

ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT 50-271/84-25

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

ASSESSMENT PERIOD: MAY 1, 1983 - OCTOBER 31, 1984

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## I. INTRODUCTION

### A. Purpose and Overview

The Systematic Assessment of Licensee Performance (SALP) is an integrated NRC staff effort to collect the available observations and data on a periodic basis and to evaluate licensee performance based on this information. SALP is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. SALP is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful guidance to the licensee's management to promote quality and safe plant construction and operation.

A NRC SALP Board, composed of the staff members listed below, met on December 11, 1984 to review the collection of performance observations and data to assess the licensee's performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance". A summary of the guidance and performance criteria is provided in Section II of this report.

This report is the SALP Board's assessment of the licensee's safety performance at the Vermont Yankee Nuclear Power Station for the eighteen month period of May 1, 1983 through October 31, 1984. The length of the review period is reflected in the number of inspection hours and in the scope of NRC observations and findings.

### B. SALP Board Members

R. W. Starostecki, Director, Division of Projects and Resident Programs (DPRP)  
E. C. Wenzinger, Chief, Projects Branch No. 3, DPRP  
L. E. Tripp, Chief, Projects Section No. 3A, DPRP  
V. L. Rooney, Licensing Project Manager, ORB No. 2, Office of Nuclear Reactor Regulation (NRR)  
S. D. Ebner, Chief, Engineering Programs Branch, Division of Engineering and Technical Programs (DETP)  
B. Sheron, Chief, Reactor Systems Branch, DSI, NRR  
W. J. Raymond, Senior Resident Inspector

#### Other Attendees

G. W. Meyer, Project Engineer, RPS 3A, DPRP

### C. Background

#### 1. Licensee Activities

The facility was involved in a major refueling and maintenance outage at the start of the assessment period. The scheduled eight week outage was extended by about 6 weeks to evaluate and repair cracks in the recirculation system piping. Major modifications completed

during the outage included torus modifications from the Mark I long term program, including resupport of the torus attached piping; installation of alternate shutdown systems per Appendix R requirements; and, installation of a recirculation seal injection system.

The facility started up from the outage on June 17, 1983. Two scrams occurred during the escalation to full power. The first occurred on June 20, 1983 when the condenser low vacuum switches were bypassed too soon. The reactor was manually scrammed on June 29, 1983 when the reactor recirculation pumps were tripped inadvertently during a logic test. The reactor reached full power operation on July 5, 1983.

The facility operated at full power from July 5, 1983 until June 15, 1984, with the exception of the following unscheduled outages: a reactor shutdown was initiated on August 26, 1983 to repair a steam leak in the main turbine bypass valve steam sealing supply line; the reactor scrammed automatically on August 27, 1983 on high vessel level due to an operator error when switching from auto to manual feedwater control; the reactor scrammed automatically on high pressure on January 5, 1984 due to a malfunction in the turbine electrical pressure regulator; the plant was shutdown on January 20, 1984 to replace the main turbine expansion joints; and, the reactor automatically scrammed on April 16, 1984 due to an MSIV isolation caused by failure of MSIV 80C during routine testing. The power coastdown to the 1984 refueling outage began on May 20, 1984.

An Alert emergency was declared on June 15, 1984 when a TIP detector failed to stop in the shielded position upon withdrawal from the core during routine surveillance. The unshielded detector created contact dose rates of 100 R/hr on the drive housing, and general area dose rates of 5 R/hr in the Northwest corner of the Reactor Building 252 foot elevation. The licensee activated the emergency response centers and responded well to protect plant workers and control the unshielded probe.

The facility was involved in a scheduled refueling and maintenance outage from June 15 until August 6, 1984. Major activities during the outage included the completion of modifications to provide environmental qualification (EQ) for electrical equipment, and the examination and repair of recirculation system welds. Following plant startup on August 6th, the reactor was shutdown to replace connectors on the MSIVs on August 9, 1984. The connectors were installed during the outage as part of the EQ upgrade and failed after several days of plant operation. The plant was shutdown from August 13-15, 1984 to identify and repair tube leaks in the main condenser. Subsequent plant operation was limited to about 80% full power due to the failure on August 12, 1984 of one of the three condensate pumps.



Following repair of the condensate pump, plant power was increased to rated conditions for the first time since the outage. An anomaly in the core power to flow ratio was first noted on September 11, 1984. Actions were taken to study the core conditions and identify the possible causes for the anomaly. A suspected problem with the steam separator assembly was confirmed on September 16, 1984 when the anomaly was verified to occur only at core flows above a certain value during routine surveillance testing. The plant was shutdown on September 18, 1984 following a series of discussions with the NRC staff to examine the vessel internals. The examinations confirmed that the separator was not securely bolted to the core shroud assembly by Maintenance personnel during vessel assembly in August, 1984. The plant was restarted on September 29, 1984 following a ten day outage.

During power ascension on September 29, 1984, MSIV 80D failed during routine testing, and the plant was shutdown to effect repairs. Power operation resumed on October 1, 1984 and continued until October 23, 1984. Both diesel generators failed within 12 hours while in a standby conditions during steady state plant operations on October 22-23, 1984. The diesels became inoperable due to a generator lockout condition caused by spurious operation of the generator differential relays in both diesels. A plant shutdown was initiated. The differential relays were repaired and returned to service.

The plant was operating at rated power at the conclusion of the assessment period.

## 2. Inspection Activities

One NRC resident inspector was assigned to the site during the entire assessment period. The total NRC inspection hours for the period was 3903 hours (resident and region based) with a distribution in the appraisal functional areas as shown in Table 1.

A special team inspection of the facility for compliance with the requirements of 10 CFR 50, Appendix R, Section III.G was conducted from August 29, - September 2, 1983.

NRC Emergency Preparedness Inspection Teams observed the EOF-IN emergency exercise on August 11, 1983, and the EOF-OUT emergency exercise on September 21, 1983.

Tabulations of Violations and Inspection Activities are attached as Tables 2 and 3, respectively.

## II. CRITERIA

Licensee performance is assessed in selected functional areas, depending on whether the facility is in a construction, preoperational, or operating phase. Each functional area normally represents areas significant to nuclear safety and the environment, and are normal programmatic areas. Special areas may be added to highlight significant observations.

One or more of the following evaluation criteria were used to assess each functional area.

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

However, the SALP Board is not limited to these criteria and others may have been used where appropriate.

Based upon the SALP Board assessment, each functional area evaluated is classified into one of three performance categories. The definitions of these performance categories are:

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 so that a high level of performance with respect to operational safety or construction is being achieved.

Category 2. NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and reasonably effective so that satisfactory performance with respect to operational safety or construction 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 to be strained or not effectively used so that minimally satisfactory performance with respect to operational safety or construction is being achieved.

The SALP Board has also categorized the performance trend over the course of the SALP assessment period. The categorization describes the general or prevailing tendency (the performance gradient) during the SALP period. The performance trends are defined as follows:

Improving: Licensee performance has generally improved over the course of the SALP assessment period.

Consistent: Licensee performance has remained essentially constant over the course of the SALP assessment period.

Declining: Licensee performance has generally declined over the course of the SALP assessment period.

### III. SUMMARY OF RESULTS

#### A. Overall Facility Evaluation

During the previous assessment period, increased licensee management attention was identified as being necessary in the functional areas of Plant Operations, and Refueling and Outage Management to achieve improvements. Specifically, management attention was necessary to assure personnel adhered to established procedures and policies, and to maintain an aggressive approach to resolve operational problems. Improvements were noted in both functional areas during the current assessment period.

This assessment noted numerous personnel errors during the performance of routine duties in the surveillance, radiological controls, operations and refueling functional areas. The errors resulted from either a lack of attention to details during the performance of routine duties or an over-reliance on experience as a substitute for strict adherence to established procedures. Increased management attention is warranted to assure an adverse trend does not develop and lower performance. Licensee management has been responsive to NRC concerns regarding personnel errors by evaluating available performance data and addressing the issue with the plant staff.

More aggressive management involvement is needed in the radiation protection area to correct programmatic weaknesses by formalizing the ALARA program, assure that anomalous conditions are aggressively pursued and resolved, and enforcing a rigorous frisking policy to assure licensed material is adequately controlled. Modifications and corrective actions to meet Appendix R requirements should be completed in accordance with commitments made to the NRC staff. Additional management attention is required in the Maintenance area to strengthen supervisory oversight and QA/QC controls.

The strength of the licensee's management controls is most notable in the generally conservative approach taken to assure safety in plant operations, the planning and control of outage activities and design changes, the effective housekeeping program, the security area, the completion of licensing actions, and in the preventive maintenance and operational surveillance programs. The policy for operation under apparent anomalous operational conditions should be reviewed and strengthened as necessary to assure conservatism in plant operations is maintained at previously observed levels. Significant improvements were noted in the emergency preparedness area.



B. Facility Performance

<u>Functional Area</u>	<u>Category Last Period</u> (May 1, 1982 - April 30, 1983)	<u>Category This Period</u> (May 1, 1983 - October 31, 1984)	<u>Trend</u>
A. Plant Operations	2	1	Declining
B. Radiological Controls	1	2	Consistent
C. Maintenance	1	2	Declining
D. Surveillance	1	1	Consistent
E. Fire Protection and Housekeeping	1	2	Consistent
F. Emergency Preparedness	No Basis	1	Consistent
G. Security and Safeguards	1	1	Consistent
H. Refueling and Outage Management	2	1	Consistent
I. Quality Assurance	Not Assessed Separately	2	Improving
J. Licensing Activities	1	1	Consistent

#### IV. PERFORMANCE ANALYSIS

##### A. Operations (28%)

##### 1. Analysis

During the previous assessment period, problems were identified in the areas of offsite review committee activities; completion of 50.59 evaluations for electrical jumpers; control of containment valve lineups; licensee response to NRC initiatives on resolving containment isolation valve operability issues; and, violating secondary containment while moving fuel, which also involved failure to report the incident in a timely manner. The failure of senior licensed operators to strictly adhere to administrative policies during the incident was a significant concern. The need to take a more aggressive approach in the evaluation and resolution of equipment problems was deemed an area requiring greater emphasis to improve performance. The licensee was generally responsive in correcting deficiencies in these areas in a timely manner.

This area was under continuous review by the resident and regional inspectors during the current assessment period. Specialist inspectors reviewed the non-licensed and licensed operator requalification training programs.

Site and corporate management have generally demonstrated a strong and effective commitment to safety in plant operations. Plant management and supervisor reviews of daily plant status and periodic tours of the facility are evident and demonstrate management involvement and control of routine operations. Corporate management routinely visits the plant and their involvement in routine plant activities and in response to problems has been evident. Questions regarding interpretation of technical specification LCO requirements are usually discussed with the NRC staff before the items become an issue.

Operators are knowledgeable of plant status, technical specifications, and procedural requirements. Licensee management satisfactorily resolved NRC issues such as TMI Action Plan training items, which have been incorporated into the program. Two SRO and two RO licenses were issued during the period. Plans to construct and operate a site specific simulator are progressing and should be completed on schedule in 1985. Full staffing for the control room per NUREG 0737 Item I.A.1.3. was achieved early in the assessment period. Operations staffing and organization remained adequate, but personnel changes did occur in the Operations Superintendent position, and a pending change in the Operations Supervisor position has been announced. The number of changes in this assessment

period, together with those in previous periods, indicate there is a need to achieve stability in management and leadership for the department.

Non-licensed training programs were well defined and implemented. Instructor positions were understaffed, however, while management attempted to fill positions vacated by promotions and resignations. Minor programmatic improvements were found necessary, such as better documentation of attendance sheets and the subjects covered during specific training sessions needed to be more specific. Portions of the maintenance retraining were not completed in a timely manner. However, subsequent inspection found that the maintenance retraining was satisfactory and the requalification attendance records had been corrected.

The licensee has demonstrated a proper regard to regulatory requirements and safety, as evidenced by actions taken in response to several operational problems. Examples included the following: the seismic upgrade currently in progress for the hydraulic control units; the compensatory measures taken in 1983 while supports were upgraded on small diameter service water cooling lines; installation, operation and maintenance of recirculation weld leakage detectors; voluntary operation under reactor coolant leakage limits more restrictive than those required by the technical specifications; the detection of defects in the uninterruptible power system batteries and replacement of both battery banks; and, the detection and replacement of defective cells in the A main station batteries. The licensee was responsive in resolving technical questions raised by the NRC staff regarding service water system performance, and concerns regarding updated drawings for the control room. Overall, licensee actions during this assessment period have demonstrated a greater degree of aggressiveness in resolving equipment problems.

However, the management decisions and actions to continue plant operation from September 16-18, 1984 with an anomalous core power-to-flow relationship and in spite of clear indications that the plant was operating in an unanalyzed condition, appeared as a significant deviation from the normally conservative approach taken to assure safe plant operations. NRC considered that the licensee had an insufficient basis to continue operation with the anomaly, and the licensee's decision to do so was neither prudent nor conservative. While subsequent reviews and after-the-fact analyses confirmed that no unsafe conditions were created by operation with an improperly secured steam separator assembly, the NRC raised questions regarding the licensee's philosophy related to operation under apparent unanalyzed conditions and the criteria used to assure adequate safety margins are maintained.



Seven violations of minor safety significance were identified during the current assessment period. Three of the violations involve improper valve or electrical breakers configurations in systems important to safety. The system valve lineup problems had minimal safety significance in that no major flow path valves have been found incorrectly positioned on safety systems.

One violation concerns an administrative procedure for valve lineup controls that was inconsistent with technical specification requirements. NRC concerns associated with the item were first identified to the licensee in May, 1984 and resolution of the concerns was still in progress at the conclusion of the assessment period. While further discussions are required to resolve differences of opinion regarding the issue, the licensee has been less than fully responsive to correct perceived weaknesses in the administrative controls under review, which if left uncorrected, could result in a significant safety concern.

Reviews of plant operations by the resident inspector and licensee personnel identified several instances during the assessment period where personnel errors or performance either resulted in degraded performance for an activity, contributed to an operational event, or affected compliance with regulatory requirements. Examples included the following: several minor leaks were not noted by operators during the 1983 reactor hydrostatic test; inadvertent scram in August, 1983 caused by an operator not following procedures while shutting down the plant; tagging order not properly cleared from instrument air system in June, 1983; tagging order not properly cleared on advanced offgas system in August, 1984 and resulted in a glycol spill and intrusion into the radwaste system; tagging order not properly cleared from the core spray system in August, 1984; failure of senior licensed operator to follow startup procedure in April, 1984 resulted in inoperable HPCI system; and, failure to maintain cooling water supply valves to RHR service water pumps aligned per procedures, and failure of auxiliary operators to note the mispositioned valves during routine rounds. Each incident above can be characterized as deficiencies in personnel performance rather than a disregard for administrative controls and procedures.

The number of events noted above (8) is of concern to the NRC, although no one incident had a measurable effect on plant safety. The root cause for the events appears to stem from a lack of strict attention to detail during the conduct of daily activities. The number of personnel errors associated with tagging operations was small in comparison with the large number of component manipulations completed under tagging requests. However, personnel performance problems with tagging requests were not limited to operations personnel (see Section H below). The licensee was responsive to NRC concerns about the occurrence of personnel errors on a plant wide



basis and addressed this issue with the plant staff. Additional licensee reviews regarding the implementation of tagging controls were in progress at the conclusion of the assessment period.

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. Some of the equipment problems that have been noted (e.g. binding of MSIV actuator plates with bushings and guide rods) concern problems for which an engineering fix has been established and modifications for redundant components are being completed in a phased manner. Event reports submitted by the licensee are generally complete and accurate. An evaluation of LERs for the period was completed by the NRC's Office for Analysis and Evaluation of Operational Data (AEOD). This review found that the reports were technically accurate, complete, and intelligible to a knowledgeable safety engineer not intimately familiar with the plant. None of the events involved what AEOD would consider to be a significant event or plant safety issue. Planned corrective action taken by the licensee were considered to be commensurate with the nature, seriousness and frequency of the problems found.

A conservative approach is taken in potentially reportable matters, particularly as regards 10 CFR 50.72 notifications. The licensee has been aggressive in identifying problems and reporting them to the NRC. The Plant Operations Review Committee has been effective in its technical review of problems and proposed license amendments and has made recommendations appropriate to resolve identified issues.

2. Conclusion:

Category 1, declining. Improvements in the area of personnel adherence to procedures and policies has occurred. The licensee response to the anomalous core conditions near the end of the assessment period is indicative of a non-conservative operational philosophy of concern to NRC which led to the declining trend categorization.

3. Board Recommendation

Licensee

Additional improvements can be realized by a more aggressive response to NRC initiatives on procedure improvements, encouraging greater attention to details in the conduct of routine activities to reduce personnel errors, and, taking a more conservative approach in response to apparent operation with unanalyzed conditions.

NRC

Conduct routine inspection program and monitor performance for trends.

B. Radiological Controls (23%)

1. Analysis

The licensee's Radiological Controls Program during the previous assessment period was categorized as Category 1 and no major problems were identified during that period.

During the current assessment period, weaknesses in the licensee's Radiological Controls Program were identified. Eleven inspections were performed in the Radiological Controls Program resulting in nine identified violations.

1.1 Radiation Protection

Five inspections of this program area were conducted by Region I Radiation Specialists. These inspections included reviews during normal and outage operations and a special review for possible transuranic contamination. The Resident Inspector reviewed ongoing radiation protection activities.

Procedures are generally well controlled and documented. One violation concerned the failure to properly review and approve procedures for the operation of a van-mounted whole body counting system. The item was an isolated instance due to the temporary nature of the operation involved.

Reviews of routine operations, planning and preparation for the outages and outage activities indicated that a generally effective radiation protection program was maintained. However, management needs to formalize and improve the "As Low As Reasonably Achievable" (ALARA) program to support piping replacement in 1985. The ALARA program lacked an adequately stated and understood management policy statement providing a commitment to ALARA. The charter for the ALARA Committee failed to define the term "high radiation exposure jobs" within that committee's purview. Procedures for ALARA instructions, pre-operational briefings, use of engineering controls, practice in low radiation exposure areas and scheduling tasks to reduce radiation exposures were not in place. Records were not available of man-rem estimates for several outage activities involving up to ten man-rem projected exposures.

The licensee's personnel contamination survey program had programmatic weaknesses identified by the NRC. These weaknesses were due to a poorly understood and frequently ignored policy for personnel "frisking." These weaknesses were addressed and corrected by the licensee in response to NRC in-

initiatives, including Confirmatory Action Letter 83-10. The discovery by the licensee of areas of contamination and uncontrolled material outside the radiologically controlled areas (RCA) of the plant, both inside and outside the protected area, indicates that additional controls are needed for the movement and storage of licensed material outside the RCA. The licensee adequately responded to these instances with technically sound corrective actions.

An NRC-sponsored survey of possible transuranic contamination in commercial nuclear plants showed the possible presence of alpha-emitting radionuclides in the licensee's facility. The licensee failed to promptly investigate and resolve this potential safety issue when notified of the survey results. In response to NRC initiatives, the licensee determined that alpha-emitting radionuclides were not present in sufficient quantities to significantly contribute to worker exposures.

The radiation protection organization and staffing level were generally adequate to support normal operations and the outages. Selection, training and qualification programs for replacement personnel in radiation protection were also generally adequate and contributed to generally acceptable personnel performance and adherence to procedures during the outages.

Documentation of radiation protection activities was generally complete, adequately maintained and available. However, supervision-approved changes to requirements in radiation work permits were not documented in at least two instances. Dosimetry records were well-organized and available.

The total personnel exposure reported for the facility for 1983 was 1528 MAN-REMs, which includes exposure for the recirculation pipe repairs, and is about average for BWR plants of the same age.

## 1.2 Radioactive Waste Management/Effluent Controls

Four inspections of this program area were conducted by Regional Radiation Specialists during this assessment period. These inspections reviewed normal operations and the discovery by the licensee of radioactive contamination outside the radiologically controlled areas of the plant. The Resident Inspector also reviewed ongoing activities in this program area.

One violation concerned the failure to properly record test results for Standby Gas Treatment System Train B. This violation was an isolated event and suggested a lack of attention to detail in reviewing the results of one particular test.



The licensee's response to this item was timely and adequate to assure that supervisory personnel would review test results. A second violation concerned the failure to adequately implement the requirements of NUREG 0737 Item II.F.1.2 (effluent monitors for particulates and noble gases) and Item II.F.1.3 (containment high range monitor) in accordance with the March 1983 Confirmatory Order. The items concerned a failure to meet the specified design requirements for the containment monitor, and a failure to provide a technically adequate design for the effluent monitors, and suggest a lack of management involvement to assure quality in the design engineering. However, the licensee has disagreed with the second violation and this matter was still under review at the conclusion of the assessment period.

An effective radioactive waste management and effluent controls program was maintained. Planned releases of liquid radwastes were minimized as result of prior planning for control of activities. There were no unplanned releases during the assessment period.

Reviews of staffing and organization structure showed all positions are adequately identified, authorities and responsibilities are defined, and a generally adequate staff available. Annual retraining in applicable procedures, Technical Specifications and related areas is required by the licensee. This retraining program is generally complete and contributes to a generally acceptable level of personnel performance with few personnel errors.

Radioactive waste management and effluent control procedures are generally complete, adequately maintained and available. However, several minor technical inadequacies in procedures were identified. Plant procedures failed to provide instructions for converting stack gas monitor readings to gaseous release concentrations. A calibration procedure for the main steam line monitors did not specify that the monitors must be calibrated when found out of tolerance during functional tests, and did not adequately address how to determine background levels to establish the trip setpoints. Four procedures for iodine chemical separation of the reactor coolant sample did not require calibration of the iodine carrier. The routine environmental program failed to detect the small but measurable buildup of cobalt-60 in the Connecticut River at levels up to 750 pCi/kg at the discharge of the site North storm sewer, due to a source originating from the turbine building roof vents. Increased attention to technical detail in procedures during revision and review is needed.

Quality assurance audits of radioactive waste management and effluent control areas were timely, generally thorough and performed in accordance with the licensee's Technical Specifications. Actions taken in response to audit findings were generally timely and thorough.

Four of the seven LERs for this functional area involved missed surveillances which resulted from personnel errors committed by failing to pay attention to details. Plant management review of personnel performance deficiencies is warranted to assure adverse trends do not occur.

### 1.3 Transportation

One onsite inspection of this area was made by regional radiation specialists. Additionally, receipt inspections by a representative of the State of Nevada and by Boston Edison Company employees of two licensee shipments were reviewed during the assessment period. Three violations were identified: failure to transport licensed low specific activity (LSA) material in a strong tight package; delivery of a spent resin shipment exceeding 200 millirem per hour on the external surface of the package to the Beatty, Nevada burial site; and failure to provide training to licensee employees performing inspection activities affecting quality of licensed shipments. An enforcement conference and a management meeting were held to discuss these violations with the licensee. The State of Nevada temporarily suspended the licensee's burial privileges.

The licensee has documented the specific responsibilities assigned to the Operations, Maintenance and Chemistry and Health Physics Departments in plant procedures. Procedures affecting shipping activities of these departments were revised to reflect changes in 10 CFR 71 and DOT regulations effective during the assessment period. Records for material shipments were complete, well maintained and kept for a period in excess of the two year requirement.

Quality assurance audits of the transportation area were conducted by technically qualified personnel, and were generally timely and addressed most aspects of the program. However, the audits failed to identify the weakness in the training of quality control inspectors.

## 2. Conclusion

Category 2, consistent.

3. Board RecommendationLicensee

Formalize ALARA program policies and procedures. Take a more aggressive approach to investigate and resolve indications of anomalous radiological conditions. Maintain and enforce a strong frisking program to reduce the probability for inadvertent release of material from the radiological controlled area. Strengthen controls for the preparation and QC review of radwaste shipments. Emphasize attention to detail in the conduct of routine duties and procedure reviews.

NRC

The inspection frequency in the transportation area should be increased. The inspection frequency in the remaining areas should remain as prescribed by the routine program.



### C. Maintenance (3%)

#### 1. Analysis

There were no significant deficiencies, weaknesses or violations identified in this area during the last assessment period and performance for the area was rated as Category 1. The preventive maintenance program was identified as a notable strength in the licensee's system of management controls.

During this assessment period the area was under continual review by the resident inspector. One inspection conducted by a Region based inspector reviewed the maintenance program to determine the extent to which maintenance practices may contribute to system unavailability. Specialists conducted two inspections in this area. The second inspection was conducted to followup deficiencies identified during the first inspection.

Reviews of items requiring maintenance found that safety related items are given priority attention. The Instrument & Control and Maintenance Departments are staffed by experienced personnel and personnel turnover has been low. Supervisor monitoring and involvement in daily work activities is evident and remains an element of strength. Craft and supervisory personnel demonstrated a good working knowledge of plant systems and components within their realm of expertise. Completion of an SRO certification program by the Maintenance Supervisor is an asset that will strengthen the functional area. There is a generally good regard for administrative and procedural requirements. The special inspection of maintenance practices identified no programmatic elements that would cause an adverse impact on equipment availability. The licensee's program assures that equipment failures are evaluated for frequency of occurrence and root cause, and that maintenance errors are detected, evaluated and corrected. A recent example of the latter involved the determination by the I&C Supervision of an improper power supply that was installed in the ECCS vessel level instrumentation channel during routine corrective maintenance.

The preventive maintenance program continues to be well documented in both the Maintenance and Instrument & Controls areas. The well maintained Visirecord system is an asset in the licensee's review of equipment failure histories and trends. Deficiencies in equipment performance were identified and corrected. A notable example includes the degraded performance identified and corrected on the 125 VDC station batteries and the 480 VDC uninterruptible power supply batteries. Notwithstanding the above, a significant equipment problem occurred at the end of this assessment period, when two independent, redundant relays failed nearly simultaneously and



rendered both emergency diesel generators inoperable. Licensee actions to evaluate and eliminate potential common mode failure mechanisms are being followed by the NRC staff.

The licensee program for maintenance and surveillance of pipe supports and restraints remained effective. However, an item regarding upgraded snubber technical specifications has been a long standing issue with the licensee that has just been recently resolved. Following the NRR request in November, 1980 that the licensee revise the snubber technical specifications, and after two meetings (May, 1983 and February, 1984) initiated by the NRC staff to resolve the technical issues, the licensee submitted a proposal to change the technical specifications in October, 1984. The licensee's reluctance to respond to the Staff's request caused the unnecessary expenditure of additional NRC resources to resolve the issue in a timely manner.

Two of the violations identified during this period concern problems in the documentation of work activities in the corrective maintenance program, which appear as a programmatic weakness in assuring the quality of the completed work. Examples of these problems included: incomplete or inaccurate information on maintenance work requests regarding the scope of work required; incomplete procedural instructions regarding the requirements for independent inspections; a lack of documentation of independent inspections; and, a failure to define operational testing and acceptance criteria in all cases. The exact work done and replacement parts used during maintenance was not determinable in all cases after the work was done. The incomplete information recorded on the maintenance requests suggests a lack of attention to detail in maintaining records. Workers were not knowledgeable of the intent and meaning of administrative requirements regarding documentation of work scope and independent inspection. The post-maintenance review of work requests was inadequate since it failed to identify the lack of documentation of parts used, testing completed, and inspections conducted. QA reviews of these areas also appears inadequate since the above problems were not noted during QA audits. The licensee was responsive to the NRC concerns since a followup inspection in this area indicated increased management attention and general improvement in the documentation of maintenance activities.

The third violation in this area stems from the failure to properly bolt the steam separator to the core shroud during vessel reassembly following the 1984 refueling outage. Although the procedure used for the evolution was satisfactorily used perhaps a dozen times in the past to set the separator, it was inadequate to assure that the separator was bolted tightly in place. The licensee reviewed the event and determined that the maintenance crew performing the work in July, 1984 did not have a full understanding of the bolting process and required further training. This event demonstrated

that the licensee's QC and QA controls were insufficient to detect the improper procedure, training and bolting prior to subsequent plant operation in that condition.

The licensee took the initiative during this assessment period to provide SRO certification for managers in the department. This action created a temporary vacancy in the Maintenance Supervisor position from about February to April, 1984. There was also a vacancy in the Maintenance Superintendent position from about February to October, 1984, that was created at first when the incumbent attended the SRO certification program, and was extended later when that individual was promoted to a new position. The Maintenance and I&C departments were temporarily realigned under the Operations and Technical Services Superintendents during the interim period. A new appointee for the Maintenance Superintendent position began work in October, 1984, and is being gradually phased into the position. The temporary vacancies created in these key management positions and the extended time taken to fill the vacancy in the Superintendent position reduced the level of management attention for the area and created a lack of continuity in management oversight and control.

Two licensee event reports (LERs) are listed for this functional area. One event concerned the installation by I&C personnel of the wrong type (gamma sensitive) detector for a stack gas monitor during routine preventive maintenance. The second LER concerned the failure by maintenance personnel to properly bolt the steam separator to the core shroud in July, 1984. The failure of maintenance personnel to strictly follow procedures during vessel disassembly in September, 1984 resulted in a security event and was a licensee identified violation of the technical specifications. These events are indicative of personnel performance problems and suggest a lack of attention to detail during the performance of routine duties. The licensee has been responsive to NRC concerns by reviewing and responding to apparent trends in this area and by addressing these concerns in a memorandum to all plant personnel.

2. Conclusion

Category 2, declining.

3. Board Recommendations

Licensee

Strengthen management oversight and QA controls to assure previous levels of performance are re-established and maintained.

NRC

Monitor licensee performance through the routine inspection program.



D. Surveillance (5%)

1. Analysis

There were no significant concerns identified in this area during the previous assessment period. Two violations of minor safety significance were identified during the current assessment period. The implementation of an operational surveillance program by an experienced staff remains a significant strength.

Surveillance activities during normal operations and refueling outages were reviewed by the resident inspector during routine inspections. There were two specialist inspections in the areas of containment leak rate testing and snubber testing. Two additional inspections by Regional personnel reviewed the in-service inspection program and nondestructive examination for repair of recirculation system welds.

The licensee performed recirculation weld inspections per IE Bulletin 83-02 during the 1983 outage, and per NRC Generic Letter 84-11 during the 1984 outage. No problems were noted during the NRC review of the licensee's program for augmented ultrasonic examination of recirculation piping; the ISI program, data, and results; and, personnel certifications and qualifications. The licensee maintained adequate control over the recirculation weld examinations by direct surveillance of ISI vendor activities. The results of the evaluations were promptly evaluated by the licensee and appropriate corrective actions were implemented to correct unacceptable conditions. The licensee cooperated with NRC initiatives to independently measure and evaluate cracked welds in the recirculation piping.

Surveillance activities were completed in accordance with the established procedures. Planning and staffing are adequate. Personnel are well experienced in test activities and associated procedures, and are knowledgeable of the facility, its operation and the equipment under test. There is a generally good regard for administrative policies and procedural controls. One exception concerned the violation identified in the I&C area, where technicians exercised poor judgement by terminating the torus level instrument calibration prior to formal completion of the procedure.

Surveillance records are well organized and readily retrievable. Surveillance results are trended to identify and trend equipment problems. There are relatively few (5) licensee event reports (LERs) in this area due to instrument setpoints found out of technical specification limits. This record demonstrates that



the practice of trending setpoint drift and adjusting the surveillance interval accordingly is working well. Surveillance test results are consistently reviewed by supervisory personnel. One notable exception concerned the violation regarding the inoperable seismic monitoring instrumentation. However, this item was an isolated incident and does not significantly detract from otherwise good performance.

Surveillance and testing procedures are generally well written and technically accurate. A notable exception concerned two procedural problems that resulted in improper instrument setpoints for the SLC system (LER 84-13) and the main steam line radiation monitors (LER 83-25). Two instances involving inadequate procedures also caused plant transients, as follows: inadvertent ECCS actuation and depressurization during hydrostatic test with the plant shutdown due to manipulation of instrument valves for PT 56D; and, inadvertent ECCS actuation while shutdown caused by a valving manipulations during a level instrument calibration. Resolutions to technical issues in all areas reviewed were generally sound. However, one item for improvement concerns the licensee's failure to implement the NRC position on repairs and adjustments to containment boundaries as part of the containment leak rate testing.

Another item that warrants continued management attention is the occurrence of personnel errors during the performance of routine duties. Errors committed by technicians resulted in the following during the inspection period: five (5) instances where the required surveillance was either not done, or the results were lost, due to personnel error; and, plant trip (manual scram by operators) following loss of both recirculation pumps due to inadvertent ECCS actuation caused by technicians while securing from a logic test. Each instance above involved a failure to pay attention to details.

The number of reportable events for this area (17) is not considered exceptional. Equipment failure remains the predominant cause for reports submitted in this area. The identification of equipment problems during testing and the resultant LERs are expected.

## 2. Conclusion

Category 1, consistent.

3. Board RecommendationsLicensee

Increase attention to detail during the performance of routine duties to assure level of performance does not decrease.

E. Fire Protection and Housekeeping (9%)

1. Analysis

One minor violation (level V) was identified during the previous assessment period, concerning the failure to meet the conditions of a fire control permit during welding operations. Performance in this area was assessed as category 1 due to the strength of the licensee's controls in both the fire protection and housekeeping areas, which were evident by the physical plant conditions and a history of extensive work activities without any major incidents.

Routine implementation of the fire protection program and plant housekeeping conditions during normal operations and outages was reviewed continually by the resident inspector during the assessment period. A review of the licensee's implementation of the 10 CFR 50, Appendix R requirements was completed during the assessment period.

Plant cleanliness and housekeeping remained an element of strength during this assessment period, based on routine reviews by NRC inspection personnel. Good housekeeping and maintenance practices during normal operations were evident throughout the facility. The routine fire protection program has been implemented consistent with previous observations. Fire detection and suppression systems are well maintained and controlled. Fire equipment was in good working condition and adequate spares were available. There were no major incidents. There was only one observation of a minor inadequacy in the fire watch controls established for the drywell in July, 1984. There have been no major changes in supervisory personnel or training programs for the areas. Overall, management controls have remained effective in maintaining good performance in the routine programs.

The specialist team inspection conducted to review the licensee's actions to comply with the safe shutdown requirements of Section III of Appendix R, 10 CFR Part 50 was completed early in the assessment period. The one violation identified during this inspection is being considered for escalated enforcement action. The violation involves failure by the licensee to reanalyze and provide adequate fire protection for the Reactor Building. While the licensee did well in implementing the requirements of the rule for those areas outside the reactor building, the licensee did not take the initiative to assure that his assumptions for the reactor building were consistent with the NRC

staff's positions. Licensee exceptions to the requirements were not properly identified to the NRC staff.

The licensee took considerable time to respond to the issues identified by the inspection team. The NRC positions regarding the Appendix R requirements were clearly presented to the licensee by the NRC review team in August, 1983, but the licensee did not become fully committed to address the identified deficiencies and differences between his and the NRC staff's positions until March, 1984. Considerable NRC effort was required to get the licensee to agree to perform the reanalysis and implement the actions necessary to correct the violation. The licensee's interim compensatory measures for the inadequate fire protection of the reactor building were not promptly implemented and required that the NRC staff take the lead to prescribe additional compensatory measures during meetings and telephone conversations with the licensee in May, 1984.

Modifications to install remote shutdown equipment that was electrically independent from the normal shutdown equipment were completed during 1983. The licensee developed procedures to operate the systems and declared the shutdown panels operational for the startup from the 1984 refueling outage in accordance with the 10 CFR 50.48 scheduler requirements. However, no dry run of the remote shutdown emergency procedure by a shift crew was completed prior to NRC inspection of the area in October, 1984. NRC and licensee reviews of the procedure determined that the procedure would probably have worked if needed to shut down the plant, but only with great difficulty. Significant improvements were required to better integrate and coordinate the actions by the shift crew. The licensee should have performed the dry run with a shift crew prior to accepting the procedure and declaring the shutdown systems operational.

## 2. Conclusion

Category 2, consistent. The lower rating this assessment period is due to the licensee's incorrect implementation of the Appendix R rule and the licensee's slowness in responding to NRC initiatives once the deficient areas were identified.



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## 2. Conclusion

Category 2, consistent. The lower rating this assessment period is due to the licensee's incorrect implementation of the Appendix R rule and the licensee's slowness in responding to NRC initiatives once the deficient areas were identified.

3. Board Recommendation

Licensee

Finish implementation of the Appendix R analyses and modifications in accordance with established commitments.

NRC

Review the licensee's actions to fully comply with the fire protection rule during the next assessment period.

## F. Emergency Preparedness (16%)

### 1. Analysis

There were no inspections in this area, and thus, there was no basis for an evaluation during the previous assessment period. Performance in the area was rated as Category 2 for the May 1, 1981 to April 30, 1982 assessment period, based primarily on concerns associated with the emergency response actions taken during the April 24, 1982 loss of feedwater event.

During this assessment period, there were five (four announced and one unannounced) routine inspections of the emergency preparedness program. There were no violations noted during the assessment period which related to the licensee's state of emergency preparedness. One reportable event occurred on June 15, 1984 where the emergency organization was activated to correct a malfunction of a transverse incore probe (TIP), which bypassed its removal stop and produced readings in the Reactor Building at least 1000 times normal. Plant operators recognized the condition, correctly classified the event and declared an Alert emergency. The licensee performed well in responding to the condition, activating the emergency response centers, controlling the probe and protecting plant workers. A one-time exemption from conducting the scheduled November 14, 1984 exercise was granted based on a review and evaluation of the response to the event including the resident inspector's observations of the response to the event.

The inspections during this period identified only minor areas for improvement and generally indicated an adequate state of emergency preparedness in the areas examined. The close-out of previously identified items indicated that the licensee has committed attention and resources to the emergency preparedness program.

Two exercises were conducted during the appraisal period. An EOF-in exercise on August 11, 1983 tested the licensee's internal emergency response capability, and an EOF-out exercise on September 21, 1983 tested the licensee's offsite capabilities and coordination with the offsite emergency response organizations. Both exercises were observed by teams of NRC and NRC contractor personnel. Although areas for improvement were identified, the NRC inspection teams determined that the licensee had demonstrated that they could implement their emergency plan and implementing procedures in a manner which would adequately protect the health and safety of the public.

The licensee has committed an adequate amount of resources to the emergency preparedness program which is comparable to the industry. Management attention and involvement in the emergency

preparedness program was demonstrated by evidence of prior planning and assignment of priorities; adequately stated and understood policies and procedures with reviews generally timely, thorough and technically sound. Understanding of technical issues was generally apparent with conservatism generally exhibited. Timely, viable and generally sound resolutions to technical issues and NRC initiatives were provided. Staffing was adequate with positions identified, authorities and responsibilities well defined and key positions filled in a timely manner. The training program was defined and implemented for a large portion of the staff. The training program makes a positive contribution to the emergency preparedness program. During the June 15, 1984 incident, the licensee's reporting of the event was prompt and complete; the event was properly identified, analyzed, and effective corrective action was taken. The licensee has also included the NRC in the planning for the renovation of its corporate headquarters to include an EOF/training facility in Brattleboro, Vermont, which should be completed on schedule in 1985.

The licensee has been responsive to NRC initiatives and acceptable resolutions were proposed and implemented on a timely basis. Significant improvement in the licensee's performance was noted in comparison with prior performance.

2. Conclusion

Category 1, consistent.

3. Board Recommendations

NRC

Reduce the priority of emergency planning inspections at Vermont Yankee.



G. Security and Safeguards (2%)

1. Analysis

During the previous assessment period, there were no significant concerns or deficiencies identified in the security and safeguards area. One minor violation occurred during an outage because maintenance personnel failed to notify the security organization prior to changing the status of a vital area barrier. Licensee performance in the area was rated as Category 1.

During the current assessment period, one routine, unannounced physical protection inspection was performed by a region based inspector. Routine resident inspections continued throughout the assessment period and one severity level IV violation was identified. Corrective measures were prompt and effective. A licensee identified level IV violation occurred during an outage in September, 1984 when maintenance personnel failed to notify the security organization prior to changing the status of a vital area barrier. Actions to correct and report the occurrence were prompt and appropriate. The actions by the security organization in both incidents were proper. Additional licensee management attention is warranted to assure that all plant personnel are sensitive to security controls.

Management effectiveness was evidenced by proper system and equipment operation and maintenance and performance of security personnel. Administrative practices were well organized and records were neat, accessible and correctly maintained. The Site Supervisor interfaced effectively with the contract security force management staff and communications within the contractor organization reflected a thorough and professional understanding of the Safeguards Plans and implementing procedures for physical protection of the site. Also evident was support for the security program by other members of the site management staff.

An increase in security events associated primarily with security system problems was noted during the physical protection inspection in August 1984. It is notable that the security organization, on its own initiative, had a statistical study of security systems failures performed and had presented the results to licensee management in order to effect technical improvements. Management attention to this study was evident by the scheduling of vendor visits to the site during September 1984 and by the funds that have been made available to hire a contractor to study the present security equipment and recommend system enhancements. Corporate involvement was also evident by its support of this activity.

Staffing of both the licensee's and the contractor's security organization was consistent with program manning requirements. Supervisors were knowledgeable of their functional duties and responsibilities. Security officer training, qualification and performance standards were professionally developed and executed. Facilities were well maintained and uniformed guards reflected good appearance.

The licensee submitted three revisions to the Security Plan under the provisions of 10 CFR 50.54(p) during the assessment period. The revisions were acceptable. The licensee was responsive to NRC concerns and questions regarding the revisions.

2. Conclusion

Category 1, consistent.

3. Board Recommendations

Licensee

Emphasize and encourage security awareness to station staff to assure previous performance levels are maintained.

NRC

None.

#### H. Refueling and Outage Management (8%)

A significant concern was identified in this area during the previous assessment period regarding the failure of licensee personnel to follow administrative controls and the area was rated as Category 2. The NRC assessed a penalty for the failure to maintain secondary containment and then mitigated the fine to a zero dollar amount based on the licensee's corrective actions. Performance in this area was considered degraded due to the lack of regard for administrative policies and controls exhibited by several senior employees, including two senior licensed operators, which resulted in the secondary containment violation.

All phases of refueling and outage activities were reviewed by the resident and region-based inspectors during the 1983 and 1984 refueling outages. Inspections were conducted in the areas of fuel receipt inspections, refueling activities, design changes and modifications, recirculation system non-destructive examinations and piping repairs, radiological controls and the cycle 10 startup physics test program.

The planning and control of refueling outage activities remains a licensee management strength. Detailed planning for outage activities is followed through with the proper level of supervision. Station personnel are effectively used to coordinate contractor work activities during outage modifications. Communication and coordination between outage groups was generally effective. One exception concerned the lack of coordination between the maintenance and security groups during the opening of an access to a vital area.

Refueling and spent fuel pool activities, and other in-vessel surveillance and maintenance work were conducted by qualified personnel in accordance with established procedures. A notable exception concerning the installation of the steam separator by maintenance personnel is discussed in Section C above. The licensee maintains adequate control over contractors performing vessel related work. Mechanical problems with refueling equipment were minimal. Personnel responsible for new fuel receipt, inspection and installation activities were knowledgeable of the operations and conducted the activity with ample regard for nuclear safety.

For the startup physics testing program, there was adequate planning for the testing and the tests were conducted in accordance with approved procedures and accomplished by an adequate and qualified staff. Records were complete, well maintained and readily available.



Coordination with the offsite engineering groups is generally effective for the timely completion of design changes. The identification and repair of recirculation pipe cracks was completed in a manner acceptable to the staff, and without extending the scheduled length of the 1984 refueling outage. Major modifications to meet the Environmental Qualification rule for electrical equipment were also completed. During the 1983 outage, the schedule for completing the torus attached piping modifications was extended by two months because additional supports were necessary to meet the load requirements. Additionally, errors in the development and application of a support spacing table provided by the engineering organization resulted in the need for compensatory measures while the supports for equipment cooling lines were redesigned and modified. Modifications to provide the proper stiffness for the hydraulic control units and to complete support base plate modifications per IE Bulletin 79-02 were still in progress at the end of the assessment period. Additional management attention is warranted to assure quality work is received from the engineering organization in a timely manner, and to maintain a high level of performance in this area.

The first violation identified in this area concerned the failure to properly review and approve a wiring change made during the installation of the new scram instrument volume instrumentation during the 1983 outage. The violation occurred during the post installation testing when I&C technicians identified and corrected an apparent wiring error they thought was made when the design change was installed.

The second violation concerns the loss of secondary containment identified by the licensee while fuel movement was in progress in July, 1984. The item was categorized as a Level IV violation due to the lack of safety significance, based on the circumstances attendant to the event, and based on the extensive corrective actions taken upon discovery of the condition. There were significant differences between the 1983 event which significantly affected the last assessment and the 1984 event. The event in 1984 occurred primarily as the result of a single contractor individual's failure to follow the established tagging controls prior to opening a service water line in the Reactor Building to install a mechanical bypass. The contractor's actions constituted an error in judgement, rather than a disregard for the administrative controls. More importantly, the condition was detected during routine surveillance by Operations personnel, who quickly assessed the situation, suspended fuel movement, corrected the breach in containment, and reported the incident to plant management and the NRC. The actions by Operations personnel



during this event, and generally during other less significant incidents during the assessment period, demonstrated a high regard for administrative policies and controls.

The five LERs for this area consisted of three events involving personnel error, the most significant one was discussed above, and two events involving equipment failures. The equipment failures involve the alternate RPS power supplies (GE power protection panels) installed by the licensee in 1983 in response to NRC concerns. Resolution of the problem is in progress.

2. Conclusion

Category 1, consistent.

3. Board Recommendations

None.

## I. Quality Assurance (6%)

### 1. Analysis

This functional area was not addressed separately during the previous assessment period since no problems were noted in the implementation of the Quality Assurance (QA) program as part of the licensee's system of management controls.

All specialist inspections address the QA/QC interfaces in the areas inspected during the current assessment period. Two specialist inspections specifically addressed the licensee's QA Department and its inspection, surveillance and audit overview activities. One of these inspections also reviewed modifications and procurement QA program controls.

Several problems were identified during inspections early in the assessment period. The licensee failed to establish a program to assure that a meaningful level of independent inspections were performed on safety-related work other than design changes and modifications. Additionally, QA surveillance (random monitoring) was not conducted in five major QA program areas. There were no specific procedures or instructions established to conduct monitoring of the areas since the surveillances were considered a random, informal activity. The onsite QA group was budgeted at one and one-half QA personnel, who did audits at other sites in addition to other QA/QC overview of onsite activities. Corporate QA management involvement onsite was minimal. The review for plant modifications was not adequately delineated. Engineering procedures did not require a review for appropriate safety classification in certain design changes, QA did not have a procedure to detail modification package reviews, and OQA procedures for modification reviews did not require a review of safety classification. Concerns in the procurement program included a lack of independent review or audit of purchase orders classified as nonsafety-related, and equipment reclassifications were not always updated in the computer-based spare parts inventory. These problems were indicative of a QA program that was inadequately staffed and too narrow in its scope and coverage.

The followup specialist inspection in the QA area identified that the licensee had allocated five positions to the onsite QA staff and transferred a manager to the site on a part time basis. Improvement was noted in all areas because of the increased staffing and re-assignment of in-plant audits to the corporate QA organization. The licensee was responsive to NRC concerns raised during the first specialist inspection. However, the second inspection identified a concern in the procurement area in that the licensee failed to include appropriate items purchased between 1975-83 in the recently established

shelf-life control program. These items included material such as replacement diaphragms, gaskets, seals and O-rings. Components containing internal parts of like nature such as ASCO and NAMCO switches, have not been included in the current shelf-life program. These later findings indicate that while improvements have been made, further plant management attention to QA is warranted.

NRC reviews found that training for QA personnel met the requirements of the standards. However, examples were identified where QA personnel were assigned overview responsibility without receiving any formal training for the area being reviewed (e.g., surveillance and audit of radwaste shipments).

The violations and concerns discussed above indicated that there was inadequate management overview and QA involvement in some safety-related activities.

2. Conclusion

Category 2, improving.

3. Board Recommendations

Licensee

Continue efforts to fully staff the onsite QA group and to fully implement surveillance and inspection functions. Resolve concerns identified in the procurement program regarding control of equipment shelf life.

NRC

Review implementation of QA/QC improvements during the next assessment period.

Schedule a management meeting with the licensee to discuss QA program implementation.

## J. Licensing Activities

### 1. Analysis

This evaluation represents the integrated inputs of the Operating Reactor Project Manager and those technical reviewers who expended significant amounts of effort on the Vermont Yankee licensing actions during the current rating period. The rating also reflects the comments of the NRR Senior Executive assigned to the assessment.

The basis for the appraisal was the licensee's performance in support of licensing actions that were either completed or had a significant level of activity during the current rating period. These actions, consisting of amendment requests, exemption requests, responses to generic letters, TMI items, and other actions, are summarized in Table 6 along with other licensing activity data.

During the present rating period, Vermont Yankee senior management personnel involvement and apparent attention to quality in issues of major safety significance, such as recirculation system IGSCC inspection and repair, was apparent. The quality of licensing submittals generally evidenced management attention. Appropriate allocation of technical manpower in support of licensing activities and, on occasion, reprioritization of activities to meet changing safety priorities also indicates good corporate management involvement. Licensing Management involvement has further been apparent in candid, constructive discussions with NRC staff on complex licensing issues. The licensee has maintained an adequate licensing staff to assure timely responses to NRC needs.

One area where management attention could be increased is in the planning of amendment requests to assure that submittals are sufficiently timely to realistically accommodate NRC processing and Federal Register noticing time requirements.

The licensee's management and its staff have demonstrated clear technical understanding of issues involving licensing actions. Its approach to resolution of technical issues has demonstrated extensive technical expertise in all technical areas involving licensing actions. The decisions related to licensing issues have exhibited conservatism in relation to significant safety matters such as early commitment to a scheduled replacement of recirculation system piping.

The licensee frequently forms technical judgements independent of the industry, and these judgements are usually well thought out and well supported. An example of the licensee's independent technical capability is development of its own fuel



performance code (FROSSTEY). In this effort, the licensee demonstrated a level of technical competence and self-sufficiency that is difficult to find elsewhere in the industry outside of the major fuel vendors.

An example of the licensee's industry-wide technical awareness and initiative was its recent proposal to remove the feature that automatically transfers high pressure coolant injection (HPCI) suction from the condensate storage tank (CST) to the torus on high torus water level. This proposal was based on the licensee's review of the Browns Ferry report on Station Blackout which revealed that elevated suppression pool water temperatures during blackout can damage the HPCI pumps which use the water pumped from the pool for cooling the lubricating oil of the HPCI pump turbines.

The licensee has been generally responsive to NRC initiatives. During the rating period, it generally made reasonable efforts to meet or exceed commitments. Responsiveness by the licensee facilitated closing out several complex and historically tangled multi-plant issues, such as Feedwater Nozzle Cracking and Appendix J. Responsiveness in accommodating independent staff consultants in the 1984 piping inspection outage resulted in development of a more sound technical basis for understanding the IGSCC phenomena at Vermont Yankee than would otherwise have been developed. Licensing actions associated with the Environmental Qualification rule for electrical equipment were completed during the period. The number of items requiring a scheduler extension were few and adequate justification for continued operation was provided to the staff in a timely manner.

An isolated instance of licensee nonresponsiveness occurred in the licensee's provision of post-accident sampling information which required about two years to obtain, despite two letters, a number of telephone calls, and an NRC site visit.

2. Conclusion

Category 1, consistent.

3. Board Recommendations

None.

## V. SUPPORTING DATA AND SUMMARIES

### A. Investigations, Petitions and Allegations

In June, 1984, the NRC received an allegation from a contractor employee that adverse actions were taken against him and several other contract workers based on unsatisfactory medical screening results, but termination of employment as a radiation worker was delayed until a high exposure job was finished. This matter was reviewed by the resident and region based inspectors. These inspections determined that there were no violations of radiation protection requirements and there was no attempt by the licensee to knowingly expose workers to radiation who were not medically qualified for radiation work.

The NRC received a petition under 10 CFR 2.206 on October 25, 1983 from the Vermont Yankee Decommissioning Alliance and the Vermont Public Interest Research Group requesting that the NRC issue an order to the licensee to show cause why the license should not be suspended pending resolution of certain pipe crack related issues. The director of NRR issued a decision dated April 16, 1984, after considering the information filed by the petitioners, and concluded that the request was not warranted. The request was denied.

The Office of Investigations conducted no investigations related to Vermont Yankee during the current assessment period.

### B. Escalated Enforcement Actions

#### 1. Civil Penalties

None

#### 2. Actions Pending/Resolved

- + IR 83-26 violation for failure to provide protection per Appendix R, III.G.2 for equipment in the Reactor Building.
- + IR 83-30 Level III violation for transport package dose rates in excess of limits. No penalty issued since burial site suspended license.

#### 3. Orders

- a. Extended Mark I Completion Date, June 17, 1983
- b. Confirmed Pipe Crack Leak Detection, June 27, 1983
- c. Revised Simulator Examination Requirements, December 12, 1983
- d. Confirmed Emergency Response Capability, June 12, 1984
- e. Confirmed Commitments on Pipe Crack Issues, August 28, 1984

4. Confirmatory Action Letters (CAL)

- a. CAL 83-04, Confirmed Actions on Service Water Pipe Supports, June 17, 1983
- b. CAL 83-10, Confirmed Actions on Plant Frisking Policy, August 10, 1983

C. Management Conferences

- a. SALP Management Meeting at the Vermont Yankee Site, June 28, 1983
- b. Management Meeting to Review Transportation Violations, November 22, 1983
- c. Management Meeting to Review Appendix R Actions, November 22, 1983
- d. Management Meeting to Review Appendix R Actions, January 10, 1984
- e. Management Meeting to Review Appendix R Actions, May 24, 1984
- f. Management Meeting Requested by Licensee to Review Violations in Inspection Reports 84-02 and 84-06, September 24, 1984

D. Licensee Event Reports

## Type of Events:

A. Personnel Error . . . . .	14
B. Design/Mfg/Const/Install Error . . . . .	3
C. External Cause . . . . .	0
D. Defective Procedure . . . . .	4
E. Component Failure . . . . .	20
X. Other . . . . .	<u>2</u>
Total	43

## Licensee Event Reports Reviewed:

Reports 83-14 to 83-34 and 84-01 to 84-22

Causal Analysis

Six sets of causally linked events were identified.

- a. LERs 83-14, 83-15, 83-19, 83-24, 83-29, 84-03, 84-05, 84-06, 84-08, 84-09, 84-10, 84-12, 84-15, and 84-17 are events (14 total) due to personnel error. Reportable events involving errors were about equally distributed in the plant operations, radiological controls, surveillance and refueling functional areas.
- b. LERs 84-16 and 84-18 occurred in part due to the alternate RPS power supply either tripping or being in a tripped condition.
- c. LERs 83-16, 83-30 and 84-04 involved mechanical failures of main steam isolation valves.
- d. LERs 83-17, 83-20, 84-20 and 84-22 involve events in which relay failures resulted in operation in a degraded mode. LER 84-22 concerns the near simultaneous failure of both diesel generators due to failed zener diodes in redundant generator differential relays.
- e. LERs 83-21, 83-31, 83-33, 83-34, 84-02 and 84-13 are events that occurred due to setpoint drift on instruments of relief valves.
- f. LERs 83-25, 83-26, 84-13 and 84-21 are events that occurred as a result of inadequate procedures.



TABLE 1  
INSPECTION HOURS SUMMARY (5/1/83 - 10/31/84)  
VERMONT YANKEE NUCLEAR POWER STATION

	<u>HOURS</u>	<u>% OF TIME</u>
A. Plant Operations . . . . .	1087	28
B. Radiological Controls . . . . .	912	23
C. Maintenance . . . . .	111	3
D. Surveillance . . . . .	191	5
E. Fire Protection and Housekeeping . . . . .	339	9
F. Emergency Preparedness . . . . .	654	16
G. Security and Safeguards . . . . .	65	2
H. Refueling and Outage Management . . . . .	305	8
I. Quality Assurance . . . . .	239	6
J. Licensing Activities . . . . .	<u>-*</u>	<u>-*</u>
Total	3903	100%

\* Hours expended in facility licensing activities and operator license activities are not included with direct inspection hour statistics.

TABLE 2

VIOLATIONS (5/1/83 - 10/31/84)

VERMONT YANKEE NUCLEAR POWER STATIONA. Number and Severity Level of Violations

Severity Level I	0
Severity Level II	0
Severity Level III	1
Severity Level IV	16
Severity Level V	8
Deviation	0
Under Review	1

Total 26

B. Violation Vs. Functional Area

FUNCTIONAL AREAS	<u>Severity Levels</u>					
	I	II	III	IV	V	DEV
A. Plant Operations				6	1	
B. Radiological Controls			1	5	3	
C. Maintenance				3		
D. Surveillance					2	
E. Fire Protection and Housekeeping			* 1- TBD			
F. Emergency Preparedness						
G. Security and Safeguards					1	
H. Refueling and Outage Management				1	1	
I. Quality Assurance				1		
J. Licensing Activities						
Totals			1	16	8	

\* 1 violation - category to be determined

(TABLE 2 Continued)

C. Summary

<u>Inspection Report No.</u>	<u>Inspection Date</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
83-13	5/2-5/83	V	H	Failure to review a field change to EDCR per approved procedures
83-22	7/11-20/83	IV	C	Failure to provide independent QA and supervisory inspection of maintenance
		IV	C	Failure to completely document maintenance requests
		IV	I	Failure to conduct OQA surveillance of all areas
83-26	8/29-9/2/83	*TBD	E	Failure to provide fire protection per Appendix R II.G in Reactor Building
83-27	9/6-10/3/83	IV	A	Failure to maintain main steam line trip setpoints less than 3X background
		IV	A	Failure to maintain proper SLC system valve lineup
		V	D	Failure to adequately review seismic instrument test results
83-29	10/4-31/83	V	G	Failure to control access to an access controlled area
83-30	8/23/83	III	B	Nevada Burial Site received package with 250 mRem/hr surface dose rate
		IV	B	Failure to provide strong tight package for blade guide shipment
83-33	12/6-9/83	V	B	Failure to use approved procedure for temporary whole body counting system

(TABLE 2 Continued)

84-02	1/24-27/84	V	B	Failure to train QA personnel in transportation regulations
84-05	2/28-4/2/84	IV	A	Procedure for valve controls inconsistent with technical specification requirements
84-07	3/26-30/84	V	B	Failure to review SBGTS test data
84-08	4/3-5/7/84	IV	A	HPCI actuation channels partially inoperable
		IV	A	Failure to follow procedure to reset ECCS logic
		V	A	Failure to maintain 125 VDC breakers positioned per procedure
84-10	5/8-6/4/84	V	D	Failure of I&C personnel to properly secure from testing
84-11	5/21-25/84	IV	B	Failure to meet March 1983 Order on NUREG 0737 Items II.F.1.2 and II.F.1.3
84-18	7/31-9/18/84	IV	A	Failure to maintain core spray and RHR service water valve lineup per procedure
84-20	7/17-31/84	IV	H	Failure to maintain secondary containment during refueling
84-21	9/19-10/31/84	IV	C	Failure to bolt separator to core shroud
		IV	B	Failure to survey material prior to release from the restricted area
		IV	B	Failure to post and label radioactive material in the unrestricted area



(TABLE 2 Continued)

IV	B	Failure to secure radioactive material in the unrestricted area from unauthorized removal
----	---	---

\*TBD - To Be Determined: the appropriate escalated enforcement action for this item is under review by NRC management.

TABLE 3  
INSPECTION REPORT ACTIVITIES (5/1/84 - 10/31/84)  
VERMONT YANKEE NUCLEAR POWER STATION

<u>Inspection Report No.</u>	<u>Inspection Hours</u>	<u>Areas Inspected</u>
83-11	30	Radiological Controls - Outage
83-12	15	Emergency Preparedness - PNS
83-13	26	Outage Activities and Modifications
83-14	97	Routine, Resident Refueling
83-15	13	ISI - Recirculation Weld Overlay NDE
83-16	56	Environmental Monitoring
83-17	127	Routine, Resident
83-18	48	Containment Leak Rate Test
83-19	37	Fire Protection Appendix R
83-20	47	Radiological Controls
83-21	124	Routine, Resident
83-22	144	Quality Assurance Salem Issues
83-23	256	EOF-IN Emergency Drill
83-24	61	Radiological Controls
83-25	96	Emergency Pre- paredness

(TABLE 3 Continued)

<u>Inspection Report No.</u>	<u>Inspection Hours</u>	<u>Areas Inspected</u>
83-26	257	Fire Protection Appendix R
83-27	126	Routine, Resident
83-28	200	EOF-OUT Emergency Drill
83-29	87	Routine, Resident
83-30	16	Transportation Activities
83-31	100	Routine, Resident
83-32	37	Licensed and Non- licensed Training Programs
83-33	58	Radiological Controls
84-01	210	Routine, Resident
84-02	44	Transportation Activities
84-03	35	Snubbers and Pro- posed Technical Specifications
84-04	9	Special-Review Incident Radio- logical Controls
84-05	132	Routine, Resident
84-06	26	Radiological Controls
84-07	102	Radiological Con- trols Independent Measurements
84-08	103	Routine, Resident
84-09	28	Refueling Outage Startup Testing
84-10	61	Routine, Resident

(TABLE 3 Continued)

<u>Inspection Report No.</u>	<u>Inspection Hours</u>	<u>Areas Inspected</u>
84-11	169	Special Review of NUREG 0737 Items
84-12	229	Routine, Resident
84-13	37	Inservice Inspection Recirculation Weld Repair
84-14	--	Number not used
84-15	--	License Examinations
84-16	50	Emergency Preparedness
84-17	48	Radiological Controls
84-18	195	Routine, Resident
84-19	27	Security and Safeguards
84-20	43	Special - Review Loss of Secondary Containment Incident
84-21	202	Routine, Resident
84-23	95	Quality Assurance Maintenance



TABLE 4  
TABULAR LISTING OF LERS BY FUNCTIONAL AREA  
VERMONT YANKEE NUCLEAR POWER STATION

<u>Area</u>	<u>Number/Cause Code</u>					<u>Total</u>
A. Plant Operations	3A	1B	2D	5E	1X	12
B. Radiological Controls	4A			2E	1X	7
C. Maintenance	1A		1D			2
D. Surveillance	3A		1D	13E		17
E. Fire Protection and Housekeeping			None			0
F. Emergency Preparedness			None			0
G. Security and Safeguards			None			0
H. Refueling and Outage Management	3A	2B				5
I. Quality Assurance			None			0
J. Licensing Activities			None			0
TOTAL						43

Cause Codes: A. Personnel Error  
 B. Design/Mfg/Const/Install Error  
 C. External Cause  
 D. Defective Procedures  
 E. Component Failure  
 X. Other

TABLE 5

LER SYNOPSIS (5/1/83 - 10/31/84)VERMONT YANKEE NUCLEAR POWER STATION

<u>LER Number</u>	<u>Type</u>	<u>Summary Description</u>
83-14	30 day	Surveillance test for service water system radiation monitor missed due to scheduling error
83-15	14 day	Supports for service water copper tubing and torus attached piping inadequate due to engineering errors
83-16	30 day	MSIV 86A closed in 5.5 seconds during testing due to broken spring in hydraulic dashpot assembly
83-17	30 day	Time delay relay for LPCI injection throttle permissive failed to actuate during testing
83-18	30 day	HPCI tripped during testing due to vibration induced loosening of screws in overspeed trip unit
83-19	30 day	Workers inadvertently opened breaker for RHR torus spray valve RHR 38A
83-20	14 day	During surveillance testing, B diesel generator tripped due to faulty shutdown relay, and B core spray suction valve failed closed on thermal overload
83-21	30 day	Drywell pressure transmitter PT 101D actuated at 2.57 psig during testing due to setpoint drift
83-22	30 day	RWCU suction valve CU 18 failed as a throttle valve during testing due to faulty closing torque switch
83-23	30 day	Routine environmental monitoring program failed to detect Co-60 buildup in the Connecticut River at discharge of the site North storm sewer due to a source originating from the turbine building roof vents
83-24	30 day	Shift supervisor removed AEOG radiation monitor from service without following administrative controls
83-25	14 day	During routine operations, all four main steam line radiation monitors had trip setpoints greater than 3 times background due to an inadequate procedure
83-26	30 day	Leakage test valve SLC-36 found open during routine operations due to inadequate procedure used during outage for recirculation loop decontamination

(TABLE 5 Continued)

<u>LER Number</u>	<u>Type</u>	<u>Summary Description</u>
83-27	14 day	During surveillance testing, A diesel generator failed due to faulty air start check valve, and 8 core spray suction valve failed closed on thermal overload
83-28	30 day	RHR pump 1D was made inoperable by removing all control fuses while investigating smoke caused by dirt and oil on motor heater
83-29	30 day	Stack gas quarterly strontium analysis incomplete due to administrative errors in processing samples
83-30	30 day	During surveillance testing, MSIV 86A closed in 2.6 seconds due to a missing plug on speed controller
83-31	30 day	Safety relief valve lifted at 1122 psig versus 1100 psig during testing due to setpoint drift
83-32	14 day	HPCI inoperable due to lost position indication on pump discharge valve, RCIC inoperable due to failed motor windings on pump discharge valve
83-33	30 day	Main steam line radiation monitor 251C trip setpoint found greater than 3 times background during testing due to zero bias voltage shift
83-34	30 day	HPCI suction transfer on low CST level found out of specification during testing due to setpoint drift of level instrument LT 107-5B
84-01	30 day	Reactor trip from 100% FP on January 5, 1984 due to high pressure caused by turbine control system EPR oscillations
84-02	30 day	Both reactor building-torus vacuum breakers found inoperable during testing due to setpoint drift of delta-P switches to 0.55 and 0.51 psid
84-03	30 day	21 samples from the weekly surveillance of the environmental stations were mistakenly discarded as rubbish
84-04	30 day	Reactor scram from 100% FP on April 16, 1984 due to MSIV isolation caused by MSIV 80C failing closed during testing due to a faulty air pilot valve assembly

(TABLE 5 Continued)

<u>LER Number</u>	<u>Type</u>	<u>Summary Description</u>
84-05	30 day	HPCI inoperable during 5 days of power operations due to blocked high drywell pressure initiation logic, which was not reset by operator following April 16, 1984 scram
84-06	30 day	Both post accident torus level instruments found inoperable following return to service after routine calibration
84-07	30 day	Alert declared on June 15, 1984 due to excessive high radiation levels in the reactor building due to an unshielded TIP detector
84-08	30 day	Weekly data at one environmental air station lost because technician failed to restart sample pump following collection of sample cartridges
84-09	30 r v	While performing control rod friction testing with reactor shutdown on June 17, 1984, a reactor scram occurred due to a valving error committed during a level instrument calibration
84-10	30 day	Both stack monitors inoperable during power operations: one monitor had instrument drift by 1/2 decade; a gamma sensitive detector was mistakenly installed for the second monitor during maintenance
84-11	30 day	Type C leak rate testing identified components with leakages in excess of technical specification limits
84-12	30 day	Secondary containment violated during fuel handling due to a contractor's failure to follow procedural controls during installation of a mechanical bypass
84-13	30 day	Redundant SLC relief valves had lift setpoints found less than technical specification limits during testing; system function not compromised
84-14	30 day	Weekly air sample data lost at environmental station due to blown fuse on sample pump, possibly caused by electrical storm
84-15	30 day	Inadvertent scram signal generated on July 24, 1984 while shutdown for refueling when operator inadvertently tripped RPS power during "second" verification checks



(TABLE 5 Continued)

<u>LER Number</u>	<u>Type</u>	<u>Summary Description</u>
84-16	30 day	Inadvertent scram signal generated on July 28, 1984 with plant in refueling shutdown due to spurious loss of alternate RPS power during bus switching operations
84-17	30 day	Service water system sampling not performed for two days per technical specifications while radiation monitor out of service due to improper shift turnover
84-18	30 day	Inadvertent scram signal generated on August 1, 1984 with plant in refueling shutdown due to spurious loss of alternate RPS power during bus switching operations
84-19	30 day	Rosemont 1152 level transmitters potentially inoperable due to loose circuit board mounting screws supplied by vendor
84-20	30 day	RCIC inoperable when failed annunciator relay in control circuit caused loss of power to inboard steam supply valve
84-21	30 day	Reactor power to flow anomaly due to steam separator being not tightly secured to core shroud, caused by inadequate procedure and personnel training
84-22	30 day	Lockouts tripped on both diesel generators due to failed zener diodes in generator differential relays

TABLE 6  
SUMMARY OF LICENSING ACTIVITIES  
VERMONT YANKEE NUCLEAR POWER STATION

1. NRR/Licensee Meetings

May 26, 1983	Mark I (Framingham, MA)
September 20, 1983	Licensing Schedules (Framingham, MA)
October 21, 1983	Pipe Cracks (Bethesda, MD)
January 9, 1984	Moisture Sensitive Tape (Bethesda, MD)
April 18, 1984	Environmental Qualification (Bethesda, MD)
July 26, 1984	Pipe Cracks (Bethesda, MD)

2. NRR Site Visits

June 29, 1983	Post Accident Sampling
September 22, 1983	Emergency Facilities

3. Schedular Extensions Granted

August 12, 1984	Environmental Qualification
June 27, 1984	NUREG 0737 Supplement 1

4. Exemptions Granted

August 19, 1983	Testing of Certain Type C Valves in Accordance with Appendix J
August 21, 1984	FSAR Update Submittal per 10 CFR 50.71(e) from July 20, 1984 to November 30, 1984

5. License Amendments Issued

Amendment No. 79, Shift Technical Advisor, May 2, 1983  
 Amendment No. 80, Annual Emergency Exercise, November 10, 1983  
 Amendment No. 81, Reactor Vessel P-T Curves, March 31, 1984  
 Amendment No. 82, SDV Air Dump System, August 1, 1984  
 Amendment No. 83, RETS, October 9, 1984

6. Summary of Activities

a. 16 Multi-Plant Actions (8 completed):

RPS Power Supply (C-11) - completed  
 High Energy Line Break (D-15) - completed

## (TABLE 6 Continued)

Long Term Purge and Vent (B-24) - completed  
Feedwater Nozzle Cracking (B-25) - completed  
Implementation of NUREG 0313 (B-05) - completed  
Control of Heavy Loads Phase I (C-10) - completed  
Appendix J (A-04) - completed  
RETS (A-02) - completed

## b. 39 Plant-Specific Actions (31 completed, including):

Review of 1983 Pipe Inspection and Repair - completed  
Review of 1984 Pipe Inspection and Repair - completed  
Approval of EOF Location - completed  
Review and Denial of 2.206 Petition - completed  
Fire Protection Modifications - completed  
Reactor Vessel Pressure-Temperature Curves - completed  
FSAR Schedule Exemption - completed  
Modification of Order for Simulator Examinations - completed  
Changes in Emergency Drill Schedules  
Review of Fuel Analysis Code

## c. 14 TMI (0737) Actions (9 completed)



ENCLOSURE 3  
UNITED STATES

NUCLEAR REGULATORY COMMISSION  
REGION I  
631 PARK AVENUE  
KING OF PRUSSIA, PENNSYLVANIA 19406

Docket No. 50-271

DEC 21 1984

Vermont Yankee Nuclear Power Corporation  
ATTN: Mr. W. P. Murphy  
Vice President and  
Manager of Operations  
RD 5, Bcx 169  
Ferry Road  
Brattleboro, Vermont 05301

Gentlemen:

Subject: Systematic Assessment of Licensee Performance (SALP) Report No.  
50-271/84-25

The NRC Region I SALP Board has reviewed and evaluated the performance of activities at the Vermont Yankee Nuclear Power Station for the period of May 1, 1983 through October 31, 1984. The results of this assessment are documented in the enclosed SALP Board Report dated December 11, 1984. A meeting to discuss the assessment will be scheduled at a later date.

At the SALP meeting, you should be prepared to discuss our assessment and your plans to improve performance. The meeting is intended to be a dialogue wherein any comments you may have regarding our report may be discussed. Additionally, you may provide written comments within 20 days after the meeting.

Your cooperation is appreciated.

Sincerely,

Richard W. Starostecki, SALP  
Board Chairman  
Director, Division of Project  
and Resident Programs

Enclosure: SALP Report No. 50-271/84-25



DEC 21 1984

cc w/encl:

R. W. Capstick, Licensing Engineer

W. F. Conway, President and Chief Executive Officer

J. P. Pelletier, Plant Manager

Donald Hunter, Vice President

Cort Richardson, Vermont Public

Interest Research Group, Inc.

Public Document Room (PDR)

Local Public Document Room (LPDR)

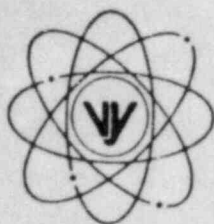
Nuclear Safety Information Center (NSIC)

NRC Resident Inspector

State of New Hampshire

State of Vermont

# VERMONT YANKEE NUCLEAR POWER CORPORATION



RD 5, Box 169, Ferry Road, Brattleboro, VT 05301

FVY 85-22

REPLY TO:

ENGINEERING OFFICE

1671 WORCESTER ROAD  
FRAMINGHAM, MASSACHUSETTS 01701  
TELEPHONE 617-672-8100

March 1, 1985

U.S. Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
Region I  
631 Park Avenue  
King of Prussia, PA 19406

Attention: Mr. Richard W. Starostecki  
SALP Board Chairman  
Division of Project and Resident Programs

References:

- a) License No. DPR-28 (Docket No. 50-271)
- b) Letter, USNRC to VYNPC, SALP Report No. 50-271/84-25, dated 12/21/84
- c) Letter, USNRC to VYNPC, I&E Inspection Report No. 50-271/84-21, dated 12/6/84
- d) Letter, VYNPC to USNRC, FVY 85-02, dated 1/14/85
- e) Letter, USNRC to VYNPC, I&E Inspection Report No. 50-271/83-26, Enforcement Conference Findings, dated 3/13/84
- f) Letter, USNRC to VYNPC, I&E Inspection Report No. 50-271/83-26, dated 11/2/83
- g) Letter, VYNPC to USNRC, FVY 84-24, dated 3/14/84
- h) Letter, VYNPC to USNRC, FVY 84-53, dated 5/21/84

Dear Sir:

Subject: Systematic Assessment of Licensee Performance  
(SALP) Report Comments

The purpose of this letter is to provide you with comments regarding the most recent Systematic Assessment of Licensee Performance (SALP) Report which was issued by letter dated December 24, 1984 [Reference b)]. We appreciated the opportunity to discuss the findings of the report at the January 24, 1985 meeting in King of Prussia. In general, we believe that the report is a fair appraisal of our activities during the May 1983 through October 1984 reporting period; however, as discussed at our meeting, there are certain areas within the report that warrant clarification and/or correction.

~~0503-80376~~ #100

VERMONT YANKEE NUCLEAR POWER CORPORATION

Please note that your December 24, 1984 letter requested that any comments on the report be formally submitted within twenty (20) days of the January 24, 1985 meeting. However, due to the complex nature of some of the areas discussed in the report, we required an additional two (2) weeks to prepare our comments. The need for additional time was discussed with and agreed to by Mr. William Raymond of your staff.

We respectfully submit the following comments for your consideration:

(1) Section IV.A.1, Operations (Page 9)

The SALP Report states that "the management decisions and actions to continue plant operation from September 16-18, 1984 with an anomalous core power-to-flow relationship and in spite of clear indications that the plant was operating in an unanalyzed condition, appeared as a significant deviation from the normally conservative approach taken to assure safe plant operations. NRC considered that the licensee had an insufficient basis to continue operation with the anomaly, and the licensee's decision was neither prudent nor conservative."

We strongly disagree with the NRC's assertion that our decision to continue operation was neither prudent nor conservative. As discussed in our January 14, 1985 [Reference c)] response to I&E Inspection Report 84-21 [Reference d)], we believe that we effectively and prudently analyzed the situation during the entire course of this occurrence (from indication that an anomaly existed through rejection of hypothetical causes to identification of a tentatively identified cause). While we evaluated possible causes of the anomaly, we simultaneously assured to our satisfaction that continued operation was prudent and posed no safety concern.

The details of our engineering assessment of the anomaly is discussed in detail in our January 14, 1985 submittal. We believe the actions taken were consistent with our conservative philosophy of assuring safe plant operations. Thus, we believe that your stated conclusion that Operations declined over the Report period due to a "non-conservative operational philosophy" is unfounded.

(2) Section IV.E.1, Fire Protection and Housekeeping (Pages 25 and 26)

- o The SALP Report states that as a result of the August/September 1983 inspection of Vermont Yankee's compliance to Section III of Appendix R to 10CFR50, Fire Protection Requirements, "one violation is being considered for escalated enforcement action."



VERMONT YANKEE NUCLEAR POWER CORPORATION

As described in various submittals made to the NRC subsequent to the 1983 Appendix R inspection, Vermont Yankee has performed extensive engineering analyses to demonstrate the adequacy of our fire protection capabilities and is continuing with the installation of additional modifications to enhance our overall fire protection design. We believe our response to the findings of the 1983 inspection have been timely, responsive to the NRC's concerns, and reflect a strong commitment on the part of Vermont Yankee and its management to achieve compliance with the provisions of Appendix R. We recognize the time it has taken to address all of the NRC's concerns; however, the continual issuance of guidance criteria by NRR regarding Appendix R compliance (i.e., Generic Letter 83-33, Generic Letter 85-01, various Information Notices, and information resulting from Regional Workshops) has made the task of achieving literal compliance that much more difficult. Enclosure 1 provides a chronological history of events associated with the Appendix R issue at Vermont Yankee. These events include formal submittals made by us as well as numerous meetings held with various NRC Staff members to resolve this issue. Based on these efforts, we believe that the pending enforcement action should be formally dispositioned with a finding that escalated enforcement action is not warranted.

- o The SALP Report also states that, "the licensee did not take the initiative to assure that his assumptions for the Reactor Building were consistent with the NRC staff's positions. Licensee exceptions to the requirements were not properly identified to the NRC staff."

This statement reflects the basic misunderstanding between the NRC and Vermont Yankee with respect to compliance with Section III.G to Appendix R. As discussed at the January 10, 1984 Enforcement Conference held in King of Prussia, we had received various correspondence from the NRC which indicated to us that to comply with Section III.G, we need only provide alternate safe shutdown capability for the Control Room, Cable Vault and Switchgear Room. This correspondence, discussed in detail in the March 13, 1984 Enforcement Conference Meeting Minutes [see Reference e)], was the basis for our conclusion that our overall Fire Protection Program satisfied the intent of Section III.G with respect to our Reactor Building and that the NRC was cognizant of our assumptions and positions which were documented in our 1978 Fire Hazards Analysis Report.

- o The SALP Report states that "The licensee took considerable time to respond to the issues identified by the inspection team. The NRC positions regarding the Appendix R requirements were clearly presented



VERMONT YANKEE NUCLEAR POWER CORPORATION

to the licensee by the NRC review team in August 1983, but the licensee did not become fully committed to address the identified deficiencies and differences between his and the NRC staff's position until March 1984. Considerable NRC effort was required to get the licensee to perform the reanalysis and implement the actions necessary to correct the violation."

In addition, the Report states that "the lower rating this assessment period is due to the licensee's incorrect implementation of the Appendix R rule and the licensee's slowness in responding to the NRC initiatives once deficient areas were identified."

As discussed above, we believe our response to the findings were timely and appropriate. Immediately following the 1983 inspection, we initiated a re-review of the requirements of Appendix R to 10CFR Part 50 and initiated a re-survey of our Reactor Building to ensure we met the separation criteria of Section III.G.2. It should be noted that our re-survey was performed assuming a fire induced loss of off-site power which was consistent with our original interpretation of the loss of off-site power provisions of Appendix R. We also initiated a breaker coordination study and an engineering analysis of plant safe shutdown systems against the separation and fire protection criteria of Section III.G.2 of Appendix R.

Once the formal findings of the inspection were issued in the November 2, 1983 Inspection Report [see Reference f)], we performed an analysis of the safety significance of the inspection's findings. The results of our analysis were presented to the NRC at a November 22, 1983 meeting at King of Prussia where it was concluded that there were no findings that would preclude our ability to safely shut down the plant in the event of a fire. At that meeting, we also presented a draft report entitled "Analysis to Demonstrate Safe Shutdown Capability During and After Fires," which documented our analysis.

Following the November 22, 1983 meeting, we continued with our engineering efforts to address the deficiencies cited in the November 2, 1983 Inspection Report. We reported the scope and status of our efforts to the NRC at an Enforcement Conference held in King of Prussia on January 10, 1984. We also discussed differences between Vermont Yankee and the NRC in interpreting certain provisions of Appendix R. Specifically, the NRC stated that Appendix R implies the need for safe shutdown capability for the plant, assuming a loss of off-site power for 72 hours concurrent with a fire in any area of the

VERMONT YANKEE NUCLEAR POWER CORPORATION

plant. Vermont Yankee's assumption, both in the pre-Appendix R Fire Hazards Survey and the post-inspection re-survey was that a non-mechanistic loss of off-site power need not be considered. The NRC also stated that Vermont Yankee's use of "fire zone boundaries" in the Reactor Building did not meet Appendix R requirements for physical "fire area boundaries." Vermont Yankee's position was that the inherent spatial separation between areas of the Reactor Building, coupled with physical barriers and extensive fire protection features installed in the Reactor Building met the intent of the "fire area boundaries."

At the January 10 Conference, Vermont Yankee committed to submit the results of the Section III.G.2 re-survey (including an associated circuits study), docket formal requests for exemption from the specific separation criteria of Section III.G.2, and submit the details of fire protection system enhancements and/or corrective actions deemed necessary as a result of the re-survey. At the time, we still believed our loss of off-site power and fire area boundary positions were justifiable.

On March 14, 1984 [see Reference g)], we submitted requests for exemption for certain areas of the Reactor Building that did not meet the specific separation criteria of Section III.G.2. The exemption requests included the technical basis for justification as well as descriptions of specific fire protection system enhancements/modifications which we deemed were necessary as a result of our III.G.2 re-survey.

In April 1984, our design engineers attended an NRC sponsored Regional Workshop held to discuss and clarify NRC positions regarding compliance with the provisions of Appendix R. Following the Regional Workshop, a meeting was held between Vermont Yankee and Yankee Atomic Electric Company engineers and management to discuss the results of the workshop and the status of our Appendix R compliance efforts. Based on an assessment from engineers who attended the Regional Workshop that the NRC was adamant on the need to assume a random loss of off-site power coincident with a fire, Vermont Yankee management directed the engineering staff to expand the scope of the III.G.2 re-survey (including the associated circuits study) to include a random loss of off-site power. In addition, based on the results of the workshop and discussions with NRR fire protection engineers, it was recognized that additional detailed engineering would be necessary to support Vermont Yankee's position that "fire zone boundaries" in the Reactor Building were an acceptable alternative to the NRC's "fire area boundaries." It was agreed that the report documenting the expanded III.G.2 re-survey would include detailed justification of the acceptability of "fire zone boundaries."

VERMONT YANKEE NUCLEAR POWER CORPORATION

Vermont Yankee then requested that a meeting be held with the NRC (NRR and I&E) to discuss the status of our engineering efforts and establish a means to close out Appendix R for Vermont Yankee. On May 21, 1984 [see Reference h)], we issued a comprehensive response to the findings detailed in the November 2, 1983 Inspection Report. This letter also included a proposed schedule for the completion of the expanded III.G.2 re-survey (including the associated circuits study), provided schedules for completing enhancements/modifications known to be necessary as a result of our initial re-survey, and committed to certain interim compensatory measures until the enhancements/modifications were completed.

We met with the NRC in King of Prussia on May 24, 1984 to discuss and clarify the contents of our May 21, 1984 Inspection Report response, as well as other correspondence recently submitted by Vermont Yankee (i.e., a request for exemption from the 72-hour cold shutdown requirement). At that time, we restated our intention to conduct a complete III.G.2 re-survey of the plant including a circuits separation and associated circuits study. At the meeting we also stated our intention to keep the NRC informed as to our progress and findings as the study progressed, focusing on any additional compensatory measures which may be deemed necessary. Finally, at the request of the staff, we agreed to consider additional compensatory measures beyond those committed to in our May 21, 1984 Inspection Report response.

The expanded III.G.2 re-survey and associated circuits study was performed during June and July 1984 culminating in a draft report which detailed the findings. During August 1984, we performed an engineering evaluation of the findings to scope the necessary modifications and corrective measures to address additional areas that did not meet the specific separation criteria of Section III.G.2 of Appendix R. We also began drafting a comprehensive report which would be submitted to the NRC. In early September, we informed the NRC of the status of our efforts and committed to implement additional interim compensatory measures based on the findings of the expanded re-survey. On November 26, 1984, we submitted the results of the expanded re-survey in a report entitled "Safe Shutdown Capability Analysis". This report was submitted in draft form at the request of the NRC so as to ensure that the format and technical content were sufficient for NRC review purposes. This report contains the re-survey results, associated circuits analysis, basis for acceptability of "fire zone boundaries," and identifies all corrective actions required for ultimate compliance with Appendix R.



VERMONT YANKEE NUCLEAR POWER CORPORATION

We had scheduled a meeting with the NRC for December 21, 1984 to discuss their comments on the report, but the NRC was unable to support the meeting. Because of the subsequent difficulty in trying to reschedule the meeting, it is our intent to finalize and formally docket the report in the near future. We will also be submitting additional requests for exemption from the provisions of Section III.G of Appendix R (as described in Appendix A of the "Safe Shutdown Capability Analysis Report"), and will continue with the completion of necessary fire protection enhancements/modifications and other corrective actions (i.e., procedural revisions).

As discussed above, we believe Vermont Yankee has been responsive to the concerns identified by the NRC and is committed to closing out the Appendix R issue at the earliest possible time. Although we had philosophical differences with the staff with respect to the need to assume a random loss of off-site power coincident with a fire as part of our reanalysis and the acceptability of fire zones in lieu of fire areas, we believe these differences in interpreting the requirements of Appendix R should not be characterized as failure to respond to the NRC's concerns in a timely manner. We also believe that based on the extensive efforts we have made to achieve full compliance with Appendix R, a strong case can be made for a better performance rating than the one received for the Fire Protection and Housekeeping functional area. At a minimum, we expect the text of the final SALP Report to more accurately reflect the high degree of management attention and true level of responsiveness to this issue that Vermont Yankee has displayed.

Vermont Yankee took and continues to take an aggressive leadership position in completing compliance with Appendix R and looks forward to a prompt review by NRC of the "Safe Shutdown Capability Analysis Report" such that the steps we are now taking based on that report can be concluded as acceptable in meeting the provisions of Section III.G of Appendix R.

(3) Section III.A, Overall Facility Evaluation (Page 6)

The SALP Report states that, "this assessment noted numerous personnel errors during the performance of routine duties in the surveillance radiological controls, operating and refueling functional areas. The errors resulted from either a lack of attention to details during performance of routine duties or an over-reliance on experience as a substitute for strict adherence to established procedures."

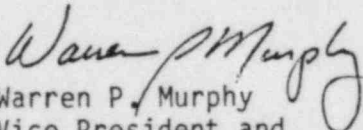


We clearly recognize the need for continued management attention and involvement to minimize the instances of human error. Events resulting from human error are and will continue to be evaluated to determine if procedural, policy, programmatic, or design changes are warranted. We will continue to focus our attention at minimizing the instances and consequences of human error.

Again, we appreciate meeting with you and the Board to discuss the subject report and to reaffirm Vermont Yankee management's continued commitment to the safe and efficient operation of the Vermont Yankee Nuclear Power Station. Be assured that although we do not always agree with your assessment findings, we will always be responsive to your concerns of safety and/or compliance. We view your assessment of our performance as positive input to enable us to carry out our commitments and responsibilities. We hope you consider our feedback as positive input into your evaluation/assessment process.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

  
Warren P. Murphy  
Vice President and  
Manager of Operations

WPM/dm

VERMONT YANKEE/NRC CHRONOLOGY OF  
EVENTS REGARDING APPENDIX R TO 10CFR50

Since the inspection of August 29/September 2, 1983, Vermont Yankee has taken many steps in its attempt to comply with NRC requirements. These steps include:

1. September 1983 - Began a review of Appendix R and the licensing correspondence in order to understand why part III.G had not been applied to the Reactor Building.
2. October 1983 - Concluded that, per Appendix R, the entire plant should have been re-examined for compliance with III.G. Began re-survey. Generic Letter 83-33 issued.
3. November 1983 - Received written results of inspection. Studies and reviewed inspection results in detail with management.

Completed first draft of "Analysis to Demonstrate Safe Shutdown Capability During and After Fires".

Held internal meetings to consider safety implications of the inspection findings.

Attended meeting with Region I staff to demonstrate that continued safe operation of the plant was possible and justified, based on the low probability of the adverse safety effects from the non-conforming areas and the redundant safe shutdown capabilities of the plant. The plant was allowed to continue operating. The NRC Region I Report confirming continued safe operation was received in January 1984.

4. December 1983 - Continued to examine re-survey. Scoped design changes and exemptions to correct inspection deficiencies. Held internal management and engineering meeting to discuss status of Appendix R.
5. January 1984 - Attended Enforcement Conference at Region I. Committed to completing design changes to correct inspection deficiencies by December 1984.
6. February 1984 - Plant and NSD engineers attended the Fire Protection Seminar in Washington, D.C. These engineers met informally with NRC staff the day before the seminar to review draft exemption requests relative to inspection items.
7. March 1984 - Formally submitted exemption requests relative to Inspection Report 83-26 commitments.

8. April 1984 - Engineers attended Region I Regional Workshop and also met informally with NRR staff for scoping comments, as the workshop indicated that drafts of studies on III.G compliance were to be informally submitted to the staff and discussed before formal submittal.
9. April 1984 - Meeting on Appendix R was held during which management directed the engineering staff to expand the scope of the III.G.2 re-survey to include random loss of off-site power.
10. May 1984 - Held scheduled and follow-up conference with Region I staff. The NRC minutes of this meeting note that the meeting was at Vermont Yankee's request. Vermont Yankee was only required to commit to a schedule within thirty days of the meeting with NRR staff to review the draft work on III.G. The NRR meeting has not yet taken place.

Vermont Yankee committed to Interim Compensatory Measures at this time. The need for these measures had only been clarified at the Regional Workshop.

11. Mid-July 1984 - Conducted formal re-survey, circuit separation, and associated circuit analyses.
12. July 1984 - Completed minor changes to Alternate Shutdown System and declared it operational per required schedule.

Made changes to two plant circuits so that plant would conform to the inspection and associated circuits study. One change addressed an inspection finding. One change resulted from the associated circuits study.

13. August 1984 - Completed design scoping of corrective measures based on re-survey and associated circuits study. Began drafting report and optimizing solutions.
14. September 1984 - Informed NRC Region I of progress. Implemented additional Interim Compensatory Measures.
15. November 1984 - Submitted draft "Safe Shutdown Capability Analysis" to NRR and Region I staffs, per process indicated at regional workshops. Extensive color photographs included.
16. January 1985 - Completing installation of design changes to address Inspection Report commitments. Began design change on additional emergency lighting, made necessary by findings of draft "Safe Shutdown Capability Analysis Report".

17. February 1985 - Completed installation of all modifications detailed in March 14, 1984 Inspection Report response letter.
18. In Progress - Completing installation of additional modifications detailed in the "Safe Shutdown Capability Analysis Report". Preparing formal exemption requests for submittal to NRR. Completing necessary procedural changes as detailed in the Analysis Report. Continuing with interim compensatory measures until all actions complete.
19. September 1983 through Present - Scope and status of engineering efforts to address Appendix R inspection findings were discussed at routine monthly meetings held between Vermont Yankee and Yankee Atomic Electric Company engineers and management. These monthly meetings are held to discuss the scope and status of ongoing engineering activities.



ENCLOSURE 5

NRC REVIEW OF SALP REPORT 50-271/84-25 COMMENTS  
PROVIDED IN VERMONT YANKEE NUCLEAR POWER CORPORATION  
LETTER FVY 85-22, MARCH 1, 1985

A. Operations (SALP Report Section IV.A.1)

The Region I staff has reviewed the comments in your letter regarding (1) your disagreement with the NRC assertion that your continued operation from September 16-18, 1984 was neither prudent nor conservative, and (2) that the NRC conclusion that Operations declined over the report period due to a "nonconservative operational philosophy" was unfounded.

The Region I staff agrees that your response to the event was "conservative and prudent" to a degree. However, at the time of the event on September 16-17, 1984, you were unable to respond to NRC staff questions regarding the potential outcome of analyzed transients. Your explanation of the event lacked a quantitative assessment that showed there was reasonable assurance within the spectrum of analyzed transients and accidents that safety margins would be preserved. Your operations proceeded during that period without a previously accepted engineering basis to provide the assurance that the plant was operating without undue risk. Given these uncertainties, the Region I staff did not find sufficient justification for continued operation in that anomalous state and our position was and remains that your approach was not conservative enough to assure safety margins had not been significantly eroded.

Your plans to continue operation to further study the possible causes for the anomaly were apparently curtailed because of the increasing level of NRC concern. The post event engineering evaluation concluding that no unacceptable conditions would have occurred as a result of the loose reactor internals did not in any way justify your continued operation in that anomalous unanalyzed condition.

For these reasons your decision to continue operation on September 16, 1984 and your overall response to this event are characterized as less prudent and conservative than has been previously observed. The staff conclusion in Paragraph IV.A.1 of the SALP Report remains Category 1, declining, for the Functional Area. The Board recommendation also remains unaffected.

B. Fire Protection and Housekeeping (SALP Report Section IV.E.1)

The Region I staff has reviewed the comments in your letter on the statements in Section IV.E of the SALP. Following is our detailed evaluation of your comments.

## 1. SALP Statement

The SALP Report states that as a result of the August/September 1983 inspection of Vermont Yankee's compliance to Section III of Appendix R to 10 CFR 50, Fire Protection Requirements, "one violation is being considered for escalated enforcement action."

### 1.1 VY Comment

As described in various submittals made to the NRC subsequent to the 1983 Appendix R inspection, Vermont Yankee has performed extensive engineering analyses to demonstrate the adequacy of our fire protection capabilities and is continuing with the installation of additional modifications to enhance our overall fire protection design. We believe our response to the findings of the 1983 inspection have been timely, responsive to the NRC's concerns, and reflect a strong commitment on the part of Vermont Yankee and its management to achieve compliance with the provisions of Appendix R. We recognize the time it has taken to address all of the NRC's concerns; however, the continual issuance of guidance criteria by NRR regarding Appendix R compliance (i.e., Generic Letter 83-33, Generic Letter 85-01, various Information Notices, and information resulting from Regional Workshops) has made the task of achieving literal compliance that much more difficult. Enclosure 1 provides a chronological history of events associated with the Appendix R issue at Vermont Yankee. These events include formal submittals made by us as well as numerous meetings held with various NRC staff members to resolve this issue. Based on these efforts, we believe that the pending enforcement action should be formally dispositioned with a finding that escalated enforcement action is not warranted.

### 1.2 NRC Staff Evaluation

The staff agrees that VY performed extensive engineering analysis and additional modifications as corrective actions for the inspection findings identified in the violation. However, the staff disagrees with the VY comment that VY responses to the findings have been timely. The findings were identified during the inspection in August-September 1983, but VY did not become fully committed to address the identified deficiencies and differences between his and the NRC staff's position until April 1984. Considerable NRC effort was required to get VY to perform the reanalyses and implement the actions necessary to correct the violation.

## 2. SALP Statement

The SALP Report states that, "the licensee did not take the initiative to assure that his assumptions for the Reactor Building were consistent with the NRC staff's position. Licensee exceptions to the requirements were not properly identified to the NRC staff."

## 2.1 VY Comment

This statement reflects the basic misunderstanding between the NRC and Vermont Yankee with respect to compliance with Section III.G to Appendix R. As discussed at the January 10, 1984 Enforcement Conference held in King of Prussia, we have received various correspondence from the NRC which indicated to us that to comply with Section III.G, we need only provide alternate safe shutdown capability for the Control Room, Cable Vault and Switchgear Room. This correspondence, discussed in detail in the March 13, 1984 Enforcement Conference Meeting Minutes (see Reference e), was the basis for our conclusion that our overall Fire Protection Program satisfied the intent of Section III.G with respect to our Reactor Building and that the NRC was cognizant of our assumptions and positions which were documented in our 1978 Fire Hazards Analysis Report.

## 2.2 NRC Staff Evaluation

When Appendix R came into effect in 1981, VY should have asked for clarification from the NRC staff with respect to the need to do a post-Appendix R reanalysis including the Reactor building and proper assumptions to use therein. Instead, VY incorrectly assumed that their pre-Appendix R analysis and its assumptions were good enough. At the time Appendix R came into effect in 1981, the licensee's technical staff reviewed Appendix R, the preamble in the Federal Register and Generic Letter 81-12. Their conclusion was that a resurvey was required. The licensee's management had been deeply involved in Fire Protection concerns for several years and disagreed with their technical staff. There is no evidence of the licensee requesting clarification for their need to conduct Appendix R reanalyses from NRR.

## 3. SALP Statement

The SALP Report states that, "The licensee took considerable time to respond to the issues identified by the inspection team. The NRC positions regarding the Appendix R requirements were clearly presented to the licensee by the NRC review team in August 1983, but the licensee did not become fully committed to address the identified deficiencies and differences between his and the NRC staff's position until April 1984. Considerable NRC effort was required to get the licensee to perform the reanalysis and implement the actions necessary to correct the violation."

The Report also states that, "the lower rating this assessment period is due to the licensee's incorrect implementation of the Appendix R rule and the licensee's slowness in responding to the NRC initiatives once deficient areas were identified."



### 3.1 VY Comment

As discussed above, we believe our response to the findings were timely and appropriate. Immediately following the 1983 inspection, we initiated a re-review of the requirements of Appendix R to 10 CFR Part 50 and initiated a re-survey of our Reactor Building to ensure we met the separation criteria of Section III.G.2. It should be noted that our re-survey was performed assuming a fire induced loss of off-site power which was consistent with our original interpretation of the loss of off-site power provisions of Appendix R. We also initiated a breaker coordination study and an engineering analysis of plant safe shutdown systems against the separation and fire protection criteria of Section III.G.2 of Appendix R.

Once the formal findings of the inspection were issued in the November 2, 1983 Inspection Report (see Reference f), we performed an analysis of the safety significance of the inspection's findings. The results of our analysis were presented to the NRC at a November 22, 1983 meeting at King of Prussia where it was concluded that there were no findings that would preclude our ability to safely shut down the plant in the event of a fire. At that meeting, we also presented a draft report entitled, "Analysis to Demonstrate Safe Shutdown Capability During and After Fires," which documented our analysis.

Following the November 22, 1983 meeting, we continued with our engineering efforts to address the deficiencies cited in the November 2, 1983 Inspection Report. We reported the scope and status of our efforts to the NRC at an Enforcement Conference held in King of Prussia on January 10, 1984. We also discussed differences between Vermont Yankee and the NRC in interpreting certain provisions of Appendix R. Specifically, the NRC stated that Appendix R implies the need for safe shutdown capability of the plant, assuming a loss of off-site power for 72 hours concurrent with a fire in any area of the plant. Vermont Yankee's assumption, both in the pre-Appendix R Fire Hazards Survey and the post-inspection re-survey was that a non-mechanistic loss of off-site power need not be considered. The NRC also stated that Vermont Yankee's use of "fire zone boundaries" in the Reactor Building did not meet Appendix R requirements for physical "fire area boundaries." Vermont Yankee's position was that the inherent spatial separation between areas of the Reactor Building, coupled with physical barriers and extensive fire protection features installed in the Reactor Building were the intent of the "fire area boundaries."

At the January 10 Conference, Vermont Yankee committed to submit the results of the Section III.G.2 re-survey (including an associated circuits study), docket formal requests for exemption from the specific separation criteria of Section III.G.2, and submit the details of fire protection system enhancements and/or corrective ac-



tions deemed necessary as a result of the re-survey. At the time, we still believed our loss of off-site power and fire area boundary positions were justifiable.

On March 14, 1985 (see Reference g), we submitted requests for exemption for certain areas of the Reactor Building that did not meet the specific separation criteria for Section III.G.2. The exemption requests included the technical basis for justification as well as descriptions of specific fire protection system enhancements/modifications which we deemed were necessary as a result of our III.G.2 re-survey.

In April 1984, our design engineers attended an NRC sponsored Regional Workshop held to discuss and clarify NRC positions regarding compliance with the provisions of Appendix R. Following the Regional Workshop, a meeting was held between Vermont Yankee and Yankee Atomic Electric Company engineers and management to discuss the results of the workshop and the status of our Appendix R compliance efforts. Based on an assessment from engineers who attended the Regional Workshop that the NRC was adamant on the need to assume a random loss of off-site power coincident with a fire, Vermont Yankee management directed the engineering staff to expand the scope of the III.G.2 re-survey (including the associated circuits study) to include a random loss of off-site power. In addition, based on the results of the workshop and discussions with NRR fire protection engineers, it was recognized that additional detailed engineering would be necessary to support Vermont Yankee's position that "fire zone boundaries" in the Reactor building were an acceptable alternative to the NRC's "fire area boundaries." It was agreed that the report documenting the expanded III.G.2 re-survey would include detailed justification of the acceptability of "fire zone boundaries."

Vermont Yankee then requested that a meeting be held with the NRC (NRR and I&E) to discuss the status of our engineering efforts and establish a means to close out Appendix R for Vermont Yankee. On May 21, 1984 (see Reference h), we issued a comprehensive response to the findings detailed in the November 2, 1983 Inspection Report. This letter also included a proposed schedule for the completion of the expanded III.G.2 re-survey (including the associated circuits study), provided schedules for completing enhancements/modifications known to be necessary as a result of our initial re-survey, and committed to certain interim compensatory measures until the enhancements/modifications were complete.

We met with the NRC in King of Prussia on May 24, 1984 to discuss and clarify the contents of our May 21, 1984 Inspection Report response, as well as other correspondence recently submitted by Vermont Yankee (i.e., a request for exemption from the 72-hour cold shutdown requirement). At that time, we restated our intention to conduct a complete III.G.2 re-survey of the plant including a cir-

cuits separation and associated circuits study. At the meeting we also stated our intention to keep the NRC informed as to our progress and findings as the study progressed, focussing on any additional compensatory measures which may be deemed necessary. Finally, at the request of the staff, we agreed to consider additional compensatory measures beyond those committed to in our May 21, 1984 Inspection Report response.

The expanded III.G.2 re-survey and associated circuits study was performed during June and July 1984 culminating in a draft report which detailed the findings. During August 1984, we performed an engineering evaluation of the findings to scope the necessary modifications and corrective measures to address additional areas that did not meet the specific separation criteria of Section III.G.2 of Appendix R. We also began drafting a comprehensive report which would be submitted to the NRC. In early September, we informed the NRC of the status of our efforts and committed to implement additional interim compensatory measures based on the findings of the expanded re-survey. On November 26, 1984, we submitted the results of the expanded re-survey in a report entitled, "Safe Shutdown Capability Analysis." This report was submitted in draft form at the request of the NRC so as to ensure that the format and technical content were sufficient for NRC review purposes. This report contains the re-survey results, associated circuits analysis, basis for acceptability of "fire zone boundaries," and identified all corrective actions required for ultimate compliance with Appendix R.

We had scheduled a meeting with the NRC for December 21, 1984 to discuss their comments on the report, but the NRC was unable to support the meeting. Because of the subsequent difficulty in trying to reschedule the meeting, it is our intent to finalize and formally docket the report in the near future. We will also be submitting additional requests for exemption from the provisions of Section III.G of Appendix R (as described in Appendix A of the "Safe Shutdown Capability Analysis Report"), and will continue with the completion of necessary fire protection enhancements/modifications and other corrective actions (i.e., procedural revisions).

As discussed above, we believe Vermont Yankee has been responsive to the concerns identified by the NRC and is committed to closing out the Appendix R issue at the earliest possible time. Although we had philosophical differences with the staff with respect to the need to assume a random loss of off-site power coincident with a fire as part of our reanalysis and the acceptability of fire zones in lieu of fire areas, we believe these differences in interpreting the requirements of Appendix R should not be characterized as failure to respond to the NRC's concerns in a timely manner. We also believe that based on the extensive efforts we have made to achieve full compliance with Appendix R, a strong case can be made for a better performance rating than the one received for the Fire Pro-

tection and Housekeeping functional area. At a minimum, we expect the text of the final SALP Report to more accurately reflect the high degree of management attention and true level of responsiveness to this issue that Vermont Yankee has displayed.

Vermont Yankee took and continues to take an aggressive leadership position in completing compliance with Appendix R and looks forward to a prompt review by NRC of the "Safe Shutdown Capability Analysis Report" such that the steps we are now taking based on that report can be concluded as acceptable in meeting the provisions of Section III.G of Appendix R.

### 3.2 NRC Staff Evaluation

The staff maintains the position stated in the SALP and as quoted in Section 3 above. As stated in the NRC Staff Evaluation, Section 1.2 above, the staff disagrees with the VY comment that the VY responses to the findings have been timely. Specifically, during the August 1983 Appendix R inspection of Vermont Yankee, the licensee was told by the inspection team that their Appendix R analysis was substantially deficient in that it included several major flaws. These included analyses based on fire zone boundaries when they should have been based on fire areas. Furthermore, the analyses did not make the required assumption of loss of offsite power concurrent with a fire in any area of the plant. The licensee contended that this was a Region I position as opposed to an NRR position. It is noted that two NRR members participated in the region-based inspection. The licensee was encouraged to request formal NRR clarification of any perceived differences in Regional versus NRR position regarding required analyses assumptions. Neither the inspection team or NRR provided the licensee any bases for their view that the inspection team imposed requirements beyond those sanctioned by NRR. The licensee did not request clarification from NRR regarding these issues.

NRC Regional staff again pointed out these deficiencies to the licensee during the November 22, 1983 meeting and the January 10, 1984 meeting in the Region and in several phone conversations between Region I and a member of the licensee's staff prior to the April 1984 Regional Workshop. In each of these instances, the Regional staff discussed the licensee's need to either correct the deficient analyses or request formal clarification of the subject issues from NRR.

In addition to the above, the NRC issued Generic Letter 83-33 in December 1983 to all licensees (including Vermont Yankee). This letter provided additional clarification of the issues supporting the Regional view of the licensees need to correct the subject deficiencies.



On March 23, 1984, the NRC presented the first of five Regional Workshops regarding clarification of Appendix R requirements. The first Workshop was held in Chicago, Illinois. A draft document clarifying Appendix R issues was distributed to all participants. The Workshop and the document again supported the Region position on the subject issues.

Despite the above actions by NRC, it was not until the Appendix R Workshop in Region I on April 18, 1984 that the licensee agreed to correct their analyses and determine the need for related modifications. This represented a seven month period where the licensee did little to correct significant analytical deficiencies identified by the NRC, despite continued staff comments to the licensee to encourage resolution of the issues.

The staff does recognize that the licensee did conduct analyses, albeit deficient analyses, and they submitted a draft copy of the analyses to the Region on a timely basis following the inspection. They made extensive and prompt modifications following the inspection to correct specific hardware deficiencies identified by the NRC. In addition, following the April 18, 1984 Regional Workshop, they corrected the deficient analyses on a timely basis.

#### 4. Conclusion

The staff disagrees with the VY comment that the VY responses to the inspection findings identified in the violation have been timely. However, the staff agrees that VY made extensive corrective actions for the deficiencies identified in the violation.

The staff conclusion in the SALP Report, Paragraph IV.E.2, remains Category 2, consistent for this Functional Area. The Board recommendation documented in the SALP Report, Paragraph IV.E.3, also remains unaffected.