ENCLOSURE 1

SALP REPORT - VERMONT YANKEE NUCLEAR POWER STATION

50-271/95-99

I. BACKGROUND

The SALP Board convened on July 27, 1995, to assess the nuclear safety performance of the Vermont Yankee Nuclear Power Station for the period January 16, 1994, through July 15, 1995. The Board was conducted pursuant to NRC Management Directive (MD) 8.6 (see NRC Administrative Letter 93-20). Board members were: Susan F. Shankman (Board Chairman), Deputy Director, Division of Radiation Safety and Safeguards, NRC Region I (RI); Richard W. Cooper, Director, Division of Reactor Projects, RI; James T. Wiggins, Director, Division of Reactor Safety, NRC RI; and, Phillip F. McKee, Director, Project Directorate I-3, NRC Office of Nuclear Reactor Regulation. The Board developed this assessment for the approval of the Region I Administrator.

The performance ratings and the functional areas used below are described in NRC MD 8.6, "Systematic Assessment of Licensee Performance (SALP)."

II. PERFORMANCE ANALYSIS - OPERATIONS

The operations area was rated category 2 in the last SALP period. Operators continued to respond well to plant transients and conduct normal operations safely. However, poor interpretation of Technical Specifications had the potential to affect the availability of safety systems, and the licensee's approach to correction and assessment of longstanding deficiencies of low safety significance that potentially distracted operators was weak. Additionally, licensee management was encouraged to ensure that repetitive, relatively routine activities (e.g., fuel handling) were conducted with rigor and oversight commensurate with their safety significance.

Operators continued this period to exhibit strong performance in support of safe plant operations, including good response to unexpected transients, as well as the conduct of routine and non-routine activities. For example, control room operators performed well in response to a Fall 1994 loss of condenser vacuum transient resulting from an accumulation of leaf debris at the plant intake structure. Ownership of the plant by Operations was evident in strong shift turnovers and pre-test briefings, as well as effective control of maintenance and testing. Corrective actions that were implemented as a result of the fuel handling problems during the last SALP period were very effective and resulted in a significant improvement in the conduct of fuel handling during this SALP period. Furthermore, the Yankee Quality Services Group independently, broadened the applications of lessons learned from fuel handling problems by performing a thorough review of infrequently performed tasks during the Spring 1995 refueling outage, resulting in beneficial oversight and controls. Although there were a few instances of poor operator performance of low safety significance, primarily during mode changes, Operations was quick to identify and evaluate these occurrences succeeding in abating them through prompt and comprehensive corrective action.

Early in the SALP period, programmatic weaknesses in Licensed Operator Requalification Training (LORT) were identified. Strong and aggressive management attention resulted, later in the period, in a significantly improved LORT program that was characterized by strong command and control, enhanced communications among operators on shift, improved adherence to Emergency Operating Procedures (EOPs), increased knowledge level of operators, and improved documentation of performance deficiencies and remedial training. The effectiveness of the improved LORT program was also reflected in the safe and conservative conduct of operations at power. In addition, LORT sessions on reactor safety during shutdown operations demonstrated a strong safety focus and contributed to the effective management of shutdown risk during the refueling outage.

Improved performance relative to identifying and resolving problems was noted in the Operations area this SALP period. Longstanding deficient conditions that went undocumented in the past were being documented for appropriate resolution. The Vermont Yankee Observation Program, involving managers observing the performance of staff conducting activities in the field, was generally effective in identifying potential problems prior to their becoming significant safety concerns. In addition, the Operations Department developed and appropriately prioritized a list of "operator workarounds," corrective actions for which were progressing satisfactorily. However, there were a few noteworthy examples of weak corrective actions to identified problems. In one case, Vermont Yankee did not integrate corrective actions for cold weather failures experienced during the winter of 1994 into a comprehensive approach to ensure that such failures would not recur in the forthcoming winter. In another case, a general weakness in administrative controls, namely the verification and validation review processes for procedural revisions, resulted in the recurrence of significant problems with the technical adequacy of EOPs.

Operations Department self assessments and Quality Assurance (QA) audits and surveillance activities were effective in highlighting performance problems. Although in most cases Operations management effectively resolved problems identified by themselves or independent entities on a schedule commensurate with their safety significance, noteworthy examples to the contrary were identified. For example, Vermont Yankee identified that Technical Specification (TS) shutdown margin testing requirements were not completed prior to releasing control rods for maintenance during the last two refueling outages, even though an April 1994 self-assessment and a February 1995 QA audit (both of which occurred prior to the start of the last refueling outage) identified this problem and the fact that it had not yet been resolved. Furthermore, this is an example of a problem with the interpretation of TSs that has continued this SALP period, albeit with fewer examples and of lesser safety significance when compared with those from the previous SALP period.

In summary, operations exhibited significant improvements in several areas over this SALP period, effectively addressing most of the weaknesses highlighted in the last SALP period. Operator performance continued at a high level and was effective in ensuring safe plant operations. The Operations Department improved its identification of problems and generally was effective in preventing their recurrence. Although the LORT program exhibited

significant weaknesses early in the SALP period, strong and aggressive management attention resulted in significant improvements by the end of the period. However, noteworthy examples of ineffective response to identified problems existed. Although problems with the interpretation of TSs continued, they were less frequent and generally of lesser safety significance.

Operations was rated Category 2.

III. PERFORMANCE ANALYSIS - MAINTENANCE

In the last SALP period the rating in this area was Category 2. Plant material conditions remained very good. Personnel continued to demonstrate excellent skills and qualifications. Conditions adverse to safety were promptly corrected. The conduct of maintenance was generally good and the management of at-power maintenance was robust. There were examples of ineffective work controls, weak evaluation of inspection and test results, and some technically inadequate procedures.

During this period, management oversight of maintenance activities was generally effective. Departmental interface within planning meetings promoted a questioning attitude that was observed to be prevalent in coordination among work groups. The interface and cooperation between Maintenance and other departments was very good and resulted in improved control of work and risk minimization during on-line maintenance. Early in the period, VY began using risk assessment broadly to plan and evaluate the safety impact of maintenance activities, and enhanced this process later in the period by using more detailed risk insights from their IPE. The overall material condition of the plant was very good. Recent initiatives, such as the temporary assignment of a licensed operator to the Maintenance department and the staffing of newly created planner positions, resulted in improvements in the planning, scheduling, and implementation of many maintenance activities. However, a noteworthy exception to this good performance occurred in the middle of the SALP period. This involved the lack of an initial review of planned maintenance on the reactor vessel level trip circuit by PORC prior to implementation. This review was needed to fully understand the safety implications of the work, which involved the removal of both high pressure safety injection systems from service with voluntary entry into a 24 hour action statement.

Vermont Yankee increased the use of self-assessment and industry experience information and industry representatives from outside the company to enhance the quality of the maintenance and testing programs. For example, the licensee used a third party proctor to independently verify the integrity and validity of the blind qualification examination for the reactor vessel feedwater nozzle inspection technique. In addition, trending of field observations by maintenance supervisors resulted in the correction of maintenance documentation problems.

Many examples of well planned and executed maintenance and surveillance activities over the period were directly attributable to the qualifications and experience of maintenance and testing personnel. In most cases, personnel exhibited a strong questioning attitude and used excellent work practices.

However, a weak testing practice was identified late in the period associated with the loss of information about "as-found" conditions when unsatisfactory results were obtained from initial testing. In two cases identified (EDG room air louvers and a transmitter calibration), this practice prevented licensee supervision from being properly informed about "as-found" conditions, and in a third case identified ("B" main station battery discharge test), this practice prevented management from obtaining a full understanding of the issues at the time of the event.

Although the licensee was generally effective in acquiring and documenting equipment performance data for trending purposes, inconsistent evaluation of trending data resulted in some equipment degradation or failures that may have been preventable. For example, increasing corrected differential pressure across the ECCS room coolers was observed for over two years by the licensee without being properly dispositioned. This culminated in fouling rates that exceeded service water self-assessment assumptions resulting in heat exchanger degradation prior to scheduled preventive maintenance.

One plant trip and a number of forced power reductions or outages occurred over the SALP period due to equipment malfunctions and failures, the majority of which were caused by preventive maintenance (PM) program weaknesses and personnel errors. The plant trip occurred because of a shift in the calibration of a Balance of Plant normal control instrument and the failure of a backup control instrument due to it not being included in the PM program. Some of the forced power reductions were also linked to the lack of inclusion of some components in the PM program. Although not specifically tied to equipment failures, there were also problems with the scheduling, tracking, and deferral of PMs. Vermont Yankee generally acted on these problems more from a reactive than a proactive standpoint; however, none of the malfunctions and failures were repetitive this cycle, which indicated that corrective actions to individual equipment failures were effective. Moreover, personnel errors by maintenance technicians resulted in two forced outages and five events that challenged the operators. The continuation of such errors throughout the period indicated that the licensee had not evaluated broadly the problem for root cause to enable the development and implementation of lasting corrective action.

Maintenance and surveillance programs were generally good, as evidenced by a strong program for inspection and testing of mechanical snubbers and a foreign material control program but certain programs had isolated weaknesses. Weaknesses were identified in such programs as inservice testing (some manual valves not included and tested), lube oil analysis (problems with sampling methodology), and the Rosemount transmitter monitoring program (some transmitters not included initially).

In summary, management implemented a number of good initiatives to enhance the interface with operations, scheduling and planning, and safety review aspects of maintenance but some noteworthy exceptions to good performance were noted. Vermont Yankee increased the use of self-assessments and industry experience information to improve maintenance and testing programs. Further, industry representatives from outside the company were effectively used to enhance the quality of these programs. Many examples of well planned and executed

maintenance and surveillance activities over the period were directly attributable to the qualifications and experience of maintenance and testing personnel. However, when unsatisfactory results were obtained from initial testing, the loss of information about "as-found" conditions was identified as a weakness. Further, inconsistent evaluation of trending data resulted in some equipment degradation or failures that may have been preventable. Notwithstanding equipment problems and personnel errors impacting plant operations, the overall material condition of the plant was very good. Although maintenance and surveillance programs were generally good, certain programs had isolated weaknesses.

Maintenance was rated **Category 2.**

IV. PERFORMANCE ANALYSIS - ENGINEERING

Performance in the Engineering area was rated Category 2 in the last SALP. Performance was generally very good in those areas where site and corporate management focused attention. The knowledge and experience of the engineering staff and effective communications among onsite and offsite Engineering organizations, including Yankee Nuclear Services Division (YNSD) and site organizations contributed to the high quality of performance. The technical quality of design products was very good. Significant weaknesses, however, existed in some of the areas that did not receive management focus, such as the testing of safety-related systems not specifically discussed in Technical Specifications.

Engineering management continued to coordinate effectively with other site departments and with the YNSD. Communications among the organizations continued to be very good. Particularly important was the ongoing support on emergent issues provided by the site engineering organization to the operating organization. There was a renewed emphasis on the part of Engineering management to improve those areas where significant weaknesses existed. As shown by service water system activities and by the focus on testing of the alternate cooling system, improvements have resulted.

Design work continued to be of high quality, as indicated by work done in support of the reactor vessel water level indication modification. Engineering analyses and evaluations, such as those associated with the station blackout issue, the hardened wetwell vent modification, and core reload analyses, were typically very good. Although NRC noted some instances of weak operability reviews, such as that for operation with the vital ac motor-generator set out of service, the overall quality of operability reviews improved this period. For example, the quality of the reviews associated with service water system deficiencies found during the self-assessment was, technically, very good. However, some problems were noted in the timeliness and thoroughness of the licensee's approach to several electrical distribution inspection issues such as that associated with emergency diesel generator fuel oil temperature control. Also, early in the period, the onsite review committee (PORC) missed opportunities to improve engineering performance when it did not identify weaknesses in several evaluations including one associated with the cross-connection of the service water and fire water systems and an evaluation of core spray valve leakage.

Self-assessment in the engineering area improved throughout the period. Particularly noteworthy was the assessment of the service water system. Although the assessment of the motor-operated valve program was prompted by significant issues identified by the NRC, it stood out as an especially effective use of expertise from outside the Vermont Yankee-YNSD organizations and it provided clear and needed feedback to site and corporate licensee management on the adequacy of the program.

The temporary modification program was well developed with a strong management focus on reducing their number and average age. However, implementation problems occurred, such as the installation of a test recorder in the reactor vessel level instrumentation loop without an adequate review.

The Engineering organization effectively used current industry operating experience to improve system performance and reliability. For example, the evaluation of installed Rosemount transmitters for potential hydrogen permeation affecting the sensor cell was very good. Also, the site engineering organization promptly evaluated the reactor core isolation cooling system for its susceptibility to water entrainment in the control oil system after problems were found at the Pilgrim station. However, during the conduct of an Equivalency Review associated with a bolting material change, engineers did not consider a concern discussed in an older NRC Information Notice related to susceptibility of high hardness stainless steel to stress corrosion cracking.

Several Licensee Event Reports (LERs) described problems associated with implementation of 10CFR50 Appendix R requirements for fire barriers and emergency lighting. Although the corrective actions associated with those LERs appeared appropriate, the existence of those problems suggested that weaknesses existed in the licensee's past approach to that area.

Notwithstanding the generally strong performance described above, significant weaknesses were uncovered by NRC and the licensee in the motor-operated valve testing program. Site and corporate operating and engineering managers did not effectively oversee activities in that area in that they failed to assure that the organization's response to the issue of pressure-locking was appropriate. For example, engineering judgement was used as a surrogate for engineering analysis for certain core spray valves vulnerable to pressure-locking. Further, contrary to the basis for NRC Generic Letter 89-10, there was no clear intent to correct the pressure-locking issue promptly; rather deferring thorough analysis and modifications until later in the program. Once licensee senior managers understood the weaknesses in their approach, their response was particularly strong. As stated above, they commissioned an independent assessment that provided important insights into the scope and conduct of the program.

In summary, performance in the engineering area continued to be good. Engineering management oversight and attention provided generally positive results. Weaknesses from the prior SALP were addressed with improvements noted in areas such as self-assessment and system testing. Design activities, engineering evaluations and analyses were generally very well done. However, some signs of problems were noted in the plant's conformance with 10CFR50

Appendix R. Also, significant weaknesses were identified in Operations and Engineering management's oversight of the motor-operated valve testing program that were being addressed at the end of the period.

Engineering was rated Category 2.

V. PERFORMANCE ANALYSIS - PLANT SUPPORT

In the previous SALP, plant support was rated Category 1. Significant improvement in security was attributed largely to strong management involvement. Communications between licensee management and a new security contractor were good, overtime problems were resolved and guard force training was greatly improved. Strong performance in radiation protection continued to improve due, in part, to excellent coverage of work activities and numerous "As Low As is Reasonably Achievable" (ALARA) program improvements. Very low goals for total dose and contaminated floor space were achieved. Excellent surveys and postings clearly defined work boundaries. Management support for the emergency preparedness program was evident in their assurance of operationally-ready response facilities, effective independent audits, and strong training program. Performance during two emergency exercises was excellent, with effective governmental interaction.

During the current SALP period, radiation controls continued to produce excellent results. The program was well staffed with qualified radiation technicians. The ALARA program was effectively implemented and it resulted in continued reduction in total dose to workers. Quality ALARA reports provided valuable information for workers and management. External and internal radiation exposure control included good oversight during supplemental new fuel inspection, effective ALARA procedures and program implementation, excellent prejob briefs and very good response to abnormal radiological conditions. Controls for radiological materials were effectively implemented during operations and throughout the refueling outage resulting in a reduction in contaminated areas. Oversight of the contractor radiation protection technicians during the refueling outage was particularly noteworthy. Quality assurance audits and oversight activities continued to be strong. Radiological incidents were integrated into the plant's ERS, allowing a broader perspective and timely discussion among all departments at morning meetings. A continuing weakness noted during this period was problems with high radiation area control. A minor weakness was noted in the documentation of radiological information for use during eventual decommissioning of the facility.

Performance in the radiological environmental monitoring (REMP) and effluent control programs continued to be strong. Effective programs were in place for measuring radioactivity in process and effluent samples. The REMP was well implemented with very good laboratory quality assurance and quality control programs. Further, the effluent control program continued to be very good. An upgrade to the radiation monitoring system and completion of the multi-year turbine building vent project enhanced the program. Trending and evaluation of the reactor coolant chromate chemistry was a noted strength.

The emergency preparedness program continued to be effectively implemented. Emergency response facilities were operationally ready; independent program audits were effective in identifying areas for improvement; and support from site management was evident. The emergency preparedness staff was enhanced by the addition of one full-time person with health physics expertise. The training program remained strong and included joint training sessions with licensed operation and emergency response organization managers. Exercise performance was strong and one event involving an unisolatable service water leak was appropriately classified. Communications equipment enhancements were added during this SALP period.

The security program continued to be a strength. Effective management attention and involvement, extremely knowledgeable security force members, properly installed and well maintained security equipment, and excellent protected area lighting and assessment aids contributed to the excellence of the program. Audits of security and fitness-for-duty/access authorization were very comprehensive in scope. Commitments for corrective actions for weaknesses identified were appropriate. Further, a follow-up by the Operational Safeguards Response Evaluation team found all concerns noted by that team in 1991 were corrected.

The fire protection program continued to be effectively implemented. Further, management demonstrated a strong commitment to improve foreign material exclusion controls and fire safety standards. Fire brigade response to two events and during a drill was very good. The fire protection staff effectively inspected areas for potential fire hazards. Excellent housekeeping and cleanliness continued to be strengths. Weaknesses associated with conformance with 10 CFR 50 Appendix R were noted and they were addressed in the engineering functional area. The effect of these weaknesses on the fire protection program was under review subsequent to the end of the SALP period.

In summary, the plant support functions substantially contributed to safe plant performance. Already strong performance continued in the radiation protection area including ALARA, environmental and effluent monitoring. There was continued excellent performance in the emergency preparedness and security areas. Strong performance in fire protection program implementation and in housekeeping was noted.

Plant support was rated Category 1.

ENCLOSURE 2

SALP CYCLE 12 - INSPECTION SCHEDULE FOR VERMONT YANKEE

Planned Start Date	Inspection Procedure (IP) and Basis	
07/31/95	TI 2515/128	BWR Water Level Instrumentation
	Basis:	Area of Emphasis program requirement
08/01/95	IP62703	Resident Maintenance Program Implementation with focus on craft performance and supervisory oversight
	Basis:	Resident inspector initiative in response to personnel errors resulting in power reductions and other events in the last SALP period
08/01/95	IP40500	Onsite and Offsite Safety Review Committee Activity with focus on safety accomplishments as a result of committee initiatives
	Basis:	Operations inspection initiative in response to weaknesses noted in last SALP
08/07/95	IP 82302	Review of Emergency Preparedness Exercise Objectives and Scenarios for Power Reactors
	Basis:	Core Inspection Program
08/28/95	TI 2515/111	Electrical Distribution System Followup Inspection
	Basis:	Area of Emphasis Inspection related to safety issue followup.
09/11/95	IP 82301	Evaluation of Exercise for Power Reactors
	Basis:	Core Inspection Program
09/18/95	73756	PRA Based IST, (focus on components that are PRA risk significant)
	Basis:	Prior program inadequacies, Section XI compliance, and utilization of IPE safety insights.
10/07/95	IP 82701	Operational Status of the Emergency Preparedness Program
	Basis:	Core Inspection Program

Planned Start Date	Inspection Procedure (IP) and Basis	
10/23/95 & 11/06/95	64150 Basis	App R. Post Shutdown Fire Capability, along with a number open issues Multiple open issues identified during last SALP.
10/30/95	IP 84750 Basis:	Radioactive Waste Treatment Core Inspection Program
11/01/95	IP71714 Basis:	Cold Weather Preparations Operations inspection initiative in response to program weakness
11/13/95	IP 81700 Basis:	Physical Security Program for Power Reactors (Part 1 of 2) Core Inspection Program
11/27/95	IP 86750 Basis:	Solid Radioactive Waste Management and Transportation of Radioactive Materials Core Inspection Program
11/27/95	IP 65051 Basis:	Low-Level Radioactive Waste Storage Facilities Plant support initiative inspections related to generic need for onsite storage of low level radwaste related to uncertainty of a continuously open low level waste facility.
12/04/95	IP 37550 Basis:	Engineering Core Inspection (Part 1 of 3) with focus on: (1) licensee system engineer initiative and (2) reactive engineering support for operations including the quality of evaluations and assessments submitted for PORC review Core Inspection Program and reactive inspection in response to weaknesses noted
03/04/96	IP 62700 Basis:	LCO Maintenance with focus on equipment performance and trending Maintenance inspection initiative in response to program weakness
04/01/96	IP 71001 Basis:	Licensed Operator Requalification Program Evaluation Core Inspection Program

Planned Start Date	Inspection Procedure (IP) and Basis	
04/01/96	IP 42001	Emergency Operating Procedures with focus on verification & validation of supporting documents and procedures (in conjunction with next Requalification Inspection)
	Basis:	Operations inspection initiative in response to program weakness
04/08/96	IP 83750	Occupational Radiation Exposure (Part 1 of 2)
	Basis:	Core Inspection Program
04/26/96	TI 2515/109	MOV Program Closeout Inspection
	Basis:	Area of emphasis engineering revisit inspection of TI 2515/109
05/06/96 & 05/20/96	IP 37550	Engineering Core Inspection (Part 2 of 3) with focus on Human Performance Improvement Modifications for the Refueling Bridge
	Basis:	Core Inspection Program and reactive inspection in response to weaknesses noted
05/06/96	IP 37551	Resident Engineering Inspection with focus on operational aspects of the modifications for the Refueling Bridge
	Basis:	Resident inspection initiative on licensee corrective actions from past events to be conducted with Core 2 Engineering visit if modification schedule permits
05/13/96	IP 84750	Environmental Monitoring
	Basis:	Core Inspection Program
06/01/96	IP 40500	Effectiveness of Licensee Controls in Identifying, Resolving and Preventing Problems (with NRR human/equipment performance expertise to focus on the adequacy of control of human performance issues and equipment root cause analysis for which root causes are unknown
	Basis:	Core Inspection Program and reactive inspection to past weaknesses noted
07/22/96	IP 81700	Physical Security Program for Power Reactors (Part 2 of 2)
	Basis:	Core Inspection Program

Planned Start Date	Inspection Procedure (IP) and Basis	
09/02/96	IP 73753	Inservice Inspection
	Basis:	Core Inspection Program
09/02/96	IP 73753	Inservice Inspection on Reactor Pressure Vessel and Core Shroud during Fall 1996 Outage
	Basis:	Engineering inspection initiative in response to generic problem with known cracks at Vermont Yankee.
09/09/96	IP 83750	Occupational Radiation Exposure (Refueling Outage)
	Basis:	Core Inspection Program
09/09/96	IP 62705	Electrical troubleshooting
	Basis:	Maintenance initiative in response to weaknesses noted and assessment of licensee corrective actions
10/28/96	IP 37550	Engineering Core Inspection (Part 3 of 3)
	Basis:	Core Inspection