, completed on October 31, 1981. This item is closed.

- d. (Open) Followup Item (50-271/81-05-07): Shift Manning Per NUREG 0737 Item I.A.1.3.2. Vermont Yankee letter FVY 82-104 dated September 14, 1982 provided additional information to the NRC staff on this item. VY committed to meet the NUREG 0737 staffing requirements based on the ability to license at least seven of nine candidates in the Hot license program which ended in March, 1982. The results of the licensing applications were received in July, 1982 and since only four candidates received Reactor Operator Licenses, VY was not able to implement its commitment.

Based on current reactor operator and senior reactor operator license programs, the licensee expects that full implementation of the staffing requirements could be achieved by August, 1983. During the interim, measures would be taken to meet the intent of the NUREG requirement with the available licensed staff, including the use of four licensed operators on shift for all preplanned power maneuvers greater than 20%. This item remains open pending further NRC staff review of the licensee's proposed interim staffing measures and schedule to meet the full staffing requirement.

- e. (Closed) Unresolved Item (50-271/81-15-06): Followup LER 81-17 and 81-21 Actions. This item concerned the failure of radwaste system valves due to dirt in the solenoid operator. Licensee action on these and other problem valves was tracked by the Plant Operations Review Committee (PORC) follow item 80-32-01. The solenoid operators for valves LRW 94 and 95 were replaced during the 1981 refueling outage and no subsequent failures of these valves have occurred. PORC follow item 80-32-01 was closed in PORC meeting 82-11 on March 10, 1982. This item is closed.
- f. (Closed) Unresolved Item (50-271/81-15-08): Procedure Revision for RPT Trip Setpoint (LER 81-06). Revision 1 to OP 4342 dated June 17, 1982, corrected the acceptance criteria for the 1150 psig recirculation pump trip setpoint. The basis for the change was reviewed with a cognizant licensee engineer and found acceptable. This item is closed.
- g. (Closed) Unresolved Item (50-271/82-03-01): Clarify Standby Liquid Control LCO. The licensee issued Technical Specification Interpretation No. 29 on May 28, 1982, which formalized the previous guidance given on Technical Specification 3.4. Additionally, Proposed Technical Specification Change No. 102 was submitted to the NRC staff in letter FVY 82-85 on July 22, 1982. This item is closed.

- h. (Closed) Followup Item (50-271/82-07-02): Update Forms for HPCI Injection Cycles. Procedure OP 0145 was revised on July 1, 1982, to include all pre-1975 high pressure coolant injection (HPCI) system cycles on form VYOPF 0145.01. The total number of HPCI injections that have occurred as of April, 1982 is 10, which is less than the established limit of 200. This item is closed.

3. Shift Logs and Operating Records

- a. Shift logs and operating records were reviewed to verify that:
- Operating logs and surveillance sheets were properly completed and that selected Technical Specification limits were met.
 - Control Room log entries involving abnormal conditions provided sufficient detail to communicate equipment status, lockout status, correction and restoration.
 - Log Book reviews were conducted by the staff.
 - Operating and Special Orders did not conflict with Technical Specifications requirements.
 - Jumper (Bypass) log did not contain bypassing discrepancies with Technical Specification requirements and that jumpers were properly approved prior to installation.
- b. The following plant logs and operating records were reviewed periodically during the period of August 31-October 4, 1982:
- Shift Supervisor's Log
 - Night Order Book Entries
 - CR Information Log
 - Jumper/Lifted Lead Log
 - Safety Related Maintenance Requests
 - Control Room Operator Round Sheet
 - Auxiliary Operator Rounds Sheet
 - Communications Log
 - Switching Order Log
 - Shift Turnover Checklist
 - Surveillance Log
 - Discharge Records
 - Radiochemistry Analysis Log
 - Equipment Status Log
 - RE Log Typer-Core Performance Log

No violations were identified.

4. Plant Tours

Plant tours were conducted routinely during the inspection period to observe activities in progress and verify compliance with regulatory and administrative requirements. Tours of accessible plant areas included the Control Room Building, Reactor Building, Diesel Rooms, Intake Structure, Radwaste Building, Control Point Areas and the grounds within the Protected Area. Inspection reviews and findings completed during the tours were as described below.

a. Control Room Panel Reviews

The operational status of standby emergency systems and equipment/systems aligned to support routine plant operation was confirmed by direct review of control room panels. The following items were reviewed to verify adherence to Technical Specification Limiting Conditions for Operation (LCOs) and approved procedures.

- Switch and valve positions required to satisfy LCO's, where applicable and personnel knowledge of recent changes to procedures, facility configuration and existing plant conditions.
- Alarms or absence of alarms. Acknowledged alarms were reviewed with on shift licensed personnel as to cause and corrective actions being taken, where applicable.
- Meter indications, recorder values, status lights, power available lights and front panel bypasses.
- Computer printouts and comparison of redundant readings.

No violations were identified.

b. Radiological Controls

Radiation controls established by the licensee, including: posting of radiation areas, radiological surveys, condition of step-off-pads, and disposal of protective clothing were observed for conformance with the requirements of 10 CFR 20 and AP 0503, Establishing and Posting Controlled Areas. Confirmatory surveys were performed in areas toured to verify established posting of radiological conditions was proper. Radiation work permits (RWPs) were reviewed to verify conformance with procedure AP 0502, Radiation Work Permits. The following RWPs were reviewed: 82-329, 82-336, 82-343, 82-337, 82-375 and 82-384. Licensee portable survey instruments were checked and found operable and calibrated.

No violations were identified.

c. Plant Housekeeping and Fire Prevention

Work activities in progress and plant housekeeping conditions, including general cleanliness and storage of materials to prevent fire hazards, were observed in all areas toured for conformance with AP 0042, Plant Fire Prevention, and AP 6024, Plant Housekeeping.

On September 9, 1982, work involving open flame in the Reactor Building Southeast Corner Room was in progress when the job foreman noted that Fire Control Permit 82-175, issued on September 8, 1982, had expired. Thus, although a fire watch was in effect required, the Operations Shift Supervisor was not notified of the start of hot work on September 9, 1982. The job foreman halted work in progress until a valid permit was re-issued. Workmen involved with the job were reinstructed on AP 0042 requirements regarding the daily issuance of fire permits. The conduct of hot work without a current fire control permit is considered a violation of AP 0042 and Technical Specification 6.5.A requirements, identified and corrected by the licensee. The inspector had no further questions on this item.

Controls established to support work near the Southeast corner of the Reactor Building 252 foot elevation on September 13, 1982, were found to be in accordance with the requirements of Fire Control Permit 82-176 and AP 0042.

d. Fluid Leaks and Piping Vibrations

Systems and equipment in all areas toured were observed for the existence of fluid leaks and abnormal piping vibrations. Pipe hangers and restraints installed on various piping systems were observed for proper installation and condition.

During an inspection tour of the Reactor Building Northeast Corner room on October 4, 1982, the inspector noted a small (1 drop per minute) packing leak on manual valve RHR-9 (heat exchanger shell side drain). This information was reported to the shift supervisor, who issued MR 82-1190 to effect repairs. The inspector had no further comment on this item.

No violations were identified.

e. Control Room Manning/Shift Turnover

Control Room staffing was reviewed for conformance with the requirements of the Technical Specifications, AP 0152, Shift Turnover and AP 0036, Shift Staffing. Several shift turnovers were observed and all were noted to be thorough and orderly.

No violations were identified.

f. Equipment Tagout and Controls

Tagging and controls of equipment released from service were reviewed during the inspection tours to verify equipment was controlled in accordance with AP 0140, VY Local Control Switching Rules. Controls implemented per Switching Orders 82-334, 82-479 and 82-492 were reviewed.

No violations were identified.

g. Analyses of Process Liquids and Gases

Analyses results from samples of process liquids and gases were reviewed periodically during the inspection to verify conformance with regulatory requirements. The results of isotopic analyses of radwaste, reactor coolant, off-gas and stack samples recorded in shift logs and the Plant Daily Status Report were reviewed to verify that Technical Specification limits were not exceeded and that no adverse trends were apparent. Boron analysis results reported for the Standby Liquid Control System on September 15, 1982, were reviewed.

No violations were identified.

h. Jumpers and Lifted Leads (J/LL)

Implementation of J/LL Request No. 82-63 was reviewed to verify that controls established by AP 0020 were met, no conflicts with the Technical Specifications were created and jumper removal was in accordance with the request.

No violations were identified.

i. Conformance with Technical Specification LCOs

The operational status of plant systems and equipment was reviewed to verify compliance with selected Technical Specification LCOs. Conditions established to meet Technical Specification 2.1.B.1 and Table 3.1.1 were verified through direct observation and/or surveillance record review.

No violations were identified.

j. Radwaste System Operations

Implementation of Radwaste System controls was reviewed to verify waste processing activities were conducted in accordance with approved procedures OP 2610 and OP 2160. The review also verified that required instrumentation was operable during transfers and samples were taken and analyzed.

Process controls established to transfer water on September 6, 1982, and September 29, 1982, were reviewed and found to be in accordance with the requirements of OP 2151.

The inspector accompanied a licensee technician on September 14, 1982, for the weekly maintenance and inspection of the Environmental Sample Stations per OP 4510. No inadequacies were identified.

k. Containment Isolation

System valve lineups established to maintain containment integrity and isolation capability were reviewed on a sampling basis during inspection tours to verify conformance with the configuration specified by OP 2115. The review confirmed that manual valves were shut, capped and locked as required by procedure; power was available to motor operated valves and no physical obstructions would block operation; and, no leakage was evident from valves, penetrations and flanges.

No violations were identified.

5. Surveillance Testing

The inspector observed or reviewed portions of the following surveillance tests to verify that: testing was performed in accordance with approved procedures by qualified personnel; test instrumentation was calibrated; test data demonstrated conformance with Technical Specification requirements; Technical Specification LCOs were met while testing was in progress and system restoration to service was proper; and, activities were in compliance with AP 4000, Surveillance Testing Control.

- OP 4385, Liquid Process Radiation Monitor System, October 4, 1982
- OP 4120, High Pressure Coolant Injection System, September 14, 1982
- OP 4302, Average Power Range Monitor System, October 4, 1982
- OP 2430, High Density Fuel Rack Boraf Test, September 20, 1982
- OP 4210, Station Battery Checks, October 4, 1982
- OP 4315, Main Steam Line Radiation Monitor Scram-Isolation Functional, October 4, 1982
- OP 4379, Drywell Torus Differential Pressure Functional, October 4, 1982

No inadequacies were identified. Except as noted below, the inspector had no further comments in this area.

The inspector reviewed activities in progress per OP 2430 on September 20, 1982, to verify proper boron loading in three new spent fuel racks. The racks will be installed in the spent fuel pool later this year as part of the phased expansion of the spent fuel pool storage capacity to the current licensed limit of 2000 (reference - Technical Specification 5.5.D). The addition of the three racks, consisting of 2 10X10 arrays and one 8X10 array, will bring the total number of storage cells in the pool to 1690. There are presently 990 spent fuel bundles stored in the pool.

Testing was conducted using a parafin-wrapped, Americium Beryllium source surrounded by 4 BF₃ fission chambers. Neutron attenuation by the boron loaded in the fuel cells was measured and recorded as the detector/source was traversed along the length of the cell. Testing completed using this technique confirmed that boron was uniformly loaded in the appropriate cell. The inspector reviewed the strip chart recordings for all cells tested in the three racks. No discrepancies were noted.

NRC staff review of rack installation in the spent fuel pool will be conducted on future routine inspections.

No violations were identified.

6. Maintenance Activities

The maintenance request log was reviewed to determine the scope and nature of work done on safety related equipment. The review confirmed: the repair of safety related equipment received priority attention; no backlog of required repairs developed on safety related systems; and, the performance of safety related systems was not impaired.

Maintenance activity associated with the following was observed/reviewed by the inspector to verify (where applicable) procedure compliance; radiological controls; personnel qualifications; and, equipment return to service, including operability testing.

- MR 82-679, RHRSW Valve 89B Seat Leakage, September 8, 1982
- MR 82-871, RHRSW Valve 191B Inspection, September 9, 1982
- MR 82-1116, RCIC EGM Change-out, September 14, 1982

No violations were identified. The inspector had no further comment on these items, except as noted below.

a. MR 82-679: RHRSW Valve 89B Seat Leakage

MR 82-679 was issued to inspect and repair the internals of V72-89B after plant operators noted abnormal flow characteristics and vibrations during system operation. V72-89B is the motor operated flow control valve for the B Residual Heat Removal Heat Exchanger. Upon opening the valve, plant workers found that the seat ring had become detached from the valve body and was travelling with the disc. Since welding would be required to repair the valve, work was stopped under MR 82-679 and continued under AP 6021, Procedure for Unanticipated Nonroutine Corrective Maintenance. The valve seat ring was re-attached using a full circumference weld in place of the tac welds used in the previous installation.

The inspector had no further comment on this item.

7. Safeguard System Operability

Reviews of the Residual Heat Removal, High Pressure Coolant Injection, Residual Heat Removal Service Water, Standby Liquid Control and Containment Air Dilution systems verified that the systems were properly aligned and fully operational in the standby mode. Review of the above systems included the following:

- visual observation of the valve or remote position indication to verify that each accessible valve was correctly positioned.
- verification that accessible power supplies and breakers were properly aligned for active components.
- visual inspection of major components for leakage, proper lubrication, cooling water supply, and general condition.

No violations were identified.

8. Organization and Administration

Organization and personnel changes were recently announced by the licensee that affected the staff positions listed below. The changes were reviewed to verify that the organization structure and reporting lines remained as specified in Section 6 of the Technical Specifications. Personnel qualifications were also reviewed for conformance with Technical Specification, ANSI N18.1-1971 and Regulatory Guide 1.8, Revision 1 requirements. The changes reviewed included the following:

- + creation of the new position: Assistant to the President

- + Manager of Operations (MOO) became Vice President and MOO
- + personnel changes in the positions of Plant Manager, Assistant Plant Manager, Operations Superintendent, Technical Services Superintendent, Chemistry and Health Physics Supervisor and Plant Health Physicist.

The above licensee changes were effective on or before August 17, 1982. None of the changes involved a change in organizational structure or reporting lines that would require prior approval by the NRC staff. A revision to the Technical Specifications organization chart was proposed by the licensee in Proposed Technical Specification Change No. 104 dated September 28, 1982. Except as noted below, no inadequacies were identified regarding personnel qualifications and the inspector had no further comment in this area.

NRC staff review of the plant Health Physicist qualifications determined that the individual lacked approximately two years of professional experience to be deemed fully qualified in accordance with the requirements of Regulatory Guide 1.8. This matter was discussed with the licensee in a meeting on August 24, 1982. An additional change included in Proposed Technical Specification Change No. 104 ensured that the qualification requirements of Regulatory Guide 1.8 for the Radiation Protection Manager would be maintained in the positions of either the Plant Health Physicist or the Chemistry and Health Physics Supervisor. The licensee reviewed plant procedures and concluded that no procedure changes would be required as a result of the proposed change to Technical Specification 6.1.D.5. The inspector concurred that no other Technical Specification or procedure changes would be required, based on a sampling review of plant procedures.

The inspector had no further comment on this area.

9. Followup on Information Notice 82-40

Information Notice (IN) 82-40, issued on September 22, 1982, concerned the potential for deficiencies in primary containment electrical penetration assemblies manufactured by the Bunker Ramo Corporation. This matter was reviewed for applicability to Vermont Yankee by comparison of the information provided in IN 82-40 with the specifications contained in YAEC-1228, Environmental Qualification of Safety Related Electrical Equipment, Revision 1, September 4, 1981. All electrical penetration assemblies used for safety related service at Vermont Yankee are General Electric Model NS02, NS03 or NS04. Thus, the concerns addressed by IN 82-40 do not apply to VY. The inspector had no further comment on this item.

10. Licensee Event Report (LER) Review

The licensee event report listed below was reviewed in the NRC Resident/Regional Office. The report was reviewed to determine whether: the

information provided was clear in the description of the event and identification of safety significance; the event cause was identified and corrective actions taken (or planned) were appropriate; and, the report satisfied the requirements of Technical Specification 6.7.

- + LER 82-20/3L, RHR Valve 89B Inoperable due to Loss of Position Indication and Valve Seat Degradation, September 2, 1982

Inspector review of the repairs associated with valve RHR 89B is documented in paragraph 6 of this report. No inadequacies were identified.

11. Containment Purge and Vent Valve Operation

The inspector reviewed the administrative controls applied to the use of containment purge and vent valves on lines three inches in diameter or larger. The review was conducted based on a request for information from NRC Region I.

Restrictions on the use of containment purge and vent valves are provided by Manager of Operations (MOO) Directive 79-4, Revision 1 dated June 8, 1982. The conditions under which the purge and vent valves can be used per MOO Directive 79-4 are as described in letter FVY 82-32 dated March 26, 1982 and include: (i) unlimited use of six inch and three inch valves to maintain drywell-torus differential pressure per Technical Specification 3.7.; (ii) limited use of purge and vent valves up to 18 inches in diameter for inerting/deinerting the containment prior to plant startup/shutdown; and, (iii) unlimited use of purge and vent valves as necessary to satisfy Technical Specification surveillance requirements. The restrictions on valve use include limiting the position of valves V16-19-7A and SB-7 to 50 degrees open. The NRC staff accepted, on an interim basis, the manner of operation proposed by the licensee (documented in a letter dated May 3, 1982), contingent upon resolution of a concern regarding the orientation of valve SB 16-19-9. Work completed under MR 82-716 dated June 8, 1982, to reorient valve 16-19-8 by 27½ degrees and valve 16-19-9 by 72½ degrees, per vendor specifications, resolved the NRC staff's concern.

The inspector reviewed the use of purge and vent valves during the period of plant operations from January 1, 1981 to December 31, 1981, to determine: (i) the number of hours vent valves were open; and (ii) whether use of purge and vent valves was for safety related purposes. The inspector noted that no log of vent valve operation times is maintained by the licensee, nor is one required due to the manner of operation allowed by MOO Directive 79-4. The information provided below was determined from interviews with licensee personnel and reviews of the Shift Supervisor's Log. For the period under

consideration, the number of hours purge and vent valves were OPEN with the plant operating above 212°F were as follows:

<u>Valve I. D.</u>	<u>Size</u>	<u>Hours Open</u>
SB 16-19-6A	3 inch	7590
SB 16-19-6B	3 inch	7590
SB 16-19-6	8 inch	7554
SB 16-19-8	18 inch	12
SB 16-19-9	18 inch	12
SB 16-19-7	18 inch	12
SB 16-19-7A	18 inch	12

All purge and vent valves were opened to either: (i) improve the containment atmosphere in preparation for personnel entry; (ii) conduct surveillance testing; and/or (iii) maintain drywell-torus differential pressure.

No violations were identified.

12. Minimum Critical Power Ratio (MCPR) Operating Limits

The licensee submitted analysis results and proposed Technical Specification changes to support operation for the remainder of Cycle 9. New values for Operating Limits related to minimum critical power ratio (MCPR) were provided for NRC staff review. The MCPR operating limit limiting value was 1.26. The NRC staff reviewed and accepted the analytical results, and approved plant operation through the end of Cycle 9. License Amendment No. 72 was issued on September 16, 1982, prior to exceeding 5600 MWD/ST cycle burnup.

No violations were identified.

13. Confirmatory Action Letter (CAL) 82-13 Followup

Vermont Yankee responded to CAL 82-13 in letter FVY 82-82 dated July 16, 1982 and committed to revising the Emergency Plan and Implementing Procedures by September 30, 1982. Revision 4 to the Emergency Plan was issued on September 30, 1982 to meet this commitment. The following procedures were also issued on September 30, 1982, as Change No. 16: OP 3125, Revision 4; OP 3513, Revision 10; OP 3530, Revision 3; and, OP 3511, Original.

Detailed NRC staff review of the revised Emergency Plan and Implementing procedures will be the subject of future NRC inspections.

No violations were identified.

14. Human Factors Review

The inspector participated in an evaluation of the control room design and the Nuclear Safety Engineer (NSE) program conducted by the NRC Division of Human Factors on September 22-23, 1982. The evaluation was part of the NRC's continuing assessment of the April 23, 1982, loss of feedwater (LOFW) transient and was conducted to: (i) determine how the control room design, from a human factors point-of-view, affected the sequence and outcome of the LOFW transient; and, (ii) review the NSE program and integration of the function with operations.

The results of the evaluation will be documented in a future NRC report.

15. Scram Discharge Volume Seismic Upgrade

The design, installation and operation of BWR systems has been the subject of recent NRC staff reviews. NUREG 0803 (Generic Letter 81-34) was issued on August 31, 1981, to address the safety concerns associated with pipe breaks in the BWR scram system. The licensee agreed to make certain improvements in the scram system in response to NRC requests. By letter FVY 81-14 dated January 27, 1981, the licensee committed to perform modifications that would improve the scram discharge system reliability and availability. The modifications would result in the installation of two independent instrument volumes and associated instrumentation attached to the low point of each scram discharge volume (SDV). By letter FVY 82-4 dated January 19, 1982, in response to NUREG 0803, the licensee agreed to meet the BWR Owners Subgroup design and performance criteria for the SDV modifications, including the criteria for seismic loads. The control rod drive insert and withdraw lines were reanalyzed by the licensee and pipe hangers were modified as necessary during the 1980 and 1981 refueling outages to further restrain these lines.

In the course of conducting the design engineering and analysis for the SDV upgrade, the licensee determined that the existing scram discharge headers required additional seismic supports. This information was provided in letter FVY 82-42 to NRC Region I on April 20, 1982. Design change package EDCR 82-17 was issued to install the additional seismic supports, with installation expected to be completed by July, 1982, with the plant operating. Completion of the support work would facilitate completion of the entire scram system upgrade during the 1983 refueling outage. In a memorandum to the Plant Manager dated April 26, 1982, the licensee's engineering firm (YAEC - NSD) described the safety evaluation for the seismic upgrade of the SDV. In the April 26, 1982, memorandum, the licensee compared the VY plant specific features to the assumptions used in the NRC's generic safety evaluation of SDV integrity (NUREG 0803) to demonstrate that the conclusion of NUREG 0803 are applicable to Vermont Yankee and that continued plant operation is acceptable. An integral assumption of the NUREG 0803 safety evaluation and Integrated Risk Assessment was that scram

capability would not be impaired by any potential interaction between seismic and non-seismic portions of the scram system. The licensee concluded that the physical arrangement of the hydraulic control units, the insert and withdraw lines and the scram discharge volumes assures scram capability. Based on (i) the licensee's evaluations, (ii) the description of the work to be completed during plant operation, and (iii) the schedule for completing the work, the licensee demonstrated to the NRC staff's satisfaction that the SDV seismic upgrade could proceed in accordance with the schedule proposed by his April 24, 1982 letter.

As work continued to develop EDCR 82-17 from the conceptual to a detailed design package, problems were encountered with rebar/baseplate anchor bolt interferences; support installation tolerances; and, the design of the scram outlet line clamps in the hydraulic control unit. The result of these problems was to delay issuance of the detailed EDCR design package and the start of support installation until September 13, 1982. Based on the above delays and information received by the NRC staff which indicated that the scram function may not be assured during the interim period until the seismic support upgrade could be completed, the licensee was requested to meet with the NRC Region I staff to present the details of his previous evaluations and discuss the status of proposed seismic modifications.

A meeting was held with licensee representatives at the NRC Region I Office (Philadelphia, PA) on September 22, 1982. NRC and licensee personnel who attended the meeting are identified in Attachment 1. The following was determined based on information presented by the licensee during the meeting.

- a. A seismic analysis was performed on the scram system in its modified configuration using the licensee's newly developed analytical methods, which used the LOCA spectra of Regulatory Guide 1.60 and met the NRC staff's criteria of Regulatory Guide 1.29. An overstress condition was found in the 6 inch diameter scram discharge volume headers due to insufficient seismic restraint. A subsequent analysis of the as installed system showed that the overstress condition still existed. The overstress condition occurs at the points where the 3/4 inch scram outlet lines attach to the 6 inch headers and is due to motion of the headers in the horizontal plane. The modifications to be completed per EDCR 82-17 will restrain header motion in the horizontal plane.
- b. The original scram system design requirements in Chapter 12 of the Final Safety Analysis Report specifies that those portions of the scram system essential for safe shutdown of the reactor are designed as Seismic Category 1. Thus, the hydraulic control units, the insert

and withdraw lines, and the portions of the scram system inside the drywell fit this category. The control rod drive hydraulic system and the other portions of the scram discharge system in the Reactor Building are not considered essential for proper shutdown; these systems were thus designed as seismic Category 2. The 6 inch scram discharge volume and the 3/4 inch scram outlet line fit this category. Based on the potential for interaction between the seismic and non-seismic portions of the scram system, the licensee felt that it was prudent to upgrade the non-seismic portions of the system.

- c. Based on a review of the points of interaction between the seismic and non-seismic portions of the scram system, along with the possible consequences of interaction during a seismic event, the licensee concluded that the scram function would not be prevented. The scram function is assured by either the hydraulic control unit or by operation of the ball check valve internal to the control rod drive(s), even if cutting and/or crimping of the insert and withdraw lines is postulated to occur.
- d. Based on a comparison of plant specific features with the assumptions used in the NUREG 0803 safety evaluation, the licensee concluded that the safety evaluation remains applicable to Vermont Yankee. This comparison included a qualitative evaluation of the probability for scram discharge volume failures per year and the expected frequency of occurrence for the Design Basis Earthquake (specified in the range of 1 in 40 years to 1 in 400 years).

Based on the above, the licensee demonstrated to the NRC Region I staff's satisfaction that the EDCR 82-17 modifications could proceed in accordance with the proposed schedule concurrent with continued plant operation. All major elements of the installation should be completed by about November 8, 1982. The NRC staff will review the installation work in progress and the 10 CFR 50.59 evaluation on a subsequent NRC inspection. This item will be followed on a subsequent NRC inspection (IFI 50-271/82-18-01).

16. Observations of Physical Security

The inspector observed and/or verified during regular and offshift hours that selected aspects of plant physical security were in accordance with regulatory requirements, the physical security plan and approved procedures. This review included elements of the following security measures:

- guard staffing and manning of all shifts on various days was observed to be as required;

- implementation of access controls, including identification, authorization, badging, escorting, personnel and vehicle searches and, when applicable, the completion of compensatory measures during periods when equipment was inoperable.
- selected barriers in the protected areas and vital areas were observed and random monitoring of isolation zones was performed; and,
- observations of central and secondary alarm station activities were made at random periods.
- verification that compensatory measures were completed during a partial loss of communications on September 17, 1982. Full communications capability was subsequently restored.

No violations were identified. Based on a discussion with the Security Supervisor on October 1, 1982, the licensee was still reviewing the communications failure mechanism to determine whether further corrective actions to prevent recurrence are warranted. This item is considered open pending completion of the licensee's review and subsequent review by the inspector (IFI 50-271/82-18-02).

17. Management Meetings

During the period of the inspection, licensee management was periodically notified of the preliminary findings by the resident inspectors. A summary was also provided at the conclusion of the inspection and prior to report issuance.

ATTACHMENT 1

Meeting Attendees - September 22, 1982

Vermont Yankee Nuclear Power Corporation

W. Murphy, Vice President and Manager of Operations

Yankee Atomic Electric Company

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