

Enclosure 2

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

AUGUST 23, 1982

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## Vermont Yankee SALP

### I. INTRODUCTION

#### 1.1 Purpose and Overview

The Systematic Assessment of Licensee Performance (SALP) is an integrated NRC staff effort to collect observations on an annual basis and evaluate licensee performance based on those observations with the objectives of improving the NRC Regulatory Program and Licensee performance.

The assessment period is July 1, 1981 through June 30, 1982. This assessment, however, contains pertinent observations and NRC and licensee activities through August, 1982.

The prior SALP assessment period was July 1, 1980 - June 30, 1981. Significant findings of the assessment for that period are provided in Section IV below.

Evaluation criteria used during this assessment are discussed in Section III below. Each criterion was applied using "Attributes for Assessment of Licensee Performance" contained in NRC Manual Chapter 0516.

#### 1.2 SALP Attendees

- E. G. Greenman, Chief, Facility Radiation Protection Section, Division of Engineering and Technical Programs (DETP)
- R. W. Starostecki, Director, Division of Project and Resident Programs (DPRP)
- G. H. Smith, Director, Division of Emergency Preparedness & Operational Support (DEPOS)
- G. L. Snyder, Chief, Emergency Preparedness and Program Support Branch, DEPOS
- R. R. Keimig, Chief, Reactor Projects Branch No. 2, DPRP
- V. L. Rooney, Licensing Project Manager, Operating Reactors Branch No. 3, Nuclear Reactor Regulation (NRR)
- R. M. Gallo, Chief, Reactor Projects Section #1A, Division of Project and Resident Programs
- W. J. Raymond, Senior Resident Inspector, Vermont Yankee Nuclear Power Station

#### 1.3 Background

##### 1.3.1 Licensee Activities

The plant was operating at rated licensed power at the start of the assessment period. Routine power operations continued until October 16, 1981, when the reactor scrambled on high flux from 94% full power. The high flux condition was caused by pressure oscillations when the turbine mechanical pressure regulator was put into service. The plant remained shut down for the annual refueling outage, which was scheduled to commence at midnight, October 16, 1981.

General plant maintenance and core reload were completed during the outage. Approximately one-third of the core was replaced to allow for extended (18 month) operation in cycle 9. The core spray spargers were inspected and the

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jet pump hold-down beams were replaced. Plant startup from the refueling shutdown occurred on December 1, 1981.

Excessive leakage on the "A" recirculation pump (RCP) outboard seal occurred on December 5, 1981, during power escalation. The reactor was shut down to replace the A RCP seal. Reactor startup commenced on December 7, 1981, following completion of repairs and escalation to full power was completed on December 11, 1981. On December 26, 1981, a high flux scram occurred as a result of pressure oscillations induced by turbine control system malfunctions. The reactor was returned to power on December 27, 1981, and power escalation was completed on December 31, 1981.

Following the return to power on December 31, 1981, the 3-stage Target Rock relief valve on the "D" main steam line began leaking slightly as evidenced by an increase in tailpipe temperatures. The relief valve was subsequently replaced during an unscheduled shutdown on January 26, 1982, which was conducted to repair a leak in the 6 inch diameter drain line between the "C" moisture separator and the heater drain tank. The reactor returned to power operation on January 28, 1982. Routine operations continued until March 30, 1982, when a high flux scram occurred due to pressure oscillations induced by the turbine control system electrical pressure regulator. Power operation resumed on March 31, 1982, following repairs.

On April 13, 1982, the plant began operation for the first time with a fully inerted drywell atmosphere, three weeks ahead of the May 4, 1982, deadline set by the NRC Rule.

A malfunction in the feedwater control system on April 24, 1982, resulted in a loss of feedwater transient from 75% full power. The reactor scrambled on low water level and the low-low vessel level setpoint was reached before the HPCI and RCIC systems actuated to restore normal levels and terminate the transient. The plant returned to power operation on April 25, 1982, following completion of repairs to the feedwater control system. Following the loss of the second of four drywell fan cooler units on June 8, 1982, the plant was taken to cold shutdown to repair the fan coolers. The reactor returned to power operation on June 11, 1982. Routine power operation continued through the end of the assessment period.

### 1.3.2 Inspection Activities

Two NRC resident inspectors were assigned to the site for the assessment period. However, as of July 11, 1982, NRC staffing at the site was reduced to one resident inspector.

The total NRC inspection hours for the period was 2,471 hours (resident and region-based), with a distribution in the appraisal Functional Areas as shown on Table 3.

NRC inspection activities and violations issued during the period are tabulated in Table 4 and Table 5, respectively.

The first major Emergency Plan exercise under the new Emergency Plan was conducted on February 18, 1982. The exercise was observed by a team of NRC

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inspectors. The Emergency Preparedness Appraisal team completed an audit during the period from March 16-24, 1982.

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II. SUMMARY OF RESULTS

VERMONT YANKEE NUCLEAR POWER STATION

FUNCTIONAL AREAS

CATEGORY 1

CATEGORY 2

CATEGORY 3

1. Plant Operations	X		
2. Radiological Controls Radiation Protection Radioactive Waste Management Transportation Effluent Control & Monitoring	X		
3. Maintenance	X		
4. Surveillance (Including Inservice Testing)	X		
5. Fire Protection & Housekeeping	X		
6. Emergency Preparedness		X	
7. Security and Safeguards	X		
8. Refueling	X		
9. Licensing Activities	X		

### III. CRITERIA

The following performance aspects were reviewed in each area:

1. Management involvement in assuring quality.
2. Resolving technical issues from a safety viewpoint.
3. Responsiveness to NRC Initiatives.
4. Enforcement history.
5. Reporting and analysis of reportable events.
6. Staffing (including management).
7. Training effectiveness and qualification.

To provide a consistent evaluation attributes relating each aspect to the characteristics of Category 1, 2, and 3 performance were applied as discussed in NRC Manual Chapter 0516, Part II and Table 1.

The SALP Board conclusions were categorized as follows:

Category 1: Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used such that a high level of performance with respect to operational safety is being achieved.

Category 2: NRC attention should be maintained at normal levels. Licensee management attention and involvement in nuclear safety are evident; licensee resources are adequate and reasonably effective such that satisfactory performance with respect to operational safety is being achieved.

Category 3: Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appear strained or not effectively used such that minimally satisfactory performance with respect to operational safety is being achieved.

IV. PERFORMANCE ANALYSIS

1. Plant Operations (38%)

Three violations of minor safety significance were identified during the previous assessment period (July 1, 1980 - June 30, 1981). The violations concerned a failure to meet administrative requirements for jumper controls; equipment restoration following maintenance; and, changes made to approved procedures. No similar violations were identified during the current assessment period that would be indicative of an adverse trend.

Management has demonstrated an overall commitment to safety in its approach to plant operations, which is backed up by a well established system of management (procedural) controls that are well implemented by an experienced facility staff. Upper plant management review of daily plant status and periodic tours of the facility are notable strengths. (A degraded containment spray subsystem was identified on one such tour). The commitment to safe operation has been demonstrated by management's conservative response to malfunctions in plant systems/components (e.g. drywell fan cooler units; "D" safety relief valve leakage; moisture separator C drain line leak; and, replacement/repair of RWCU system safety class 3 piping). Licensee regard for and adherence to Technical Specification (TS) limiting conditions for operation (LCO) is noteworthy. Violations of TS LCOs that have occurred were identified and corrected in a timely manner by the licensee.

Notwithstanding the above, the instances listed below appear as weaknesses in the licensee system of management controls and may be indicative of an adverse trend:

- + the incorrect and nonconservative interpretation initially applied by management to the SLC boron concentration LCO. Subsequent actions were responsive to NRC initiatives. \*
- + the failure to promptly assign staff responsibility to gather and record information on the scope of equipment damage resulting from an electrical storm and the failure to include lightning protection in the design of recently installed stack instrumentation.
- + the incorrect and nonconservative interpretation initially applied by management to the one inch drywell purge/containment isolation valve LCO. Subsequent actions were responsive to NRC initiatives. \*
- + the failure to resolve turbine control system problems that continue to be troublesome to plant operations and which have caused 5 of the 8 plant trips within the last two years.

The resident inspector will continue to review this area to detect adverse trends.

\*Refer to Supplement Page 8a

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Notwithstanding the above, the instances listed below appear as deviations from good management practices:

- + the nonconservative interpretation initially applied on February 20, 1982 by management to the SLC boron concentration LCO. Subsequent actions were responsive to NRC initiatives.
- + the failure to promptly assign staff responsibility to gather and evaluate information on the scope of equipment damage resulting from an electrical storm and the failure to include lightning protection in the design of recently installed stack instrumentation.
- + the nonconservative interpretation initially applied on June 22, 1982 by management to the one inch drywell purge/containment isolation valve LCO. Subsequent actions were responsive to NRC initiatives.
- + the failure to resolve turbine control system problems that continue to be troublesome to plant operations and which have caused 5 of the 8 plant trips within the last two years.

The resident inspector will continue to review this area to detect adverse trends.

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Personnel turnover in the operating staff is low and there is, therefore, a stable group of experienced competent licensed operators. The operations staff has been found to be knowledgeable of plant status, Technical Specifications, LCOs and procedural requirements during routine resident inspector Resident inspector reviews in the initial and requalification training programs have identified no discrepancies. The training program is viable, and meets or exceeds the regulatory requirements. However, it is noted that of 9 candidates for initial Reactor Operators licenses to look the NRC exam in April, 1982, only 4 received licenses. Four candidates scheduled for re-examination by the Fall of 1982. One of the reasons above was the inability of Vermont Yankee to meet the July 1, 1982, start date to achieve full staffing under NUREG 0737 Item I.A.1.3. Additionally, supplemental staffing per 0737 Item III.A.1.2 (staffing for emergencies) remains an outstanding item with the licensee.

Complete staffing of the Nuclear Safety Engineer (STA) group with full time engineers began at the start of the assessment period. The STAs were assigned duties during the Fall, 1981 refueling and served in a monitoring/coordinator function for outage activities. The potential for violating the Reactor Building integrity LCO during refueling was identified by the on-shift STA (LER 81-33) and the matter was brought to the attention of the Shift Supervisor. This incident demonstrated integration of the STA function with the operations crews. However, the on-shift STA's failure to communicate essential information to the operating crew during the April 24, 1982, LOFW transient, together with comments from both the STAs and operators, indicated that the STA group has not been fully integrated with operations. This matter is being pursued as a result of Inspection 82-07 and will be reviewed by the NRC:NRH Human Factors Evaluation Branch in the latter part of 1982.

Aside from the areas discussed above, plant staffing and organization appears adequate. The creation of the assistant manager/superintendent positions below the plant manager appears to offer better management involvement and control over Department activities. Corporate and engineering personnel involvement in site activities is evident. It is noted that the reorganization also left vacant the position of Reactor Engineer (RE). Although the position remains vacant a year after the reorganization, the RE job function appears to have been adequately performed by the interim staff.

Three violations were identified during the current assessment period: failure to follow an emergency operating procedure following an earthquake - Level IV; failure to position valves in the RHR and SFGTS systems (one in each system) in accordance with the system operating procedure - Level V; and, failure of the offsite review committee to review safety evaluations for certain 1981 plant design changes - Level V. A fourth violation that is applicable to this area was identified by NRC Inspection Report No. 82-07. The violation concerns the failure to promptly classify an emergency plan emergency action level following an event and the failure to promptly notify offsite agencies of the classification once it was known. This matter will be discussed in an Enforcement Conference with Vermont Yankee personnel scheduled in August 1982. These enforcement items are discussed further below.

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Personnel adherence to plant procedures and policies has been verified during routine inspector reviews of operating activities. Identified instances of failure to follow procedures appear to be exceptions to otherwise good performance. However, the following items regarding operations personnel performance are noteworthy:

- + the Level IV violation identified in Inspection Report No. 82-01 concerned the failure to refer to the natural disaster emergency operating procedures (EOP) after an earthquake on January 18, 1982. A similar failure occurred during the loss of feedwater (LOFW) transient on April 24, 1982, when the operating crew failed to refer to the LOFW EOP. While all applicable procedural steps were completed by the crew, failure to refer to the procedure hindered the crew's assessment of the transient.
- + the shift crew on April 24, 1982, did not make an effective initial assessment of the transient. The fact that HPCI injection was not recognized by the crew for an hour after the event was noted in Inspection Report No. 82-07 and was significant in not classifying the item in a timely manner. This item is the subject of Region I's ongoing review of the event along with the role that control room design played in the delayed assessment. This matter will be reviewed by the NRC:NRR Human Factors Evaluation Branch in the latter part of 1982.

The resident inspector will continue to review this area to detect adverse trends.

Offsite and onsite review committees are adequately staffed and appear to be functioning in accordance with established requirements. The violation discussed above and cited against the offsite review committee appears to be an isolated case. The number of reportable events submitted for this area is not considered excessive. Equipment failures and the resultant LERs are expected in this area. No excessive failures occurred on any one system or component. Onsite review committee evaluation and followup on equipment performance problems has been evident. Event reports submitted by the licensee are complete and accurate. A conservative approach is taken in regard to reportable matters, particularly as regards 10 CFR 50.72 reports.

Conclusion: Category 1

Board Recommendations: None

## 2. Radiological Controls (5%)

During the previous assessment period, three violations of minor significance were identified: one in radiation protection and two in transportation. During the current assessment period, three violations were identified - two in radiation protection and one in transportation. Regional-based Health Physics Specialists conducted one routine on-site inspection of refueling activities and another of transportation. The Resident Inspectors conducted routine monthly inspections of selected areas. No violations were identified in the areas of radioactive waste management and effluent control and monitoring. No major or programmatic breakdowns have been identified.

Routine resident inspector reviews of this area have found radiological controls established fairly consistently in accordance with procedures and regulatory requirements. The control over low level radiation and contaminated areas is an exception to the above noted good performance, based on a pattern of repetitive violations that appears to be developing. NRC inspection has revealed 4 similar violations in the last two years and a fifth was recently identified, outside the current assessment period (Inspection Report No. 82-14). While previous corrective actions taken appear to have been effective on a case-by-case basis, the repetitive violations in this area, taken collectively, are indicative of a weakness in the management control system for the control of low level radiological areas. Additional licensee management attention is warranted in this area.

Staffing in the area appears adequate to implement the established program. Personnel turnover is low, which provides for a stable, experienced staff. Concerns identified by the inspector have been given priority attention and have been resolved expeditiously.

Regional management review of the recent assignment of a new person to the position of Plant Health Physicist found discrepancies with the Technical Specification requirements on staff qualifications. The matter is being pursued with licensee management to achieve resolution.

One reportable occurrence listed for this area (LER 82-04) concerned the loss of environmental data at one sample station. A trend of failures was identified in this area during the previous assessment period. The latest failure was not causally related to previous failures. Licensee efforts to correct a design deficiency on environmental air sample pumps appears to have resolved previous pump failures.

### 2.1 Radiation Protection

One routine health physics inspection was conducted of radiation protection during the assessment period, primarily to review refueling activities. No violations were identified.

Routine resident inspections of selected radiation protection functions were conducted during this period. Two violations were identified; failure to post and barricade an outdoor radiation area, and failure to post and barricade a

contamination area. The radiation area resulted from the outdoor storage of a wood shipping box filled with radioactive waste. The contamination area resulted from a failure to control known contaminated material. Management involvement in, and control of, radiation protection included review and reissue of all procedures at least every two years; audits of operations and records; and review and correction of each violation.

## 2.2 Radioactive Waste Management

Routine reviews of selected radioactive waste operations by the Resident Inspectors identified no violations in this area during the assessment period. However, as discussed in paragraph 2.1 above, a radiation protection violation resulted when a container of radioactive materials was stored outdoors without posting and barricading the surrounding radiation area. There was little evidence of prior planning to provide adequate indoor storage facilities for low level waste; however, such space has recently been designated. It is noted that plans are in progress to provide a permanent waste compacting structure. Improvements in communications and coordination between the groups involved in low level waste processing has been noted.

## 2.3 Effluent Control and Monitoring

There were no inspections of this area by Region-based inspectors during the assessment period. Routine resident inspector reviews of radwaste system operations, including liquid transfers and discharges, identified no violations of regulatory or procedural requirements. Liquid discharges are typically the contents of non-radioactive yard sumps. Routine plant gaseous emissions were well below applicable requirements and no instances of accidental unplanned effluent releases were identified.

## 2.4 Transportation

No violations were identified during resident inspector reviews in this area. An improvement in management controls has been noted in this area. Management sensitivity to problems in the area is high. A tendency to report even the slightest problems has been demonstrated.

One routine inspection of transportation activities by Region-based inspectors was conducted during the assessment period. One violation of minor significance was identified concerning the failure to keep maintenance and repair records for radioactive waste shipping containers. Licensee review and response to this item is still pending.

Conclusion: Category 1

Board Recommendations:

The Health Physics Appraisal for the facility was conducted in September, 1980 and the results were reported in Inspection Report No. 80-14 issued on April 7, 1982. Inspection of licensee action on Health Physics Appraisal items should be completed during the next assessment period.

3. Maintenance (2%)

Two violations of minor significance were identified during the previous inspection period concerning the documentation of maintenance activities. No violations were identified during the present assessment period that would be indicative of a trend.

Routine reviews of ongoing maintenance activities by the resident identified no violations during the current assessment period. There were no inspections of the area by Region-based inspectors.

Resident inspector review of the snubber program found the program well maintained, documented and executed. Personnel assigned to the area are knowledgeable of regulatory and procedural requirements. A viable program for preventive maintenance has been implemented.

The Instrument and Control and Maintenance Departments are staffed by experienced personnel. Personnel turnover is low. Intermediate level supervisors routinely monitor inplant work activities to provide multi-level control and first hand knowledge of the work. This latter practice allows for decisions to be consistently made at the appropriate level of management. Craft and supervisory personnel have demonstrated a good understanding of the plant systems and components within their realm of expertise, which is indicative of a good qualification and training program.

One licensee event report in the refueling area (Area 8) concerned the potential violation of the Reactor Building Integrity LCO, when maintenance and contractor personnel welded a strongback to a roof hatch during refueling. The incident was caused by a breakdown in communications between operations and maintenance personnel in that the latter failed to adhere to equipment control procedures. As noted in section 1 above, this issue was identified by the onshift Nuclear Safety Engineer, who brought the matter to the shift supervisor's attention for resolution. Upon further review the NRC determined that no violation of the LCO occurred. The incident is considered to be an isolated event.

Conclusion: Category 1

Board Recommendations: None

4. Surveillance (7%)

One minor violation was identified during the previous assessment period related to the failure to follow administrative requirements for revisions to procedures.

Two violations were identified during the assessment period: failure to adequately review monthly seismic instrument test results - Level V; and, submittal of a 30-day licensee event report 4 months late - Level VI. A third violation, listed under paragraph IV.1 above, is also applicable to this area and concerns a failure to return a safety system to standby status following testing in accordance with applicable procedures. The resident inspector conducted routine reviews of safety-related surveillance testing. There were no inspections of the surveillance and Inservice Testing areas by Region-based inspectors. Two inspections in the areas of Inservice Inspection and Reload Startup Testing were completed by Region-based inspectors.

In the area of inservice inspection (ISI), management involvement in ISI activities has been consistently high due to the personnel assigned responsibility for the area. Personnel were found knowledgeable of activities in progress and were technically qualified to address ISI related issues addressed during the inspection and achieve an acceptable resolution. Records were found to be complete and readily retrievable in all areas inspected. Reporting of ISI findings was found to be complete and accurate.

No violations were identified during the inspection of post-refueling startup testing. Startup test procedures were found to be acceptable and to contain conservative acceptance criteria for parameters with safety significance. Two exceptions to otherwise good procedures were identified, which involved the instructions for core thermal power and shutdown margin determinations. No violations or unacceptable conditions were identified to have resulted from the observed procedure inadequacies. Personnel were found knowledgeable and technically competent to complete assigned tasks.

Personnel in other areas of surveillance testing were found to be well experienced and qualified to conduct assigned work. Personnel are knowledgeable of the facility and its operation, as well as the administrative and procedural requirements applicable to their job function. Surveillance test results are consistently reviewed at the supervisor level. Discrepancies in test data are referred to the proper level of supervision for review and dispositioning. The failures identified by the violations discussed above are considered to be exceptions to otherwise good performance. None of the identified violations represents a programmatic breakdown.

Surveillance records are well organized and readily retrievable. A viable calibration program for surveillance test instruments has been established and implemented. The number of reportable events for this area (14) is not considered exceptional. Equipment failure was the predominant cause for reports submitted in this area. The identification of equipment problems and the resultant LERs are expected for this area.

Conclusion: Category 1

Board Recommendations: None

5. Fire Protection/Housekeeping (2%)

No violations were identified in this area during the previous assessment period.

No violations in either the fire protection or housekeeping areas were identified during the current period. One inspection was conducted by a Region-based inspector and the area received continual review of the resident inspector.

Plant housekeeping is considered an element of strength in the management control system. Good housekeeping and maintenance practices were evident throughout the facility. The Fire Protection Coordinator was found knowledgeable of requirements in the area and was directly involved in the formulation and dissemination of housekeeping requirements.

The fire protection program was found well established, maintained and implemented. Fire detection and suppression systems appeared to be well maintained and controlled. NRC review and selected fire protection modifications per license Amendment 43 showed that commitments and requirements have been met. Plant modifications to assure Safe Shutdown Capability have not been completed. Licensee exceptions to the NRC Staff requirements were properly identified to the NRC. The licensee's alternate safe shutdown design is under review by NRC; modifications are scheduled to be completed during the 1983 refueling outage. One outstanding issue from the previous assessment period was resolved with the successful fire rating testing of the "Typical H" penetration configuration.

Staffing for the area was found to be adequate with key positions identified and authorities and responsibilities well defined. The training program is well defined and implemented with a dedicated fire protection training staff. The program has well defined courses and an instructor who is qualified in the subjects taught.

The fire protection program has been maintained by a Fire Protection Coordinator who devotes 2/3 of his time to the function. Licensee plans to reduce the Coordinator function to a 1/3 time position requires NRC attention to assure that the appropriate level of continuing licensee management attention is applied to the program.

Conclusion: Category 1

Board Recommendation: None

\*Refer to Supplement Page 15a

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No violations were identified in this area during the previous assessment period.

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Conclusion: Category 1

Board Recommendation: None

6. Emergency Preparedness (33%)

There was one inspection of licensee emergency preparedness during the previous assessment period. No violations were identified. Commitments to correct identified weaknesses in the then existing classification and dose assessment procedures were solicited through Confirmatory Action Letter (CAL) 80-34 dated October 3, 1980. The licensee was responsive to complete the required corrective actions. During the previous assessment period, the Emergency Plan was upgraded in accordance with 10 CFR 50 and NUREG 0654. NRC review of the upgraded plan occurred during the current assessment period. The licensee requested an extension beyond July 1, 1981, to complete the installation and testing of the Emergency Public Notification System (PNS). The NRC granted an extension until February 1, 1982.

There were several inspections of this area during the current assessment period. The status of the PNS was reviewed. A full scale exercise was observed. A team audit of emergency preparedness implementations was conducted, which resulted in significant findings. A special team inspection (82-07) that was conducted as a result of the April 24, 1982, loss of feedwater (LOFW) event included a review of the emergency preparedness aspects of the event. Inspection Report No. 82-07 identified a violation in this area related to a failure to promptly classify an emergency action level and subsequently, a failure to promptly notify offsite agencies when the classification was known. NRC review and evaluation of the violation is continuing, based on the Inspection Report No. 82-07 findings and the results of Investigation No. 82-12. In addition to the above, the resident inspector reviewed the licensee's responses under the Emergency Plan Implementing Procedures (EPIP) as followup to incidents that occurred during the assessment period.

A full scale exercise that involved federal, state and local agencies was observed on February 18, 1982. NRC evaluation of the Exercise showed that the licensee demonstrated the capability to implement his emergency preparedness program in a manner that would adequately protect the health and safety of the public. The findings of FEMA Region I concerning this exercise were that the objective of the exercise were achieved by the state and local agency responses.

NRC review of the status of the PNS in February 1982 found that installation and testing of the system were essentially complete and thus, NRC commitments were met. Post-installation review, evaluation and correction of identified deficiencies associated with the PNS continued through the end of this assessment period.

An Emergency Preparedness Implementation Appraisal (EPIA) was conducted on March 16-24, 1982. During this appraisal, nine significant findings and 55 improvement items were identified. A Confirmatory Action Letter was sent to the licensee on April 28, 1982, which described actions the licensee agreed to complete. On July 22, 1982, a letter was sent to the licensee which included the following: Appendix A, Significant Emergency Preparedness Findings (included one additional item for a total of 10); Appendix B, Emergency

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Preparedness Improvement Items; Appendix C, Emergency Preparedness Evaluation Report; and NRC Region I Inspection Report No. 50-271/82-05.

The outstanding items identified during the EPIA indicated that plant staffing for emergencies and shift augmentation capabilities were not consistent with the NRC guidance (as noted under section 1 above). Emergency equipment deficiencies were noted in the areas of post-accident coolant and containment air sampling, and meteorological instrumentation. Procedures which implement the Emergency Plan were adequate; however, deficiencies were identified in emergency action levels, communication of protective action recommendations to state agencies, inplant surveys, assessment actions, and notifications and call-in of additional staff. The Emergency Plan also requires revision to describe the capability of state/ local officials to make decisions on sheltering or evacuation in a timely manner.

Correspondence from the licensee dated June 15 and 30, 1982, described their corrective actions on a portion of the identified findings. A followup inspection is scheduled for November 1982 to verify the licensee's corrective actions. The licensee has been responsive to NRC identified concerns and acceptable resolutions were proposed to correct deficiencies in a timely manner.

NRC review of licensee response actions associated with the April 24, 1982, LOFW event identified a discrepancy between the emergency action levels proposed by NUREG 0654 and those contained in the Emergency Plan and the associated EPIP. Additionally, operator actions following the transient demonstrated a lack of familiarity with the emergency action levels and a lack of familiarity on the use of the classification procedure. The above matters were included in an apparent violation of NRC requirements documented in Inspection Report No. 50-271/82-07. NRC review of these items is still in progress. Resident inspector review of licensee emergency response actions following an earthquake on January 18, 1982, and a train derailment on May 10, 1982, identified no violations of regulatory requirements. Operations personnel demonstrated familiarity with classification and notification procedures for these events.

Conclusion: Category 2

Board Recommendations: None

7. Security and Safeguards (6%)

The licensee's security program was characterized at Category 2 during the last assessment, based on three routine inspections conducted by Region-based inspectors that resulted in eight violations. During this assessment period, there were two routine security inspections by Region-based inspectors and continued review of the area by the resident inspectors. No security violations were identified.

The licensee effectively implemented the security and safeguards program during the assessment period. The improvement in the area of enforcement is noteworthy.

Site management was responsive to security program requirements and provided direction and control to allow effective implementation. Program reviews and audits were conducted in response to NRC commitments. The audits were complete and thorough, and audit results were acted upon. Corporate management involvement in site activities was evident.

Technically sound and thorough responses are provided to NRC initiatives. Reportable events were promptly and accurately reported. Security records were found to be complete, thorough and available for review.

An ample staff exists to implement the program, with organizational positions identified and authorities and responsibilities well defined. The security training program is well defined and it meets the NRC approved training and qualification requirements. Training was conducted by a staff dedicated to that purpose. The security organization was found to be adequately staffed and qualified to provide protection for the site.

Conclusion: Category 1

Board Recommendations: None

8. Refueling (7%)

No violations were identified in this area during the previous assessment period. All phases of refueling activities were reviewed by the resident inspector during the Fall 1981 outage. Two inspections were conducted by Region-based inspectors in the areas of reload license analysis, post-refueling testing, and radiological controls. No violations were identified.

The planning and control of refueling outage activities is considered an element of strength in the licensee's management control system. Detailed planning for outage activities and evaluations is followed through with the proper level of supervision. Station personnel are effectively used to oversee contractor personnel brought in for major work items. Effective coordination with the offsite engineering group for timely completion of design modifications packages is evident.

Refueling, spent fuel pool, maintenance, surveillance and design change activities were conducted by qualified personnel and in accordance with applicable procedures. Few mechanical problems were encountered with refueling equipment, which was indicative of an improved maintenance and checkout program when compared to the previous outage. Licensee management response to one mechanical problem encountered during core alterations was considered appropriate to analyze and correct the problem.

Communication and coordination between outage groups is considered effective. In particular, no problems were identified in the radiation protection area based on one inspection by a Region-based inspector and routine reviews by the resident inspector. One example of a breakdown in communications between the Operations and Maintenance groups (LER 81-33) was considered to be an isolated event.

The licensee development of the capability to perform reload licensing is noteworthy. A review of the reload analytical methodologies by a Region-based inspector identified no inadequacies. Detailed review of the Cycle 9 reload analytical techniques and results is still in progress by NRC:NRR.

The number of reportable events for this area was low. Event reports were accurate and complete.

Conclusion: Category 1

Board Recommendations: None

9. Licensing Activities

Most of the Vermont Yankee engineering work is done by the Yankee Atomic Electric Company or by Vermont Yankee Nuclear Power Corporation. Due to many years of experience with the Vermont Yankee plant and a stable work force, the engineering and licensing staff serving the Vermont Yankee Nuclear plant demonstrates well above average managerial capability and superior technical competence. As a result, the licensee is quick to become involved in licensing issues, usually remains abreast of NRC needs, and on occasion anticipates requirements.

The Vermont Yankee staff independently arrives at conclusions on safety issues without undue reliance on others. Vermont Yankee's positions on technical issues are sometimes at variance with staff positions, which others in the industry find acceptable. The reconciliation of these issues requires significant NRC and licensee resources. (For example: the resolution of the feedwater nozzle inspection issue.)

With respect to specific license amendment requests, Vermont Yankee provides timely and accurate information, and rarely makes unnecessary requests for emergency Technical Specification changes. Meetings are held when needed and the licensee keeps NRC well informed. Usually these meetings are well organized and factual in nature. The Vermont Yankee license was amended six times over the evaluation period.

The licensee has proposed to perform much of the analysis related to core reloads using his own methodology. A good deal of the review was completed during the report period. This effort showed significant technical independence. Also, during the report period, there were meetings and extensive discussions related to the inspection program for BWR feedwater nozzles. Although the resolution of this issue has not been achieved, the licensee demonstrated technically sound and thorough approaches.

One measure of the effectiveness of a licensee's radiation control program is the accumulated occupational dose. For Vermont Yankee, the total reported dose for calendar year 1981 was 731 Man rem as compared to 988 Man rem for the average BWR.

During the evaluation period, tests for 10 RO's and 1 SRO were administered resulting in passing grades for 5 RO's and 1 SRO.

Conclusion: Category 1

Board Recommendations: None

V. SUPPORTING DATA AND SUMMARIES

1. Licensee Event Report (LERs)

Tabular Listing

Type of Events:

A. Personnel Error . . . . .	3
B. Design/Man./Constr./Install. . . . .	0
C. External Cause . . . . .	0
D. Defective Procedure . . . . .	2
E. Component Failure . . . . .	24
X. Other . . . . .	<u>5</u>
Total	34

Licensee Event Reports Reviewed:

Report Nos. 81-16/3L through 81-37/3L and 82-01/3L through 82-15/1P

Causal Analysis (Review Period July 1, 1979 through June 30, 1982)

Three chains were identified:

- a. LERs 81-22, 81-25 and 82-15 concern failure of containment isolation valves to operate due to dirt in either the Instrument Air Supply to the valve solenoid operator or the process stream. These events continue a chain identified during the last SALP review. NRC review of correcting actions taken and planned by the licensee is documented in Inspection Report No. 50-271/82-16.
- b. LERs 80-09, 81-15, 81-37 and 82-10 concern the failure of RHRSW pump circuit breakers to operate during surveillance testing. The cause for two of the failures was worn bushings in the breaker operating mechanism. NRC review of the licensee preventative maintenance program for 4KV safety system breakers is documented in Inspection Report No. 50-271/82-16.
- c. LERs 81-34, 81-33, 81-26, 81-03, 81-02, 80-18, 80-34, 80-16, 79-31 and 79-12 concern events caused by personnel error. Personnel errors in 7 of the 10 events resulted in late or missed surveillance tests. The remaining 3 events involved equipment LCOs. Personnel oversights resulting in missed surveillance appear to be recurrent in the Chemistry and Health

Physics Department. NRC followup in this area is tracked in Inspection Report No. 50-271/82-16.

2. Investigation Activities

An investigation was conducted on June 7-9, 1982, as part of the NRC:Region I evaluation of the circumstances associated with the April 24, 1982, loss of feedwater event. Specifically, the investigation was conducted to determine whether there was willfulness or careless disregard of reporting requirements in the notifications made to the NRC and offsite agencies. No evidence of willfulness or careless disregard of reporting requirements was found.

3. Escalated Enforcement Actions

3.1 Civil Penalties - None

3.2 Orders

Order modifying license dated July 10, 1981, confirming licensee commitments and actions for TMI related requirements contained in NUREG 0737 (generic).

Order modifying license dated January 14, 1982, regarding the completion of the Mark I Torus long term program (generic).

3.3 Confirmatory Action Letters

Confirmatory action letter (82-13) dated April 28, 1982, regarding planned corrective action on significant findings identified in the Emergency Preparedness Appraisal audit conducted on March 15-25, 1982.

4. Management Conferences

SALP Management Meeting at the Vermont Yankee Plant site on September 29, 1981.

Enforcement Conference held in August, 1982, in regard to the Loss of Feedwater Event of April 24, 1982.

TABLE 1  
TABULAR LISTING OF LERs BY FUNCTIONAL AREA  
VERMONT YANKEE NUCLEAR POWER STATION

<u>Area</u>	<u>Number/Cause Code</u>	<u>Total</u>
1. Plant Operations	1/D 12/E 2/X	15
2. Radiological Controls	1/E	1
3. Maintenance	None	
4. Surveillance	2/A 1/D 9/E 2/X	14
5. Fire Protection/Housekeeping	None	
6. Emergency Preparedness	None	
7. Security and Safeguards	None	
8. Refueling	1/A 2/E 1/X	4
9. Licensing Activities	None	
TOTAL		34

Cause Codes: A - Personnel Error  
 B - Design, Manufacturing, Construction, or Installation Error  
 C - External Cause  
 D - Defective Procedures  
 E - Component Failure  
 X - Other

TABLE 2  
VERMONT YANKEE NUCLEAR POWER STATION  
LER SYNOPSIS  
JULY 1, 1981 - JUNE 30, 1982

<u>LER Number</u>	<u>Type</u>	<u>Summary Description</u>
81-16/3L	30 Day	Reactor Water Cleanup System leakage from a socket weld reducing fitting in the tube-side vent of regenerative heat exchanger E-15-1A.
81-17/3L	30 Day	Containment isolation valve LRW-95 failed to close during surveillance testing due to a failure of 3-way air solenoid.
81-18/3L	30 Day	Core Spray "A" injection valve inoperable during surveillance testing due to trip of motor circuit breaker.
81-19/3L	30 Day	"B" SBTG Train failed surveillance test due to interference peaks from gas chromatograph.
81-20/3L	30 Day	Four motor mount bolts on the limitorque operator for valve RHR-31B (Upper Containment Spray) were found sheared.
81-21/3L	30 Day	During surveillance testing, containment isolation valve LRW-94 failed to close due to a failure of the 3-way air solenoid valve.
81-22/3L	30 Day	During surveillance, MSIV-80D failed to close when its control switch was placed in the closed position.
81-23/3L	30 Day	Loss of power to MCC-9D rendered portions of the HPCI and RHRSW Systems inoperable.
81-24/3L	30 Day	During surveillance testing, RCIC tripped via mechanical overspeed and isolated due to high steam line flow differential pressure.
81-25/3L	30 Day	Containment Isolation valve LRW-95 failed to close during quarterly surveillance due to mechanical binding of the valve stem.

TABLE 2 (Continued)

<u>LER Number</u>	<u>Type</u>	<u>Summary Description</u>
81-26/3L	30 Day	During the weekly review of surveillance testing data, it was discovered that the maximum monthly interval was exceeded by four days for the functional test of the ATWS/RPT System.
81-27/3L	30 Day	MSIV-80C failed to close upon receipt of a Group 1 isolation signal during a reactor scram.
81-28/3L	30 Day	Recirculation pump trip instrumentation for B recirculation pump inoperable.
81-29/3L	30 Day	During a Two Rod Interlock Functional Test on rod 34-27, the rod block associated with the "one control rod withdrawal permit" circuit was found to be inoperable.
81-30/3L	30 Day	During replacement of RWCU piping, cracks were found on the internal surfaces of the pump suction and discharge valves.
81-31/3L	30 Day	During surveillance testing of Standby Liquid Control Relief Valves, the setpoint of relief valve SR-39-B was found to be 1540 psig.
81-32/3L	30 Day	While performing the Type C Leak Rate Testing, two valves (RWCU 68 and 15) were found to have excessive seat leakage.
81-33/1P	24 Hour	Reactor Building integrity not maintained during plant startup.
81-34/3L	30 Day	During a Test Schedule review, it was discovered that the Operating Cycle Test of the SBTG HEPA filters had not been done since 9/79.
81-35/3L	30 Day	Core Spray System A injection valve inoperable during testing due to faulty circuit breaker.
81-36/3L	30 Day	Containment isolation valve RWCU-15 failed to seat satisfactorily during Surveillance Testing.
81-37/3L	30 Day	RHRWS pump P-8-1A became inoperable during testing due to faulty circuit breaker.
82-1/3L	30 Day	Reactor startup with less than two IRM channels per trip system operable.

TABLE 2 (Continued)

<u>LER Number</u>	<u>Type</u>	<u>Summary Description</u>
82-2/3L	30 Day	On 2/6/82 UPS-B inoperable due to degraded transient suppression capacitors.
82-3/1P	24 Hour	SLC Tank boron concentration below that required by Technical Specifications.
82-4/3L	30 Day	Environmental Station AT 1.4 air sample not taken during week of 2/16/82 due to loss of electrical power to the sample pump.
82-5/3L	30 Day	UPS-B inoperable on 2/23/82 due to degraded transient suppression capacitors.
82-6/3L	30 Day	40% main steam flow isolation trip setpoints out of specification due to setpoint drift on 3 of 4 lines.
82-7/1P	24 Hours	SLC system procedure contained an error in the calculation of sodium pentaborate concentration, resulting in boron measurements being non-conservative by 10%.
82-8/3L	30 Day	Control rod position indication lost due to failed power supply cooling fan. Replaced fan.
82-9/3L	30 Day	RPS reactor pressure channel inoperable due to failed 24 VDC power supply.
82-10/3L	30 Day	RHR SW Pump A inoperable due to faulty motor control breaker.
82-11/3L	30 Day	Control rod position indication lost due to failed power supply cooling fan. Replaced power supply.
82-15/1P	24 Hour	Two series containment isolation valves on 1 inch diameter nitrogen purge line inoperable due to dirt accumulation in valve internals.

TABLE 3

INSPECTION HOURS SUMMARY (7/1/81 - 6/30/82)

VERMONT YANKEE NUCLEAR POWER STATION

	<u>HOURS</u>	<u>% OF TIME</u>
1. Plant Operations . . . . .	950	38
2. Radiological Controls . . . . .	132	5
3. Maintenance . . . . .	41	2
4. Surveillance . . . . .	166	7
5. Fire Protection/Housekeeping . . . . .	49	2
6. Emergency Preparedness . . . . .	816	33
7. Security and Safeguards . . . . .	153	6
8. Refueling . . . . .	<u>164</u>	<u>7</u>
Total	2471	100

TABLE 4  
INSPECTION REPORT ACTIVITIES  
VERMONT YANKEE NUCLEAR POWER STATION

<u>REPORT</u>	<u>INSPECTOR</u>	<u>AREAS INSPECTED</u>
81-09	Specialist	Post refueling startup testing and cycle analysis
81-13(a)	Resident	Routine*; Bulletins; Circulars; Staffing; Licensee Event Reports (LERs); personnel qualifications and training; and followup on an alleged improper disposal of radioactive material.
81-14	Specialist	Security and Safeguards
81-15	Resident	Routine; Circulars; fuel inspection; staffing; LERs
81-16	Specialist	Radiation Protection during refueling; TMI action plan items
81-17	Region I Management	SALP Management Meeting
81-18	Resident	Routine; Bulletins; Circulars; refueling operations; LERs; refueling maintenance; TMI action plan items
81-19	Resident	Routine; Circulars; refueling operations; refueling maintenance; TMI action plan items
81-20	Resident	Routine; Bulletins; Circulars; fire protection; LERs
81-21	Specialist	Inservice inspection; repair of reactor water clean-up system piping; feedwater nozzle instrumentation
82-01	Resident	Routine; Bulletins; Circulars; LERs; TMI action plan items; training
82-02	Specialist	Security and Safeguards
82-03	Resident	Routine; emergency preparedness; TMI action plan items
82-04	Resident and Specialist	Emergency Preparedness Exercise
82-05	NRC Team	Emergency Preparedness Appraisal
82-06	Resident	Routine; TMI action plan items

TABLE 4 (Continued)

REPORT	INSPECTOR	AREAS INSPECTED
82-07	Resident and Specialists	Loss of Feedwater Transient of April 24, 1982
82-08	Resident	Routine; Offsite Committee Activities
82-09	Specialist	Fire Protection/ Prevention Program
82-10	Specialist	Safeguard and Security
82-11	Resident	Routine; LERs; Staffing; EP Appraisal Followup
82-12	Investigator	Loss of Feedwater Transient of April 24, 1982
82-13	Specialist	Transportation

\* Routine - includes status of previous inspection items; operational activities (logs, records, plant status); plant tours; physical security; housekeeping/fire prevention; surveillance activities; maintenance activities; periodic and special reports; event followup; and, operational safety.

(a) Inspection findings summarized in reports 81-10 through 81-12 were included in the previous assessment period (7/1/80 to 6/30/81).

TABLE 5  
VIOLATIONS (7/1/81 - 6/30/82)  
VERMONT YANKEE NUCLEAR POWER STATION

A. Number and Severity Level of Violations

a. Interim NRC Policy Severity Level (July 1 - March 9)

Severity Level I	0
Severity Level II	0
Severity Level III	0
Severity Level IV	2
Severity Level V	3
Severity Level VI	1

b. NRC Policy Severity Level (March 10 - June 30\*)

Severity Level I	0
Severity Level II	0
Severity Level III	0
Severity Level IV	0
Severity Level V	2

Total = 8

B. Violations Vs. Functional Area

(1) July 1 - March 9

FUNCTIONAL AREAS	Severity Levels (July 1 - March 9)					
	I	II	III	IV	V	VI
1. Plant Operations				1	1	
2. Radiological Controls				1	1	
3. Maintenance						
4. Surveillance					1	1
5. Fire Protection/Housekeeping						
6. Emergency Preparedness						
7. Security & Safeguards						
8. Refueling						
9. Licensing Activities						
Totals	0	0	0	2	3	1

TABLE 5 (Continued)

B. Violations Vs. Functional Area

(2) March 10 - June 30

FUNCTIONAL AREAS	Severity Levels (March 10 - June 30)				
	I	II	III	IV	V
1. Plant Operations					1
2. Radiological Controls					1
3. Maintenance					
4. Surveillance					
5. Fire Protection/Housekeeping					
6. Emergency Preparedness				See Note (b)	
7. Security & Safeguards					
8. Refueling					
9. Licensing Activities					
Totals	0	0	0	0	2

Total Violations = 8

\* Does not include the following information:

- (a) Results of inspection 82-13 in the area of Transportation, report not issued yet.
- (b) Severity level and final enforcement action in the area of Emergency Preparedness. Inspection Report 82-07 identified the violation and the report was issued. Issuance of the Notice of Violation is pending the outcome of Region I Management review of the April 24, 1982, Loss of Feedwater Transient.

TABLE 5 (Continued)

Summary					
<u>Inspection No</u>	<u>Inspection Date</u>	<u>Subject</u>	<u>Requirements</u>	<u>Severity</u>	<u>Area</u>
81-13	July 1 - Aug 10	Failure to post/barricade a low level contamination area from all points of entry.	T.S.	V	2
81-15	Aug 11 - Oct 5	Valves in RHR and SGTS systems mispositioned.	T.S.	V	1(4)
		Thirty-day LER filed four months late.	T.S.	VI	4
82-01	Jan 5 - Feb 1	Shipping box within site protected area not posted as a radiation area.	10CFR20	IV	2
		Failure to complete all emergency operating procedure actions following an earthquake.	T.S.	IV	1
		Seismograph inoperable for 13 months due to inadequate review of monthly surveillance test results.	T.S.	V	4
82-07	Apr 26 - Apr 30	Failure to promptly classify an EP EAL following an event and failure to promptly notify offsite agencies of the classification.	10CFR50	*	6(1)
82-08	May 11 - May 31	The offsite review committee failed to review the SERs for 12 plant design changes in 1981.	T.S.	V	1
82-13	Jun 22 - Jun 25	Failure to maintain QA records of maintenance/repair of Transportation packages.	10CFR71	V	2

\* See Note (b) above.