

ENCLOSURE 1

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT 50-29/85-99

YANKEE NUCLEAR POWER STATION

ASSESSMENT PERIOD: SEPTEMBER 1, 1983 - JANUARY 31, 1985

BOARD MEETING DATES: MARCH 19 AND 29, 1985

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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 March 19 and 29, 1985 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 Yankee Nuclear Power Station for the seventeen month period of September 1, 1983 through January 31, 1985. 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

Chairman

R. Starostecki, Director, Division of Reactor Projects (DRP)

Board Members

T. Martin, Director, Division of Radiation Safety and Safeguards (DRS&S)
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Other Attendees

K. Ferlic, Project Engineer, Reactor Projects Section 3C, DRP
J. Schumacher, Reactor Engineer, Reactor Projects Section 3C, DRP
M. Shanbaky, Chief, PWR Radiation Protection Section, DRS&S (Part Time)
T. Dragoun, Radiation Specialist, DRS&S (Part Time)
J. Prell, Reactor Engineer, DRS (Part Time)

C. Background

1. Licensee Activities

At the beginning of the assessment period the facility was in cold shutdown to repair a main coolant leak on the pressurizer manway that was identified on August 27, 1983. The facility operated at full power from September 4, 1983 until March 31, 1984, with the exception of the following two unscheduled outages. On October 5, 1983, a manual reactor scram was initiated in response to the loss of the Z-126 115KV transmission line during a thunderstorm resulting in the loss of a main coolant pump and feedwater pump. On January 24, 1984, a reactor shutdown was initiated for a seven day outage to repair a through wall pin hole main coolant leak in the No. 1 Loop Steam Generator's (SG) water box vent line. The power coast-down to the Core XVI-XVII refueling outage began on March 14, 1984.

An Unusual Event was declared on January 24, 1984 as part of the licensee's response to the discovery that the leak in the steam generator No. 4 water box vent line was non-isolable primary pressure boundary leakage. Their emergency response included full activation and staffing of the Technical Support Center afford selected plant personnel a realistic training exercise.

The facility was involved in a scheduled refueling and maintenance outage from March 31, 1984 until June 8, 1984. Major activities during the outage included refueling, extensive SG hot and cold leg inspections, and implementation of Systematic Evaluation Program modifications (SEP). During the refueling period, the licensee identified severe degradation of 13 fuel rods in one of the fuel assemblies. This occurrence was attributed to a baffle spacer flow jetting that induced fretting of the fuel cladding. The licensee reported this problem to the NRC. Higher than normal coolant activity levels resulted during Cycle XVI operation.

The facility started up from the refueling outage on June 6, 1984 and was phased to the grid on June 8, 1984. As a result of a turbine governor low oil pressure condition, the generator was taken off-line on June 9, 1984. The plant returned to the grid on June 10, 1984, and reached full power operation on June 17, 1984. An unscheduled load reduction to 60% of full power occurred to repair a defective Heater Drain Pump and a steam leak in a Feedwater Heater extraction steam line. The reactor was again at full power on June 21, 1984.

The facility operated at full power from June 21, 1984 until the end of the assessment period on January 31, 1985, with the exception of the following five unscheduled outages. On July 12, 1984 a reactor automatic scram was initiated from an unknown cause. The licensee proceeded to cold shutdown for a seven day outage to effect repairs to correct a leak in the No. 4 Main Coolant Pump check valve

cover flange. On August 2, 1984, a reactor shutdown commenced for a two week outage to repair the damage caused by an electrical fire in a non-safety related 480 volt bus. A manual reactor scram was initiated on September 4, 1984 in response to the loss of the Z126 115kv transmission line caused by a fallen tree. On September 14, 1984, a reactor automatic scram occurred due to a main generator trip on actuation of its loss of field relay due to Static Exciter failure. A manual scram from 59% power was initiated on November 12, 1984 as a result of severe arcing of the main generator exciter's collector ring brushes. A four day shutdown was required to effect repairs to the collector assembly. Following the phasing of the generator to the grid on November 16, 1984 an automatic reactor scram occurred due to low level on two of the four SG's caused by operator error.

In response to the switchgear room fire on August 2, 1984, the licensee initially declared a fire emergency that included response of the plant's fire brigade. Subsequently, as a conservative measure, the licensee declared an Alert level emergency, staffed the response centers, and performed notification actions required by the emergency plan.

During this assessment period the station capacity factor was 77%.

2. Inspection Activities

One NRC resident inspector was assigned to the site during the entire assessment period. The total NRC resident and region-based inspection hours for this 17 month assessment period was 2466 hours (1738 per year) with a distribution in the appraisal functional areas as shown in Table 1.

Two event related special inspections were conducted. An inspection was performed by a regional specialist to review the licensee's actions associated with the January 24, 1984 leak in the No. 1 Loop SG water box vent line. In response to the August 2, 1984 fire in the switchgear room and the Alert Emergency declaration, an NRC inspection team was dispatched to the site to review the event details, the immediate and long term corrective actions, and plant repairs.

The resident inspector conducted a special inspection in the security area in response to multiple events involving inadequate compensatory measures.

NRC Emergency Preparedness Inspection Teams observed the annual emergency exercise on August 22, 1984.

In this period seven violations were issued including one Level III which occurred near the end of the last assessment period. Tabulations of Violations and Inspection Activities are attached as Table 2 and 3, respectively.

II. CRITERIA

Licensee performance is assessed in selected functional areas depending on whether the facility is in operation or shutdown. Each functional area normally represents areas significant to nuclear safety and the environment, and are normal programmatic areas. Special areas are added to highlight significant observations; i.e., Design Control and Quality Assurance.

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.

Based upon the SALP Board assessment, each functional area evaluated was 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 also assessed each functional area to compare the licensee's performance during the last quarter of the assessment period to that during the entire period in order to determine the recent trend for each functional area. The trend categories used by the SALP Board are as follows:

Improving: Licensee performance has generally improved over the last quarter of the current SALP assessment period.

Consistent: Licensee performance has remained essentially constant over the last quarter of the current SALP assessment period.

Declining: Licensee performance has generally declined over the last quarter of the current SALP assessment period.

III. SUMMARY OF RESULTS

A. Overall Facility Evaluation

During the previous assessment, increased licensee management attention was identified as being necessary in the functional areas of Radiological Controls, Design Control and Quality Assurance, and Security and Safeguards. Yankee has demonstrated notable strengths by maintaining a high level of cooperation with, and responsiveness to, these NRC past identified concerns. Since the last assessment period, numerous improvements have been noted; however, additional or continuing NRC concerns exist involving procedures and independent audits.

Our assessment during this period detected a declining trend in performance of work activities associated with fire prevention controls although the combined area of Housekeeping and Fire Protection remained at a Category 1 rating.

The remaining functional areas reflect a consistent and strong licensee orientation toward nuclear safety. Significant licensee actions were observed this period that reflect a firm corporate commitment to provide resources that have the potential to produce an even higher level of overall performance with respect to operational safety.

The licensee exhibits very strong performance in most functional areas. However, in some instances the licensee has been slow to determine what action, if any, is needed in response to potential concerns identified by NRC. None of these instances were considered serious safety problems; however, the observation is that gentle prodding is sometimes needed so the licensee will conduct the necessary evaluation. Examples of this problem are found in the Operations, Radiological Controls, and Security and Safeguards Sections.

B. Training Review

Training is assessed in each functional area by direct observation of performance. Currently, training is in the state of transition. Training responsibilities are being shifted from individual departments to the training department. With the exception of the functional areas involving Radiation Protection and Security, overall training effectiveness has been observed to be a licensee strength.

B. Facility Performance

<u>Functional Area</u>	<u>Last Period</u> (May 1, 1982) August 31, 1983	<u>This Period</u> (September 1, 1983 January 31, 1985)	<u>Recent Trend</u>
A. Plant Operations	1	1	Consistent
B. Radiological Controls	2	2	Consistent
C. Maintenance	1	1	Consistent
D. Surveillance	1	1	Consistent
E. Fire Protection and Housekeeping	1	1	Consistent*
F. Emergency Preparedness	1	1	Consistent
G. Security and Safeguards	2	2	Improving
H. Refueling	1	1	Consistent
I. Design Control/Quality Assurance	2	2	Improving
J. Licensing Activities	1	1	Consistent

*A declining trend has been noted in the area of personnel adherence to Fire Protection procedures.

IV. PERFORMANCE ANALYSIS

A. Plant Operations (33%)

1. Analysis

The analysis of this area includes plant operations as well as operational support activities. The areas included: compliance with license and procedural requirements; response to operational events; corrective action and reporting systems; control room environment; safety review committee activities; and staffing and training. The area was under routine review by resident and regional inspectors during the assessment period.

The previous SALP identified the need for the licensee to provide continued or additional direct management attention to activities involving: tracking and control of in-plant radiological conditions; maintaining adequate resources and up-to-date training aides; effective onsite review committee function; the use of Operations Memos in place of approved procedures; the uncontrolled posting of procedures and drawings; and improving analysis of deficiency items and event follow-up. The licensee continues to demonstrate its responsiveness to NRC concerns by providing effective, timely corrective actions which prevented recurrence of the above concerns during this assessment period.

Senior corporate management, project management personnel, and Yankee Nuclear Services Division engineering personnel frequently visit the station and maintain daily contact with the station for planning, operational review, or event response. This involvement, in concert with the day-to-day review of station operation by onsite senior management, provides a decision making process that is consistently at a level that ensures adequate management review. Plant operators and licensee management response to plant events and conditions have generally demonstrated a strong and effective approach to resolution of technical issues. The management team demonstrates a clear understanding of the issues, and exhibits a conservative, technically sound approach to safety issues. These characteristics were evident in all abnormal events during this assessment period with the exception of one event. The only event viewed by the NRC as a deviation from the normally conservative manner in which the licensee responds to operational problems involved the cross-tying of all 2400 volt and non-emergency 480 volt buses when supplied from one station service transformer due to loss of a transmission line. In response to NRC concerns the licensee immediately curtailed similar cross-tying operations until an NRC requested safety evaluation was completed. At the conclusion of the assessment period, the completed safety evaluation was being reviewed.

Strong management involvement in improving plant operations and facilities has been evident. Examples are: the construction of four new site buildings, improved health physics and chemistry facilities, implementation of a computerized open item tracking system, and significant improvements in plant cleanliness, housekeeping, and personnel safety.

Additional evidence of management commitment to quality operation has been noted in the general performance of the Operations Department. Personnel errors are minimal, with those occurring usually being isolated instances that neither reflect programmatic breakdown nor result in enforcement action. The three (3) instances of personnel error identified by the licensee have resulted in: a minor unplanned release due to improper valving; inadvertent rupture of a diaphragm due to failure to follow a startup procedure; and a plant scram during startup due to the inadequate attention by control room personnel to steam generator level. The performance level of plant operators during routine and transient plant operations reflects a conscientious attitude and concern for plant safety. This attitude has contributed to the licensee's excellent safety and availability record.

Licensed operators exhibit good knowledge of plant status but occasionally appear to be lax in adherence to administrative requirements involving off normal conditions. This is evident in failure to document equipment malfunctions or off normal conditions in the shift turnover process, the post trip review process, and the control room log. Additional problems involving inadequate adherence to administrative controls and procedures have included recurrent failures to initiate maintenance when off normal equipment operation is observed. Improvements in operator attention to these activities and details have been observed toward the end of this assessment period. Management attention is necessary to emphasize continued improvement.

Onsite and offsite review committees are properly staffed, provide timely review, and function in accordance with established requirements. Both committees were observed to hold active and probing discussions on items of concern and plant events. Routine attention is directed at timely completion or updating status on open items. The effectiveness of the offsite review committee was enhanced by the incorporation of experienced operations personnel from other nuclear utilities and by participation of the Yankee Atomic Engineering staffs particularly in response to the fuel failure problems.

In response to the new 10 CFR 50.72 and 50.73 rules for notification and event reporting, the licensee has established well stated administrative controls. The station management places a strong emphasis on prompt notification to the NRC, and applies a conservative approach in determination of reportable events. Licensee Event Re-

ports (LERs) are in general properly identified, analyzed, and reported in a timely manner. An evaluation of LERs was completed by the NRC's Office of Analysis and Evaluation of Operational Data. Within the context of this review the licensee provided adequate event reports. However, the NRC has had to request revisions to several LER's due to incorrect or insufficient information. Licensee responsiveness to NRC concerns in this area have increased the effectiveness of the review conducted by the Plant Operations Review Committee (PORC) for LERs, as well as non-reportable concerns contained in Plant Information Reports. A lack of repeat events has been observed with the implemented corrective action. Continued management attention is necessary to continue the improvements.

With regard to the Operator Licensing Program, the licensee has maintained a high success rate with four Reactor Operators (RO) and one Senior Reactor Operator (SRO) receiving licenses in this period. The licensee has displayed a strong commitment to operator training and has completed preparation for a 1985 INPO accreditation of the Yankee Training Programs. The licensee has been effective in screening and preparing licensed operator candidates. A review of the Licensed Operator Requalification Program concluded that a good program was effectively implemented. The use of an independent auditor to evaluate the requalification candidates has been beneficial to the Yankee requalification effort. Although the licensee's training program continues to be upgraded with more comprehensive training material, the documentation of this improved training material is approximately 50% complete with slow progress being made. The NRC is concerned that this lack of sufficient reference material detracts from providing for meaningful NRC administered operator license examinations. In the absence of upgraded material, alternative material needs to be supplied to the NRC to enable the development of quality operational, plant specific examinations. Additional management attention to this action is warranted.

Several additional areas are of concern because of the potential for significant impact on plant operations. These areas require increased management attention or evaluation to prevent future adverse impact on plant operations. These areas are discussed below.

Station staffing is adequate; however, due to numerous demands on the time of the various licensee operators, over reliance on overtime to meet watchstanding needs has been necessary. The use of overtime has been in compliance with NRC requirements. However, the current depth of staffing level does not always provide the licensee with the desired operational flexibility. Continued management attention is warranted in providing ample operational department licensed staffing.

The majority of activity relating to control room business normally occurs in a location that is within a few feet of both Control Room Operators, the Senior Control Room Operator, and the Shift Supervisor. This condition, with the relatively high background noise level, routinely challenges the attentiveness of the operators. Location of the secondary alarm station in an unisolated space within the control room adds to the number of personnel who must conduct business inside the control room. Other than for plant upset conditions, the licensee has no formal administrative means for effectively limiting control room access or number of personnel in the control room. However, no operational problems can be attributed to the current control room environment. The licensee should consider incorporation of applicable findings of the ongoing control room design review.

The use of Special Orders in lieu of approved procedures requires evaluation. Currently, the licensee is addressing NRC concerns for Special Orders which contain long standing items that should be in documents requiring management approval.

2. Conclusion

Category 1, consistent. The licensee continues to demonstrate a strong and effective commitment to safety in the plant operations area.

3. Board Recommendation

Licensee

Emphasize to shift personnel the importance of adherence to administrative requirements involving off-normal conditions, especially as it relates to control room activity.

Provide complete and comprehensive training material to the NRC for development of quality licensed operator examinations.

NRC

Reduce inspection in this area to minimum inspector coverage.

B. Radiological Controls (10%)

1. Analysis

The previous SALP identified the need for the licensee to conduct an evaluation of the primary vent stack monitoring system performance and implement effective corrective actions to resolve continued equipment failures. The NRC concerns have received the prompt attention of senior corporate officials. Resolution has been targeted in the licensee's corporate performance goals. A meaningful corrective action program was established with detailed engineering evaluation recommendations being implemented at the end of this assessment period. Routine updating of progress was made to the NRC. Although temporary repairs were made to resolve equipment performance problems, the system was treated as inoperable per technical specification requirements for a significant portion of the period with alternative sampling performed. Although needing prompting by the NRC to initiate action, the licensee has been very responsive in resolving this problem.

There were five inspections performed in the area of Radiological Controls during the assessment period by region-based inspectors. The resident inspector reviewed ongoing radiological control activities. Licensee activities in Radiation Protection, Transportation, and Radioactive Waste Management and Effluent Monitoring were inspected.

The radiation controls programs is typical of that for an older, small, single reactor station. The small HP staff is directed by a technically competent Radiation Protection Manager who reports to the Station Technical Director. However, there is no apparent staff development program. This results in an apparent lack of depth within the organization. This problem is clearly manifested when department supervisors are absent.

Programmatic weakness were observed regarding the radiation work permit procedure recordkeeping, and the respiratory protection program. There appears to be some evidence that several procedures were both poorly written and understood. Regarding radiation work procedures operations personnel on tours routinely failed to review and sign the RWP for high radiation areas. During outages, only the foremen in charge of the work crew reviewed the RWP requirements and signed the acknowledgements. There was no confirmation that the entire work crew was briefed regarding the radiation levels or protective action required. The respiratory protection program was deficient in that there was no procedure for the respirator repair. Nor was there a requirement to retain the physicians certification for respirator users. Instead, a contractor representative's signature was accepted as evidence of medical certification. These problems resulted from the ambiguous nature of the procedures.

Additionally, near the end of the assessment period an inadequacy with procedures implementing the respirator fit program was identified. The failure of the licensee to identify these weaknesses by self audit suggests a lack of adequate quality control of these programs. Management oversight appeared unable to adequately assess program effectiveness and identify problems. However, once problems were identified by the NRC, the response of the station staff has been swift and thorough.

Annual audits of the station radiation protection program by the corporate staff are generally complete and thorough. However the on-site Operation Quality Assurance (OQA) organization does not provide quality control for the HP activities. This lack of this independent review is a significant weakness in the overall program and contributes to the licensee's failure to self-identify HP program weakness.

The licensee's records of inspection of high radiation area access controls were not complete or well maintained. These areas are normally locked and secured to prevent unauthorized access by personnel. However, evidence indicated that the areas had indeed been routinely checked as required but personnel failed to complete the required records.

Radiation protection procedures and policies were occasionally violated. In one instance, compressed gas bottles were removed from a radiologically controlled area for shipment off-site without a proper radiation survey. In another case, the shift supervisors authorizing signature was not obtained prior to the issuance of a radiation work permit. Although, these incidents did not result in a significant safety hazard, they indicated lack of adherence to procedures.

In almost all cases, the licensee's approach to the resolution of HP issues is technically sound and thorough. The coordination of onsite HP activities during the annual emergency exercise was significantly improved over the last SALP period.

During excavation onsite for construction of a building, the licensee identified an area of old contaminated soil. Comprehensive radiological controls of the area were immediately established. The source of contamination was identified and eliminated. The recovery from this ground contamination was completed promptly and without incident.

The response to NRC initiatives concerning the weaknesses in the respiratory protection program procedures was timely with acceptable resolutions. Similar responsiveness was noted in reply to all other initiatives identified by NRC inspectors.

The authority of the radiation protection manager and the first line supervisors are not well defined. There is a lack of clear authority statements in the job descriptions for these positions.

The technical training and qualification of the HP staff appears to be adequate. A defined program is implemented for a large portion of the staff with the exception of respiratory repairs technicians where no job training had been provided.

There is consistent evidence of prior planning and assignment of priorities by management to control the processing of radioactive waste. In response to program weaknesses identified early in the assessment period, a major effort by management resulted in well stated, controlled, and explicit procedures for radwaste handling.

The annual corporate audits of the radwaste program are complete and thorough. However site Operations Quality Control was not involved in verifying the classification and characteristics of radwaste as specified by regulatory requirements. This deficiency was noted by the Combined Utility Assessment Program audit. The OQA involvement in providing quality control of other radwaste operations was minimal. This resulted in a program without any QA verification of the day-to-day radwaste operations.

The licensee's resolution of the safety issues regarding the improper bracing and use of poor quality shipping containers were technically sound and thorough. A new dedicated building was erected to process and store radwaste. The process control program was improved as were the methods for handling and loading the radwaste. The licensee's major commitment of resources to the upgrading of this area resulted in a significant program improvements. The staffing in the radwaste program was increased by the addition of a radwaste coordinator and two dedicated radwaste handlers. These new positions have clear authorities and responsibilities.

The effluent control and monitoring program is well controlled by management. The procedures and policies for analyses, calibration, and reporting of effluent releases are strictly adhered to. Quality Assurance audits are generally complete, however, only one aspect of the effluent control program is normally reviewed. A need for increased scope of audits is indicated.

Some weakness regarding the training and qualification program for chemistry technicians was observed. Although a defined program is implemented for the staff, no training was provided to technicians for a 14 month period. During this period the licensee was aware that a major change to the technical specifications for environmental surveillance was imminent. This problem is discussed further in Surveillance, Section D of this report.

The most significant progress that occurred during this period concerned the processing and transportation of low level radwaste. This is in contrast to the performance in this area during the past SALP period which resulted in a Level III violation issued in this assessment period. The licensee's action to resolve this problem was commendable. Similar problems did not occur during this assessment period.

Corporate audits of transportation activities are complete, timely and thorough. There appears to be an on-going commitment by the highest levels of management to assure a high level of quality and performance in this area. However, involvement by the OQA needs significant improvements.

At the end of the assessment period, one of the three Radiation Protection Engineer positions was vacant for approximately one month, with the Health Physicist's position soon to become vacant. Considering the small size of the staff and the lack of depth within this department, management attention to assure filling of the vacant positions on a priority basis is warranted.

2. Conclusion

Category 2, consistent.

3. Board Recommendations

Licensee

Review staffing levels of the radiological controls organization to provide for increased supervisory depth.

Provide a staff development program to ensure backup for critical positions.

Provide additional management and quality control oversight to allow for self evaluation and early identification and prevention of problems.

Conduct a thorough review of site radiological protection procedures, update as required and emphasize the importance of radiological protection procedure compliance to all personnel.

NRC

Continue routine inspection coverage.

C. Maintenance (6%)

1. Analysis

The previous SALP identified problems included: failure to perform in-depth reviews of maintenance to determine root causes; a lack of in-depth reviews and trending of LER's resulting in a few instances of misclassification and failure to implement effective corrective action; and, failure to specify post maintenance test requirements and improper work sign off.

During the current SALP period, maintenance activities were routinely reviewed by the resident inspector. This included a special maintenance inspection by the resident to assess the licensee's Maintenance Program for trending, root cause analysis, and record systems that support these evaluations. One inspection by a region-based engineering specialist was conducted to review the licensee's failure analysis and repair process for a pin-hole pipe leak in the main coolant system. As in the preceding SALP period, no violations of NRC requirements were identified.

Strong corporate and site management involvement and control in assuring quality continues to be evident in this functional area. Frequent use is made of Yankee Nuclear Services Division (YNSD) personnel for technical support and resolution of concerns related to plant maintenance and design change/modification activity. The licensee has demonstrated the initiative to strengthen this corporate/site relationship by creating a new Maintenance Support Department consisting of engineers, all formally assigned to the Maintenance and I&C Departments. The intent of this department is to improve communication and enhance the control of work involving groups of various disciplines. In assuring quality, the maintenance management provides consistent evidence of prior planning and appropriate assignment of priorities; has maintained effective cooperation and coordination with the QA organization; has well stated and understandable policies; and, provides timely and thorough review of ongoing maintenance.

NRC observations have noted that safety related maintenance is given priority attention. QA inspectors will accompany safety related equipment that is sent to the factory for repairs in an effort to aide maintenance management oversight when close review of the activity is warranted. Preventive maintenance (PM) is treated as a comprehensive program. Procedural controls for scheduling, implementing and documenting the program includes both non-safety and safety related equipment. Since the licensee's maintenance philosophy is preventive in nature, maintenance supervisors are encouraged to schedule equipment for PM in an ongoing basis, and encourage release of equipment from operational status for this purpose.

The licensee demonstrates concern for plant reliability. Management will upgrade systems and components that prove to be difficult to maintain either due to age, inadequate performance, or unavailability of spare parts. The licensee's initiative in this regard was demonstrated during the current assessment period by the installation of new sensing, control, and indication portions of the Feedwater Control System, and the installation of a new static exciter for the unit generator. As a result of the licensee's desire to correct and respond to maintenance deficiencies in the previous SALP findings, senior station management has incorporated into supervisor QA training added emphasis for deficiency recognition and stressed the necessity for improved personnel performance. This action has aided in the acceptable and timely resolution of NRC and licensee concerns.

The special maintenance inspection conducted during this assessment period identified no programmatic discrepancies. In early 1984, the licensee instituted the use of Failure Analysis Reports. These reports are initiated after instances of repeated failures. Management attention is warranted to formalize use of these reports to aid in assuring that equipment failures are evaluated for frequency of occurrence and root cause.

Increased sensitivity for thorough reviews using event analysis by the maintenance organization and the PORC has resulted in noted improvement. In this functional area four LER's were submitted. A review of the event details indicates that the corrective action implemented by the maintenance organization was effective. No adverse trends were identified that would contribute to equipment unavailability or improper performance as a result of maintenance activities.

The Maintenance, Instrument & Control Department, and Maintenance Support Department continue to be staffed by experienced, qualified craft and supervisory personnel. Personnel turnover has traditionally been low. Vacancies are filled in an expeditious manner. Responsibility for compilation and review of design change and modification documentation is assigned to the Maintenance Engineers. These engineers are also responsible for resolution of installation related problems and the field supervision of work activities. Since a relatively small number of maintenance engineers perform a significant amount of work in the design change and modification area, management attention is warranted to insure sufficient maintenance engineering resources are available to perform complete and timely reviews of quality related documentation.

Training and qualification of maintenance personnel is a noted strength. This allows the licensee to continue reliance on using generalized procedures for routine work, and has generally resulted in few personnel errors. Although the existing training programs

for the Maintenance and I&C personnel are well defined and implemented, the licensee is in the process of increasing training program effectiveness to obtain INPO accreditation.

In general, the licensee has been responsive to NRC initiatives involving this functional area. Timely replacement of HFA relays with upgraded units in safety related applications was performed in response to IE Bulletin 84-02. Commitments made by the licensee in the Systematic Evaluation Program have been incorporated into site maintenance activities. Maintenance management is currently considering the initiation of a program for response time testing of reactor trip breakers during refueling outages to assess performance and detect unacceptable degradation. In response to the Salem ATWS event, the licensee has committed to establish a Vendor Interface Program to get updated information on all safety related components. This technical information program is to be formalized by a programmatic procedure.

The licensee has not been providing timely resolution to NRC concerns involving 10 CFR 50.59 and technical specification requirements for jumper and lifted lead activities. Procedural controls inadequately address this topic. The procedure for jumpers and lifted leads did not require a safety evaluation in accordance with 10 CFR 50.59, i.e., not requiring a written basis for why no unresolved safety question existed and did not require an onsite safety committee review prior to implementation as required by Technical Specifications. NRC effort has been necessary to obtain resolution and additional management attention is still required.

2. Conclusion

Category 1, consistent.

3. Board Recommendations

Licensee

Insure sufficient Maintenance Engineering resources are available with a formalized training program established for these engineers.

Implement a procedure to formalize the Vendor Interface Program.

Resolve procedural deficiencies related to jumper and lifted lead activities.

NRC

Maintain effort at the current level with resident inspector. Prioritize region based inspections as needed to handle identified concerns.

D. Surveillance (7%)

1. Analysis

Operational and refueling surveillance activities were reviewed by the resident inspector during routine inspections. Four inspections were conducted by region-based inspectors in the areas of reactor coolant water chemistry sampling, inservice testing program, containment leakage testing program, and nonradiological chemistry.

Significant NRC concerns identified in the prior SALP included steam generator cold leg ISI inspections and adequacy of the mechanical tube plugging of SG tubes. These issues were resolved during this assessment period.

The licensee's implementation of the surveillance program is performed in a dedicated manner by the various department Managers and reflects a high level of management involvement. When technical specification changes occur, the Plant Superintendent directs the implementing activity to ensure correct incorporation of requirements into the program.

Surveillance activities by the operations, radiation protection, reactor engineering, chemistry, instrumentation and maintenance groups were found to be in accordance with established procedures during routine reviews by the resident and specialist inspectors. The licensee's technical staff was well trained and knowledgeable of applicable surveillance and testing requirements. Activities are well planned, technically adequate, and properly controlled and documented. Surveillance test results continue to be evaluated in a thorough and accurate manner. Records were well organized and retrievable. An inspection of the core physics surveillance testing following the refueling outage indicated the existence of a well established and implemented program.

The number of reportable events for this functional area (four) is not considered to be exceptional. One LER described a missed surveillance test due to personnel error; the corrective action was prompt and effective. The other LERs involved a detected design inadequacy affecting a containment isolation pressure switch set-point, and component failures associated with excessive valve leakage identified as part of local leak rate testing activities. Consistent with a routinely conservative approach when dealing with containment integrity issues, the licensee has committed to perform an evaluation of the valves exhibiting excessive leakage to determine whether they should be redesigned or replaced.

Plant management is fully involved with surveillance related activities as evidenced by the scope of the testing programs. The licensee is one of the few who have successfully leak rate tested the containment in as close to the "As-Found" condition as possible.

This is a direct indication of the effectiveness of the licensee's containment penetration maintenance and improvement program. Additionally, the steam generator eddy current examination program routinely tests far more tubes than required by Technical Specifications. This is due in part to the responsiveness of the licensee to NRC initiatives involving inspection of cold leg side tubes where defects are known to exist. As of the last refueling outage, the licensee has completed a full baseline inspection for cold legs in all steam generators. The licensee is pursuing licensing action to resolve difficulties between its extensive sampling program and Technical Specification acceptance criteria. These difficulties center on the fact that actions mandated by current Technical Specifications do not provide for an ongoing trending of steam generator tube degradation.

Weakness in the management control and attention in the chemistry area was noted during this assessment period. Deficiencies identified by the NRC included: inadequate procedural controls for Technical Specification required sampling; lack of a retraining and requalification program for the laboratory personnel; failure to provide pre-implementation training on a major Technical Specification amendment (RETS); and, failure to perform required sampling and analysis because of poor requirement understanding. Licensee management has taken effective corrective action to improve performance by this department. In August 1984, a new Chemistry Department Manager was assigned to the facility. Programs are being developed to improve departmental performance and facilities. Laboratory upgrading is in progress. Continued management attention to ensure a continued positive trend is warranted.

2. Conclusion

Category 1, consistent.

3. Board Recommendation

Licensee

Continue efforts to resolve perceived incompatibility between current steam generator ISI sample size and Technical Specification acceptance criteria.

Ensure continued improvement in Chemistry Department performance is achieved.

NRC

Maintain inspection program with resident inspector. Prioritize region based inspections to handle identified concerns.

E. Fire Protection and Housekeeping (3%)

1. Analysis

During this assessment period, frequent observations of fire protection and housekeeping activities were conducted by the resident inspector, with no region-based inspections performed. Previous SALP concerns were resolved indicating management responsiveness to NRC identified concerns.

The licensee was aggressive in improving plant cleanliness with management involvement evident. Notable achievements included: improved outside storage conditions; cleanup of plant outside areas such that they are neat and uncongested; elimination of almost all temporary trailer facilities; and, implementation of a significant turbine building housekeeping and appearance upgrade program.

The prior planning and assignment of priorities by licensee management is evident in program policy and procedures, with specific assignments made to implement the stated requirements. QA audits were performed in a timely and thorough manner. A unique feature of the program utilizes the various plant supervisors on a rotating basis, including senior station managers, to conduct monthly general plant housekeeping and cleanliness control surveys. This ensures that adequate management attention is provided, with resolution of discrepancies and safety hazards performed in a systematic manner.

The Fire Protection Coordinator (FPC) is responsible for the day-to-day implementation of the program, as well as performing the assigned duties of the program's Training coordinator. The FPC is not full time, with the position staffed at about a 60% level. Consideration for staffing of the FPC at a full time level during periods of high site activity is encouraged. Overall, staffing in this area is adequate, with contractor personnel utilized during periods of high site activity to maintain a high standard of cleanliness. Security contractor management have increased the number of fire brigade personnel available on shift to address NRC concerns for brigade response capability.

The training program is well defined and implemented, and is considered a program strength. Frequent backshift fire drills for the fire brigade are conducted. Fire detection and suppression systems were well maintained and controlled. Two LERs were issued in this area and reflect removal of equipment from service to facilitate plant modification efforts. The response of fire brigade and plant personnel to an August 2, 1984 electrical fire in the switchgear room was excellent. In addition, automatic fire detection and suppression equipment functioned properly. Subsequent recovery efforts demonstrated licensee knowledge of fire protection requirements and

resulted in proper compensatory measures being implemented. The licensee's response to this event provided substantial evidence of a well managed and implemented fire protection program.

However, weaknesses in the fire prevention program were identified. These involved: improper storage of flammable liquids; control of transient combustibles; and, control of hot work. These conditions suggest a laxness in the established accountability mechanism and a lack of priority shown by supervisory personnel to established fire protection policies and procedures. Fire watch personnel involved in hot work were not always attentive to ensure that combustible materials were removed from the work areas. In one instance this lack of attentiveness resulted in combustibles being ignited in a hot work area. Aggressive management attention is needed to ensure that personnel awareness is heightened for procedural adherence in the fire prevention area. In addition, increased field supervision of work activities by first line supervisors is warranted.

2. Conclusion

Category 1, consistent. Overall performance is consistent. House-keeping practices and conditions have shown an excellent improving trend. However, a declining trend has been observed in the area of fire protection due to deficiencies in personnel adherence to fire prevention procedures.

3. Board Recommendation

Licensee

Encourage and assure adherence to established procedures and increase first line supervision in the field to direct and control work activities to prevent fires.

Consider removing all non-fire protection duties from the Plant Fire Protection Coordinator during refueling and major maintenance outages.

NRC

Maintain inspection program with resident inspector. Prioritize region based inspections to handle identified concerns.

F. Emergency Preparedness (13%)

1. Analysis

During this assessment period, there were three inspections of the licensee's emergency preparedness activities and one full-scale emergency exercise. The licensee has been responsive to NRC initiatives and has been aggressive in implementing corrective actions in previously identified problem areas. Of the 59 open items identified during the emergency preparedness appraisal and inspection of the Public Notification System, 58 were effectively resolved on schedule. The Safety Parameter Display System has been installed and is presently functional.

No regulatory deficiencies were identified during the full scale exercise on August 22, 1984. Nine areas were noted which were thoroughly planned and efficiently implemented; some areas for licensee improvement were also identified both by the NRC and the licensee.

The training program has been effective. This was reflected both during the annual exercise and in response to two emergencies. On January 24, 1984, an unusual event was promptly declared based upon the detection of a primary coolant leakage greater than Technical Specifications. The licensee's response to this event was in accordance with their emergency plan implementing procedures. Although this event did not require an extensive response by the licensee, the licensee's performance was in excess of the requirement in order to provide an opportunity for training of personnel. On August 2, 1984, the licensee declared an alert based on a fire in the switchgear room. Although an alert level emergency declaration was probably conservative, since it was subsequently determined that safety systems were not affected, the licensee applied good judgment in the identification of the emergency.

The involvement of corporate management in site activities was noted during both the performance of routine inspections and during the annual exercises. Although there is only one individual on site who is dedicated to emergency preparedness responsibilities, corporate personnel contribute much effort to site emergency preparedness activities.

The licensee continues to exhibit a high level of performance in the emergency preparedness area.

2. Conclusion

Category 1, consistent.

3. Board RecommendationLicensee

None.

NRC

Reduce priority regional inspection effort in this area.

G. Security and Safeguards (5%)

1. Analysis

During the previous SALP, three concerns were identified: recurring security computer problems, insufficient oversight in security plan implementation, and marginal nature of security facilities. As a result, licensee performance in this area was downgraded to a Category 2. Licensee corrective action during this current SALP period was not sufficiently aggressive to resolve these issues in a timely fashion. Although actions were initiated to have an independent security organization analyze various aspects of the security program, other problems developed before this evaluation was initiated.

In the current assessment period, two routine physical security inspections were conducted by region-based inspectors. Routine resident inspections continued throughout the assessment period and included a special inspection in which one Severity Level IV violation was identified. The violation, involving the failure to effectively implement compensatory measures during planned and unplanned system/equipment outages, was indicative of a potentially serious programmatic weakness. Therefore, an enforcement conference was conducted at the site on June 21, 1984. Short term corrective actions initiated by the licensee have been found effective to date. Some long term actions still are not completed but are on schedule for completion.

The security organization experienced programmatic difficulties in meeting procedural requirements during the first half of this assessment period. This was due to the extensive use of compensatory measures because of system hardware failures which resulted from a lack of maintenance. Some procedural requirements were vague and poorly understood by the security force. When the problem was identified by the NRC, the licensee responded with prompt corrective action. A comprehensive action plan was initiated to effect a general upgrade of hardware, procedures, and management oversight.

Significant program improvements were noted during the last half of the assessment period. These included hardware performance, attention to maintenance, management oversight and, in particular, attention to meeting the objectives of NRC security program requirements. These program improvements are directly attributed to increased licensee management involvement in the program.

Corporate involvement is also evident in an improvement project for QA audits of the Security Program. This project includes a plan to allow for whole, or in part, inspections of security to look at perceived problems as directed by plant management.

The project is scheduled for completion in July, 1985. The licensee has also involved the Instrumentation and Control (I&C) Department directly in the security program. This has improved the liaison between the groups and has resulted in increased reliability of security systems. This has correspondingly reduced the use of security force personnel to compensate for systems' downtime. The improvements effected during the later portion of the assessment period appear to have raised the morale of the security force personnel. More attention to detail, appearance, and improved professional conduct were evident. The licensee has shown initiative by committing resources to enlarge the present gatehouse facility which is envisioned to correct known inadequacies and improve security organization effectiveness.

Training and qualification of security force personnel appeared to be effective. Increased awareness of, and adherence to, procedures and knowledge of security program objectives has been demonstrated.

During the assessment period, the licensee submitted to Region I seven changes to Safeguards Plans under the provisions of 10 CFR 50.54(p). The changes were found to contain numerous problems: some changes were not identified as such, some changes (identified and not identified) were considered unacceptable, and an overall summary was not provided. Requested resubmittals were delayed beyond the specified time, even after prodding by the NRC. In one case, a delay in excess of six months occurred. The quality and timeliness of security plan changes requires management attention.

The licensee submitted three 10 CFR 73.71 security reports during this assessment period. None were indicative of repetitive problems. The three reports were timely, well written and provided a clear understanding of the event cause and compensatory measure taken.

2. Conclusion

Category 2, improving.

3. Board Recommendation

Licensee

Continue to upgrade security system equipment and performance and maintain the current high level of site and corporate attention.

NRC

Continue routine inspection program.

H. Refueling (7%)

1. Analysis

A 10 week refueling outage (March 31, 1984 - June 8, 1984) was conducted during this assessment period. Preparations for refueling were reviewed by the resident inspector and included outage planning, procedural preparations, new fuel receipt and inspection. Throughout the outage period, resident inspector reviews were conducted in the areas of outage coordination, refueling operation, radiological controls and post refueling physics testing. Two inspections dealing with the Radiation Protection Program and ISI activities were conducted during the refueling outage period. In addition, the following unscheduled extended maintenance outages occurred in 1984:

- January 24 - February 1 (main coolant leak repair in steam generator No. 1 water box vent line)
- July 12 - 20 (leak repair on the No. 4 main coolant loop check valve)
- August 2 - 15 (electrical bus 4-1 equipment damage repair that resulted from an electrical fault induced fire)

Activities during these outages were reviewed by resident and region-based inspectors.

This area continues to be a noteworthy strength of the licensee as evidenced by the high level of attention both senior corporate and site management have placed on scheduling, planning, and control of activities both before and during outages. As in the past, a Senior Maintenance Engineer was dedicated to outage planning. This has resulted in decision making consistently at a level that ensured adequate management review of activities. Daily planning meetings (twice per day) were effective in coordinating work accomplished and identifying mechanisms to improve schedules on critical path work. The Assistant Plant Superintendent continues to be charged with overall outage planning responsibility with a high degree of involvement from the Plant Superintendent and Technical Director. These individuals consistently used daily refueling and forced maintenance outages meetings to reinforce, in a non reactive manner, adherence to administrative policies that placed a priority on plant and personnel safety.

The licensee's response to unexpected problems during the outages has been exemplary. It is characterized by thoroughness and conservatism with an ongoing attention to safety. The licensee tends to react positively to deficiencies in controlling work activities. The problems encountered during the outage were diverse: small bore

pipng support deficiencies inside containment; fuel assembly flow induced fretting; steam generator main coolant spill; improper loading of a fuel assembly into the reactor vessel; damage to a fuel assembly in transit; and, inadvertent cross connecting of two incore flux paths. In handling these problems, the inplace corrective action systems promptly identified the four of the above items which were non-reportable concerns. Plant information reports were issued. The onsite safety committee ensured appropriate corrective action was identified to prevent recurrence. The licensee's performance reflecting the reportable events that occurred during the refueling outage is contained in the Plant Operations section. No violations were identified during this assessment period as a result of re-fueling activities.

The recent refueling outage reflected significant activity and included: turbine-generator overhaul, 10-year ISI, refueling, steam generators No. 2-4 tube eddy current testing and plugging, secondary side inspections of steam generator Nos. 1-4, main generator exciter and regulator replacement, FW control system replacement, and many modifications and backfits - including the turbine building shear wall seismic modification for the Systematic Evaluation Program. In spite of this considerable workload, the licensee completed the outage safely and essentially on schedule. This was accomplished by augmenting the station staff with appropriate contractor help and assistance from the Yankee Nuclear Service Division staff.

Updating drawings and procedures to reflect facility modifications implemented during the refueling outage is a licensee strength. In addition, considerable resources are allocated to the development of a Pre-Startup Training Manual, which is utilized to qualify licensed plant operators on the various design changes and modifications made during the refueling outage.

2. Conclusion

Category 1, consistent

3. Board Recommendation

None.

I. Design Control/Quality Assurance (12%)

1. Analysis

The previous SALP identified this topic for consideration as a separate area to specifically address NRC and licensee actions that occurred in that assessment period. Category 2 performance was assigned, with the most significant concerns being: untimely resolution of audit findings; unnecessary challenges to the short term design review effort; incomplete safety evaluation review of system modification; and, weakness in the safety evaluations performed by the onsite review committee.

During this assessment period, nine region-based specialist inspections addressed the QA/QC interfaces in the areas inspected. One region-based specialist inspection reviewed the Quality Assurance and Non-Licensed Training Programs. The resident inspector conducted regular observations of activities in this area throughout the period. Findings indicate correction of several previously noted deficiencies and identification of several new ones.

Management involvement and control in assuring quality has shown improvement in this period. This involvement has aided in correcting untimely resolution of audit findings. Licensee audits are becoming increasingly comprehensive, with corrective actions being both timely and responsive. The Quality Audit and Engineering Group is establishing a program to trend audit and NRC findings, LERs, plant inspection reports, and nonconformance reports. A computerized open item tracking system is used by site and corporate organizations to provide a formal control and accountability for correction of NRC concerns. Increased management awareness and involvement in site activities has resulted from the licensee's participation in the Combined Utility Assessment Program. This onsite management evaluation has been effective in identifying deficiencies of concern to the NRC and has resulted in initiation of appropriate corrective action.

In the area of design control and safety evaluation review, both strengths and weaknesses are apparent. Heavy reliance on Yankee Nuclear Services Division staffing has generally resulted in timely and conservative responses to SEP and IE Bulletin issues. The licensee demonstrates good understanding of the issues and provides a sound and thorough approach to resolution of identified problems. Corrective actions to resolve the prior SALP concerns have not been totally successful, in that, the NRC and the licensee have identified deficiencies in design efforts and safety reviews. Examples were: the licensee's response to IE Bulletin 79-02, Pipe Support Base Plate Designs Using Expansion Bolts; failure to establish design criteria

on planned implementation of the post accident hydrogen recombiner capability; and installation of a pressurizer code safety valve with a lift setpoint in excess of the Technical Specification tolerances. Although improvements have been made, additional management attention is necessary to improve performance in this area.

During review of the design control/quality assurance area in this assessment period, three additional concerns were identified: QC "peer" inspections, non-licensed training, and the Operations Quality Group (OQG).

A major generic problem, identified during the programmatic QA review conducted toward the end of the period, involves the lack of an independent quality inspection program. The licensee has relied upon a "peer" quality control inspection program. This practice was not formally documented and is contrary to the existing licensee procedure for quality control inspections. As a result, this item was classified as a violation. However, the current program does appear to be very effective. Management attention is required to review current practices and identify those areas of procedural disagreement. The desired program should then be formally documented and implemented with appropriate controls.

A review of the training and qualification program for non-licensed personnel has identified a deficiency involving the lack of a formal implementation of the licensee's program for evaluating training effectiveness. Positive indications of management's attempt to provide improvements in this area include seeking INPO accreditation for its various training programs, upgrading the STA training requirements, and initiating action for the possible transfer of training responsibilities currently performed by selected operating departments to the Training Department.

Early in the assessment period, the licensee had increased the allocated positions for the onsite staff of the Operations Quality Group (OQG) from two to five and assigned the OQG Manager to the Yankee site on a part time basis. One of the QA inspector positions remained vacant for almost the entire assessment period and was only recently filled by a temporary contractor. In addition to the licensee's OQG staff being increased, the audit function was transferred from OQG to another QA group. However, the OQG group supplies approximately one-half man years of effort for the performance of the auditing program at other utilities. Further reduction in the OQG staffing resulted during the refueling outage when the senior QA Engineer was temporarily assigned non-QA duties without compensation being provided for his routine ISI QA duties. The current OQG staff size does not allow intensive involvement in any one particular area without sacrificing coverage in other areas. This condition became particularly evident when extensive effort was required by the station staff to obtain QC inspection coverage

as part of the preparation and disposal activities for accumulated spent ion exchange resins. Management evaluation on the effect of OQA staff size on QA program coverage is warranted.

Overall, the licensee has made satisfactory progress in resolving deficiencies in the design control/quality assurance area. Concerns from the previous SALP period are adequately being addressed; some problems identified during this assessment period still require resolution. Continued management attention and followup is necessary to ensure the improving trend continues.

2. Conclusion

Category 2, improving.

3. Board Recommendation

Licensee

Continue to improve safety evaluation review and evaluations by onsite review committee.

Provide a documented quality control inspection program for site activities, initiate evaluations of training effectiveness and evaluate OQA staff size in relation to QA program coverage requirements.

Review the existing quality control inspection program and procedures to identify areas of disagreement. Formally document and implement desired program with appropriate controls.

NRC

Maintain inspection effort at the current level.

J. Licensing Activities (4%)

1. Analysis

During the previous assessment period, weaknesses were identified in the following areas: maintaining an appropriate level of communications with the NRC Project Manager; licensee performance in the development and QA reviews of safety analysis assumptions; and, lack of a compiled source of plant conditions assumed in the safety analysis for use by the licensee's staff.

This evaluation represents the combined inputs of the Operating Reactor Project Manager and those technical reviewers who expended significant amounts of effort on Yankee licensing actions during the current assessment period. In addition, the evaluation contains appropriate observations of the resident inspector as a result of monitoring licensing activity, reviewing implementation of Systematic Evaluation Program commitments, and licensee actions required by NRC I&E Bulletins.

The basis for this 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 assessment period. These actions, consisting of amendment requests, exemption requests, responses to generic letters, TMI items, and other actions, are described in Table 6.

Licensing actions show consistent evidence of extensive prior planning and work prioritization by the licensee as exemplified by the recent postponement of its Appendix K exemption request to allow more effort to be assigned to outstanding TMI and generic issues. The willingness to focus on the license amendment process is an excellent example of the licensee's efforts to ensure high quality and to work as efficiently and effectively as possible with the NRC staff. Significant improvement has been observed in operating within safety analysis assumptions. Only a single event (LER 84-02) was identified by the licensee where plant operations could have potentially been in deviation with the analysis. This improving trend is attributable to a high level of management involvement that resulted in an appropriate assignment of priority and resource allocation. Continued improvement is expected with the distribution and use of a recently published compiled source of safety analysis assumptions.

Senior management involvement has further been apparent by their implementation of the Yankee Project Organization and a computerized Commitment Tracking and Responsibility System. These initiatives have enhanced licensee management participation in and cognizance of current and anticipated licensing actions.

Licensee's applications and responses are sound and viable. However, justifications of no significant hazards consideration for "Sholly" determinations in some cases require a significant amount of additional effort by the NRC Project Manager to determine the safety significance because submittals do not contain detailed justification. The basis for proposals with unique solutions or that rely on existing equipment, procedures, and/or operator action must be provided for adequate review of unreviewed safety questions. Improvement in this area is warranted. The licensee has demonstrated a cooperative spirit by agreeing to modify certain of its practices to ensure quality products such as reducing the number of unrelated topics in each proposal amendment. Licensee submittals are generally considered to be technically adequate. However, concerns have risen regarding the thoroughness of the technical work. Of particular concern are the changes submitted for proposed amendments that involve many unrelated issues and the changes submitted under Section 10 CFR 50.54(p) (see Section G, Security and Safeguards).

The analysis of the licensee's reportable events is contained in Plant Operations. YAEC licensing personnel provided timely notification to the NRC Project Manager of unplanned plant shutdowns or significant events. The licensee is very responsive to follow-up inquiries by the NRC staff. The NRC staff has noted substantial improvement in event reporting. This improvement is attributed to management attention in this area, as well as the licensee's desire to ensure that the NRC staff is kept fully apprised of plant status and licensing activities.

Generally the YAEC responses to NRC requests are timely and complete. However, a few selected items such as proposed Technical Specifications for TMI issues (Generic Letters 82-16 and 83-37) have not been timely. In this case the licensee has assigned this activity a lower priority in its schedule. The prioritization of work, including NUREG 0737 issues, have been discussed with the licensee by the staff. A timely resolution of this matter is anticipated. In general, the licensee's submittals are typically of high quality and fully responsive to NRC staff initiatives, especially in the SEP areas, most TMI Action Plan Items and Equipment Qualification issues. NRC onsite inspection indicated implementation of SEP areas involving water control structures, bypass of thermal overload devices, and surface coatings inspection program was lacking in thoroughness and depth.

During reviews of IE Bulletins actions and responses, some weaknesses were identified by the NRC in both responsiveness and approach to resolution for Bulletins 79-02, 83-07, and 84-03. Preventing future inadequacies in this area will necessitate management attention.

2. Conclusion

Category 1, consistent

3. Board RecommendationLicensee

Focus attention in all NUREG 0737 technical specification efforts to provide near term accomplishment of these tasks, and upgrade performance in addressing NRC concerns identified in I&E Bulletins.

Increase attention to providing basis for no significant hazards justification on licensing actions.

Assure accuracy and thoroughness of all licensing submittals including 50.54(p) items.

NRC

None.

V. SUPPORTING DATA AND SUMMARIES

A. Investigations, Petitions and Allegations

None.

B. Escalated Enforcement Actions

1. Civil Penalties

None.

2. Actions Pending/Resolved

A Radwaste Shipment Violation cited by the South Carolina Department of Health and Environmental Control on July 28, 1983 was resolved by the NRC with Notice of Violation issued on January 6, 1984

3. Orders

Order modifying license dated June 12, 1984, confirming licensee commitments and actions for TMI related requirements contained in NUREG 0737, Supplement 1.

Order modifying license dated August 23, 1984, confirming licensee commitment to upgrade emergency response capability with an improved EOF.

4. Confirmatory Action Letters (CAL)

Confirmatory Action Letter No. 84-08, dated April 26, 1984, confirming actions required of the licensee in response to NRC identified deficiencies in the Respiratory Protection Program.

C. Management Conferences

SALP Management Meeting at the Yankee Nuclear Power Station on November 9, 1983.

Enforcement Conference at the Yankee Nuclear Power Station on June 21, 1984, in regard to a violation of Security Plan requirements identified during Inspection 84-06.

Management Meeting at the Yankee Nuclear Power Station to review the Operator Requalification Program on November 7, 1984.

D. Licensee Event ReportsType of Events:

A. Personnel Error.....	5
B. Design/Mfg/Const/Install Error.....	5
C. External Cause.....	2
D. Defective Procedure.....	2
E. Component Failure.....	16
X. Other.....	5

Licensee Event Reports Reviewed:

Reports 83-28 to 83-43 and 84-01 to 84-18

Causal Analysis

- a. LERs 83-29 and 83-32 involved the loss of one of eight incore thermocouple inputs to the Saturation Monitor due to failure of reactor vessel head connectors.
- b. LERs 83-31, 83-34, and 83-39 are events that involve removal of equipment or systems from service to facilitate installation of modifications to upgrade equipment performance or enhance facility operation.
- c. LERs 83-33, 83-41, 83-43, 84-09, 84-14, and 84-18 are events due to personnel errors. Reportable events involving errors were about equally distributed in the plant operations, radiological controls, maintenance and surveillance functional areas.
- d. LERs 83-35 and 83-42 occurred as result of electrical contact problems involving the ratemeter card of the No. 4 Steam Generator Blowdown Monitor.
- e. LERs 83-37 and 84-15 involve the loss of the Z-126 transmission line due to trees falling against the line.

TABLE 1
INSPECTION HOURS SUMMARY (9/1/83 - 1/31/85)
YANKEE NUCLEAR POWER STATION

	<u>HOURS</u>	<u>% OF TIME</u>
A. Plant Operations.....	819	33
B. Radiological Controls.....	260	10
C. Maintenance.....	139	6
D. Surveillance.....	164	7
E. Fire Protection and Housekeeping.....	74	3
F. Emergency Preparedness.....	314	13
G. Security and Safeguards.....	136	5
H. Refueling.....	176	7
I. Design Control/Quality Assurance.....	293	12
J. *Licensing Activities.....	<u>91</u>	<u>4</u>
Total	2466	100%

*Inspection effort only

TABLE 2

VIOLATION (9/1/83 - 1/31/85)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	3
Severity Level V	3
Deviation	0
Total	7

B. Violation Vs. Functional Area

<u>FUNCTIONAL AREAS</u>	<u>Severity Levels</u>					
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>DEV</u>
A. <u>Plant Operations</u>						
B. <u>Radiological Controls</u>			1	1	1	
C. <u>Maintenance</u>						
D. <u>Surveillance</u>					1	
E. <u>Fire Protection and Housekeeping</u>						
F. <u>Emergency Preparedness</u>						
G. <u>Security and Safeguards</u>				1		
H. <u>Refueling</u>						
I. <u>Design Control/Quality Assurance</u>				1	1	
J. <u>Licensing Activities</u>						
Totals			1	3	3	

C. Summary

<u>Inspection Report No.</u>	<u>Inspection Date</u>	<u>Severity Level</u>	<u>Functional Area</u>	<u>Violation</u>
83-14	9/1-10/21/83	V	B	Failure to monitor equipment for radiation/contamination prior to release from the control area
		IV	I	Failure to determine cause and implement corrective actions for instrumentation required by Technical Specifications
83-16	11/18/83	III	B	Failure to use a strong tight container in shipping radioactive waste
84-05	4/16-20/84	IV	B	Failure to maintain and implement written procedures for maintenance of respirators and training of personnel
84-06	3/14-5/3/84	IV	G	Failure to provide proper compensatory measures when security equipment is inoperable
84-20	10/1-11/19/84	V	D	Failure to conduct a required surveillance test on a containment isolation valve
85-01	1/14-18/85	V	I	Failure to follow procedure requirements for quality control inspections of maintenance activities

TABLE 3
INSPECTION REPORTS ACTIVITIES (9/1/83 - 1/31/85)

YANKEE NUCLEAR POWER STATION

<u>Inspection Report No.</u>	<u>Inspection Hours</u>	<u>Areas Inspected</u>
83-13	62	Emergency Preparedness PNS and EPIA Followup
83-14	98	Routine, Resident
83-15	110	Routine, Resident
83-16	6	Radioactive Waste Shipment
84-01	255	Routine, Resident
84-02	10	Special-Failure Analysis and Steam Generator Water Box Pipe Replacement
84-03	40	Emergency Preparedness EPIA Followup
84-04	60	Radioactive Waste Management Program
84-05	32	Radiation Protection Program
84-06	31	Special, Security Program
84-07	286	Routine, Resident Refueling
84-08	26	Inservice Inspection Program
84-09	32	Security and Safeguards
84-10	--	License Examinations
84-11	24	Containment Leak Rate Testing
84-12	28	Emergency Preparedness
84-13	193	Routine, Resident
84-14	143	Response to IE Bulletins
84-15	36	Radiation Protection Program
84-16	--	Enforcement Conference Meeting - Security Issues

<u>Inspection Report No.</u>	<u>Inspection Hours</u>	<u>Areas Inspected</u>
84-17	168	Special, Review Incident involving Switchgear Electrical Fault and Fire
84-18	170	Emergency Preparedness - Emergency Drill
84-19	30	Degraded Grid Voltage Procedures
84-20	193	Routine, Resident
84-21	53	Security and Safeguards
84-22	52	Radioactive Waste and Transportation Activities
84-23	108	Routine, Resident
84-24	--	Inspection Number Cancelled
84-25	24	Nonradiological Chemical Program
85-01	104	Quality Assurance
85-02	90	Routine, Resident
85-03	--	License Examinations

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

	<u>Area</u>	<u>Number/Cause Code</u>						<u>Total</u>
		1A	2B	2C	10E	2X		
A.	<u>Plant Operations</u>							17
B.	<u>Radiological Controls</u>	1A			2E			3
C.	<u>Maintenance</u>	2A		1D	1E			4
D.	<u>Surveillance</u>	1A	1B		2E			4
E.	<u>Fire Protection</u>					2X		2
F.	<u>Emergency Preparedness</u>				1E	1X		2
G.	<u>Security and Safeguards</u>							0
H.	<u>Refueling</u>		1B					1
I.	<u>Design Control/Quality Assurance</u>		1B					1
J.	<u>Licensing Activities</u>			1D				1
	<u>TOTALS</u>	5A	5B	2C	2D	16E	5X	35

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 (9/2/83 - 1/31/85)YANKEE NUCLEAR POWER STATION

<u>LER No.</u>	<u>Type</u>	<u>Summary Description</u>
83-28	30 day	During heatup in Mode 3, a leak caused by steam erosion in a piping elbow of a high pressure steam drain line was discovered
83-29	30 day	The Saturation Monitor failed while in Mode 2 due to the failure of incore thermocouple G-10's connector on the Reactor Vessel head
83-30	30 day	Body to bonnet flange leak on Main Steam Condensate Drain Line Valve AS-V-641 due to a failed gasket
83-31	30 day	Primary Meteorological Monitoring System removed from service for data transmission subsystem modification
83-32	30 day	The Saturation Monitor failed while in Mode 1 due to the failure of incore thermocouple F-7's connector on the Reactor Vessel Head
83-33	30 day	Primary Vent Stack Noble Gas Monitor failure due to moisture in the detector caused by personnel error due to lack of a procedure and training
83-34	30 day	Fire System yard hydrants 14 and 15 inoperable to facilitate construction of an addition to the Waste Disposal Building
83-35	30 day	No. 4 Steam Generator Blowdown Monitor failure due to buildup of dirt and tarnish on electrical contacts within the socket of the ratemeter card
83-36	30 day	Control Rod No. 11 primary position indicator channel inoperable due to a loose connection
83-37	30 day	Loss of Z-126 transmission line due to fallen tree with a resultant manual reactor scram
83-38	30 day	Momentary failure of the No. 2 Vital Bus Inverter while in Mode 1 due to improper assembly of its transfer switch during manufacturing

<u>LER No.</u>	<u>Type</u>	<u>Summary Description</u>
83-39	30 day	Cable Tray House and Non-Return Valve Enclosure fire detection system out of service to facilitate implementation of a design change involving system improvements
83-40	30 day	Primary Meteorological Monitoring System lower level wind direction instrumentation inoperability due to transmitter failure
83-41	30 day	While performing troubleshooting, the No 3 Emergency bus was inadvertently de-energized by a personnel error involving the opening of a slide link in the undervoltage relay circuitry
83-42	30 day	No. 4 Steam Generator Blowdown Monitor failure due to improper contact between the circuit board and socket contacts for the ratemeter card
83-43	30 day	Surveillance test for the SI Accumulator time delay relay missed due to scheduling error
84-01	30 day	Loop 1 Steam Generator water box vent line through-wall pin hole main coolant leak resulting in an Unusual Event and a plant shutdown
84-02	30 day	Systematic Evaluation Program (SEP) Topic VI-10.A review resulted in discovery of an Emergency Diesel Generator response time surveillance procedural inadequacy caused by failure to reflect an updated LOCA analysis contained in license amendments
84-03	30 day	Two containment isolation valves, VD-SOV-301 and 302 failed to actuate automatically at < 5 psig during Type A Integrated Leak Rate Test (ILRT) due to a design inadequacy involving a failure to account for an operating vacuum
84-04	30 day	During core alterations fuel assembly B-636 was discovered to be damaged by flow-induced fretting at the baffle side of core position C-9
84-05	--	Unassigned
84-06	30 day	Type B & C leak rate testing identified components with leakages in excess of technical specification limits
84-07	30 day	Support Deficiencies of portions of small bore piping systems inside containment identified during Cycle XVI-XVII refueling outage Review for SEP Topic III-6 with cause determined to be related to an original construction error by the architect/engineer

<u>LER No.</u>	<u>Type</u>	<u>Summary Description</u>
84-08	30 day	During the refueling outage, actuation of the three Emergency Diesel Generators occurred due to loss of power to the station resulting from switchyard maintenance inspection procedural inadequacy
84-09	30 day	During the refueling outage, actuation of the No. 1 Emergency Diesel Generator due to a loss of power to the No. 1 emergency bus due to failure of contractor personnel to lift a lead in control circuitry
84-10	30 day	Type B & C leak rate testing identified components with leakage in excess of technical specification limits
84-11	30 day	Safety Valve PR-SV-182 exceeded technical specification tolerance due to manufacturer setting valves to ASME Code and not procurement document; system function not compromised
84-12	30 day	Reactor scram from full power with cause of trip specified as indeterminable
84-13	30 day	Switchgear room fire involving 489V Bus 4-1 resulting in Alert and plant shutdown; electrical fault attributed to failure of contact retainer ring on breaker finger cluster
84-14	30 day	Two inadvertent initiations of ECCS with plant in Mode 3, with the first being due to indeterminable cause and second due to failure of the No. 1 Main Coolant Loop Pressure Channel; as well as Low Pressure Safety Injection Accumulator System inoperability due to improper installation of a swagelock cap depressurizing the Accumulator below the technical specification limit
84-15	30 day	Loss of the Z-126 transmission line due to a fallen tree with a resultant manual scram
84-16	30 day	Plant scram from full power initiated by actuation of the Main Generator loss of field relay by overload trip of the static exciter's supply transformer
84-17	30 day	Manual reactor scram from 61 percent power due to observed Main Generator rotor collector ring arcing
84-18	30 day	Automatic reactor scram during startup initiated by low water level on 2 of the 4 steam generators; cause attributed to personnel error of a licensed operator

TABLE 6
SUMMARY OF LICENSING ACTIVITIES
YANKEE NUCLEAR POWER STATION

1. NRR Site Visits

June 1984	Procedures Generation Package
October 1984	Detailed Control Room Design Review (DCRDR) In-Progress Audit

2. Schedular Extensions Granted

June 8, 1984	10 CFR 50.44 (c)(3)(ii) Hydrogen Recombiner Exemption
October 23, 1984	Exemption request from Annual Emergency Preparedness Exercise schedular requirements not required due to revision of Appendix E
January 11, 1985	NUREG 0737 Supplement 1- Modification of Order for submittal date for DCRDR Summary Report

3. Relief Granted

January 3, 1984	Inservice Inspection Requirements
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4. Exemptions Granted and Denied

October 5, 1983	Exemption from 10 CFR 50.44(c)(3) (ii) Hydrogen Recombiner Capability - Denied
January 17, 1984	Inservice Inspection Exemption from requirements for Personnel Performing Hydrostatic Exams - Denied
October 30, 1984	Exemption from seismic and redundancy requirements of 10 CFR 50.44 (c)(3)(ii)- Granted

5. License Amendments Issued and Denied

Amendment No. 81, Inservice Inspection, January 3, 1984

Amendment No. 82, Core XVII Refueling, June 5, 1984

Proposed Technical Specifications to delete certain cycle dependent variables - Request denied February 9, 1984

6. TMI and Other Actions

<u>Action</u>	<u>Completion Date</u>
TMI Item II.K.3.17 Outages of Emergency Core Cooling Systems	August 8, 1983
TMI Item II.B.1 Reactor Coolant System Vents	August 19, 1983
Change to Security Plan Approval	September 12, 1983
Equipment Qualification Approval	September 27, 1983
Low Power Physics Test Problems	October 5, 1983
TMI Item II.F.2 Inadequate Core Cooling Instrumentation	October 24, 1983
Generic Letter 81-21 Natural Circulation Cooldown	October 25, 1983
Solid Waste Process Control Program Approval	November 2, 1983
Main Steam Line Break Analysis Approval for Cycle XVI	November 30, 1983
TMI Item II.K.3.1. Auto Power Operated Relief Valve Isolation	December 13, 1983
TMI Item II.K.3.2 Report on Power Operated Relief Valves	December 13, 1983
TMI Item II.K.2.17 Potential for Voiding in RCS During Transient	December 22, 1983
Review of Asymmetric Loss of Coolant Accident Loads	February 1, 1984
Seismic Qualification of Auxiliary Feedwater System	February 23, 1984
Reactor Vessel Examination (ISI) Approval	February 28, 1984
Seismic Analysis of Modified Spent Fuel Storage Pool Approval	March 30, 1984
TMI Item I.A.1.1 Shift Technical Adviser Long Term Requirements	May 14, 1984
Reanalysis of Main Steam Line Rupture Event	June 5, 1984
TMI Item I.C.1.2.1 Inadequate Core Cooling Guidelines	June 7, 1984
TMI Item I.K.2.13 Thermal Mechanical Report	June 13, 1984

<u>Action</u>	<u>Completion Date</u>
Generic Letter 83-28 Item 4.3 Auto Shunt Trip for Scram Breakers	August 9, 1984
Hydrologic Issues	October 30, 1984
Appendix G Curve Shift	December 3, 1984
Degraded Grid Voltage Protection for Class 1E Systems	January 4, 1985
DCRDR In Progress Audit Report	January 7, 1985
Water Chemistry Issues	January 10, 1985

TABLE 7

UNPLANNED AUTOMATIC SCRAMS		
Date	Power Level(%)	Cause
10/5/83	100%	Loss of Z-126 115KV Transmission Line [Manual Scram]
7/12/84	100%	Undetermined Cause
9/4/84	100%	Loss of Z-126 115KV Transmission Line [Manual Scram]
9/14/84	100%	Main Generator Loss of Field Relay Due to Static Exciter Overload
11/12/84	59%	Arcing in Main Generator Exciter's Collecting Ring Brushes [Manual Scram]
11/16/84	12-13%	Low Level on 2/4 Steam Generators

FORCED OUTAGES		
Date	Power Level(%)	Cause
1/24/84	100%	Through Wall Pin Hole Main Coolant Leak in No. 1 Steam Generator Water Box Vent Line
6/9/84	25%	Turbine Governor Low Oil Pressure Condition
7/12/85	100%	No. 4 Main Coolant Pump Check Valve Cover Flange Leak
8/2/84	100%	Electrical Fire in 480 Volt Bus
11/2/84	59%	Arcing in Main Generator Exciter's Collecting Ring Brushes



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

ENCLOSURE 2

Docket No. 50-29

APR 08 1985

Yankee Atomic Electric Company
ATTN: Mr. L. H. Heider
Vice President of Operations
1671 Worcester Road
Framingham, Massachusetts 01701

Gentlemen:

Subject: Systematic Assessment of Licensee Performance (SALP) Report No.
50-29/85-99

The NRC Region I SALP Board has reviewed and evaluated the performance of activities at the Yankee Nuclear Power Station for the period of September 1, 1983 through January 31, 1985. The results of this assessment are documented in the enclosed SALP Board Report dated March 29, 1985. A meeting to discuss the assessment is scheduled for April 30, 1985, at 11:00 a.m. in the Region I office.

At the SALP meeting, we request that you be prepared to discuss our assessment and your plans to improve performance in those areas warranting improvement. 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,

Thomas E. Murley
Regional Administrator

Enclosure: SALP Report No. 50-29/85-99

cc w/encl:
N. N. St. Laurent, Plant Superintendent
J. E. Tribble, President
J. A. Kay, Senior Engineer - Licensing
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector
Commonwealth of Massachusetts (2)

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