ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT 50-213/85-99

CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT

(582 MWe, WESTINGHOUSE DESIGN PRESSURIZED WATER REACTOR)

ASSESSMENT PERIOD: SEPTEMBER 1, 1983 - FEBRUARY 28, 1985

BOARD MEETING DATE: APRIL 23, 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 information periodically and evaluate licensee performance. SALP supplements the normal regulatory processes used to ensure compliance with NRC regulations. It is intended to be diagnostic enough for rational allocation of NRC resources and to be meaningful to licensee efforts to improve plant safety.

An NRC SALP Board met on April 23, 1985 to assess licensee performance in accordance with NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." A summary of the guidance and evaluation criteria is provided in Section II of this report.

This report assesses performance at the Haddam Neck Plant during the 18-month period from September 1, 1983 through February 28, 1985.

B. SALP Board Members

R. W. Starostecki, Director, Division of Reactor Projects (DRP), SALP Board Chairman
W. F. Kane, Deputy Director, DRP
T. T. Martin, Director, Division of Radiation Safety and Safeguards, (DRSS)
L. H. Bettenhausen, Chief, Operations Branch, Division of Reactor Safety (DRS)
E. C. Wenzinger, Chief, Projects Branch 3, DRP
E. C. McCabe, Chief, Reactor Projects Section 3B, DRP
P. D. Swetland, Senior Resident Inspector, Haddam Neck
T. P. Speis, Director, Division of Safety Technology, Office of Nuclear Reactor Regulation (NRR)
F. M. Akstulewicz, Licensing Project Manager, ORB 5, NRR

Other Attendees (Part-Time)

J. H. Joyner, Chief, Nuclear Materials Safety and Safeguards Branch, DRSS
J. R. White, Senior Radiation Specialist, DRSS
R. H. Smith, Emergency Preparedness Specialist, DRSS
M. A. Cioffi, Radiation Specialist, DRSS

C. Background

1. Licensee Activities

At the beginning of the assessment period, the facility had been operating at or near full power since June 12, 1983. Full power operation continued from September 1, 1983 until May 4, 1984, with

the exception of power reductions for routine turbine valve testing, or equipment troubleshooting and repair. The plant operated in a three-loop mode at 65% power for several hours on November 25, 1983 to facilitate repair of a leaking steam generator level instrument root stop valve.

On May 4, 1984, the facility began a period of extended power coast-down operation in excess of 70% power until August 1, 1984. The plant was then shut down for refueling after completing over 417 consecutive days of safe power operation.

Refueling activities were to include the Core XIII fuel shuffle including the addition of four zirconium clad (vs. stainless steel clad) fuel elements to the core, an integrated containment leak rate test, completion of several TMI Action Plan and Systematic Evaluation Program modifications and significant secondary system overhaul, upgrade and repair. During the outage, loss of all offsite AC power events were experienced on August 1 and 24. On August 21, with the refueling cavity filled in preparation for fuel shuffle operations, the refueling cavity seal failed, dumping about 200,000 gallons of reactor grade water into the containment. No fuel handling operations were in progress and the spent fuel pool remained isolated from the refueling cavity. Consequently, no fuel was uncovered during this incident. An expanded steam generator U-tube testing program and the seal failure event recovery actions extended the planned 46 day refueling outage to 105 days.

Following the refueling outage, plant startup and power ascension were conducted from November 9 - 19, 1984. Turbine generator voltage regulator problems resulted in one manual plant trip on November 15, 1984. The plant again operated at or near full power from November 19, 1984, until the end of the assessment period with the exception of an automatic loss of flow trip which occurred on November 20, 1984. The trip occurred because a reactor operator inadvertently shut down the #3 reactor coolant pump. Power operation resumed the same day.

2. Inspection Activities

One NRC resident inspector was assigned to the site during the entire assessment period. The NRC inspection effort (both resident and region-based) for the period totalled 2927 hours. This corresponds to 1951 inspection hours per year.

An NRC team inspection was conducted on October 24-28, 1983, to follow-up on implementation of TMI Action Plan radiation monitoring improvements. An NRC Emergency Preparedness Team observed the full-scale emergency exercise on May 12, 1984. After the SALP period, the annual emergency exercise on March 30, 1985 was observed. Tabulations of inspection activities and findings are appended to this report.

II. CRITERIA AND RATINGS

Licensee performance is assessed in prescribed functional areas significant to nuclear safety and the environment. Special areas may be added to highlight significant observations. In this SALP, the Quality Assurance area was added to emphasize its importance. Design Change Control (DCC) was highlighted in the QA functional area because of significant DCC findings.

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

These criteria are not limiting; others are used where appropriate.

Based upon the SALP Board assessment, each functional area is classified into one of three performance categories. These 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 safety performance 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 safety performance 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 safety is being achieved.

The SALP Board also compared the overall performance over the last one-fourth of the SALP period to the overall performance for the entire SALP period. That comparison was used to trend licensee performance as "Improving," or "Consistent" (essentially the same), or "Declining."

III. Summary of Results

A. Overall Facility Evaluation

Prior assessments of licensee performance have acknowledged a strong management commitment that was effective in achieving high ratings in most, if not all, functional areas. The licensee's performance this period, in each functional area evaluated, continued to be acceptable. In many respects, the numerous high ratings reflect favorably on the performance of staff and supervisors working together. However, during the assessment period several problems were identified. When examined individually, remedial measures were taken to address each one. However, the number of problems and their occurrence in various parts of the organization leads the SALP Board to conclude that these may be indications of a more serious situation.

Specific problems include: an adverse trend in the incidence of personnel and procedure-related errors, significant deficiencies in the program for the requalification training of licensed operators, deficiencies in regard to event reporting and procedure reviews, repetitive and uncorrected minor violations in the radiological controls area, an event that involved a significant potential for personnel overexposure, weaknesses identified during the 1984 emergency exercise, substantive problems in the control over design changes, and an increasing backlog of activities in several areas including corrective action follow-up, maintenance, and licensing.

Although the licensee has taken action to ameliorate or control these problems, the examples indicate that there may be a relaxation or letdown in the aggressiveness toward self-appraisal and self-identification of problems in the plant and in some of the corrective actions. Many of the problems continue to be identified by NRC inspectors. Notwithstanding, some areas continue to be viewed as noteworthy, particularly the Security area. The improved performance in the March 30, 1985 emergency exercise demonstrated the ability of the organization to implement effective corrective measures. As such, it is clear that the licensee can be very effective.

During this period, the plant achieved a record period of continuous operation. Such an accomplishment reflects favorably on the staff responsible for operations, maintenance, and surveillance. However, based on the nature of the varied problems addressed in this report, there appears to be an adverse trend in the thoroughness and aggressiveness of management toward support and oversight/audit activities. When problems are identified, the licensee can generally be relied upon to implement effective remedial measures. However, identification of problems by NRC inspectors (as noted herein) rather than by established licensee programs is disturbing. Unless vigorous management attention is provided to both offsite and onsite activities, the corrective actions taken to date may not be sufficient to prevent recurrence of similar problems.

B. Training Evaluation

Training activities were evaluated in three areas including general employee training (GET), technical/departmental training, and licensed operator initial and requalification training.

The licensee has implemented a comprehensive GET program. On an annual basis, all employees receive training in security, radiation protection, quality assurance, fire protection, emergency preparedness, and general safety. Previous concerns had been identified by NRC regarding training attendance, documentation, and measurement of effectiveness. The licensee has taken action to correct these deficiencies and the recently completed GET cycle was significantly improved in attendance and documentation. There have been some indications of subsequent performance improvement, e.g., decrease in fire barrier problems, but the overall effect of the program improvements has not yet been shown.

The licensee's technical training program for maintenance, instrument and controls, health physics, chemistry and non-licensed operating personnel was historically a departmental responsibility. This training was typically conducted on-the-job with a limited number of component/job specific courses. This departmental training has generally been successful; however, certain incidents such as main steam flow transmitter problems, an improper weld repair, and multiple fire barrier problems indicated training weaknesses as a causal factor. During this period, the licensee's training department has expanded to include this area within their overall program. Coordination with the plant operating departments has been maintained. The licensee is developing task-oriented training requirements for all technical disciplines and will implement job-related initial and follow-on training programs in each of these areas. While some improvements have been realized in this area, technical training program goals have not yet been reached. It remains to be seen whether personnel performance is improved.

The training program for initial licensing of reactor operators has achieved excellent results in preparing operators for NRC examination. The operator requalification program, however, has been only marginally successful. Based upon an audit by the NRC, several weaknesses were identified and documented in correspondence to the licensee. Based on these findings, major revisions to the requalification program and its implementation have been initiated.

C. Facility Performance

Functional Area		Category Last Period (9/1/82 - 8/31/83)	Category This Period (9/1/83 - 2/28/85)	Recent Trend
A.	Plant Operations	1	1	Consistent
B.	Radiological Controls	1	2	Consistent
C.	Maintenance	1	1	Consistent
D.	Surveillance	2	2	Improving
E.	Fire Protection/Housekeeping	No Basis*	2	Improving
F.	Emergency Preparedness	1	2	Improving
G.	Security & Safeguards	1	1	Improving
H.	Refueling & Outage Management	1	1	Consistent
I.	Design Change Control/Quality Assurance	#	2	Improving
J.	Licensing Activities	1	1	Consistent

* Fire protection inspection was not sufficient to support a conclusion.

Not previously addressed as a separate area.

IV. PERFORMANCE ANALYSES (739 hrs., 25%)

A. Plant Operations (25%)

1. Analysis

This functional area encompasses operational activities, operator training and licensing, committee activities, corrective actions and event reporting. The previous SALP rated licensee performance as Category 1 in this area. During this SALP period, there were five NRC inspections by region-based inspectors. Plant operations were observed by the resident inspector throughout the period.

The plant operators continue to distinguish themselves by competent, conscientious performance of their day to day duties. The NRC resident inspector specifically noted that operator professionalism and vigilance, control room demeanor, discipline, access control, and housekeeping were strong assets to the plant operations area. Operator response to operating events such as the refueling cavity seal failure, loss of offsite power, and a loop isolation valve packing leak were uniformly prompt, effective and professional. The 417 consecutive days of plant operation at power are an indication of the quality and professionalism of these operators. In regard to the initial qualification of licensed operators, the operator training staff attained a high level of performance. 21 of 22 reactor operator and senior reactor operator candidates examined by NRC during this period received licenses.

NRC review of the licensed operator requalification program, however, concluded that significant weaknesses existed. In particular, programmatic weaknesses were identified in the quality of the annual examination process and in overemphasis on this examination as the measure of training effectiveness. Based on the performance of individuals examined by the NRC during NRC participation in requalification training, the requalification program was identified as marginally acceptable. Inaccuracies in plant training materials were also identified. These problems were aggravated by the licensee's initial reluctance to react to and take prompt corrective action on these findings. By the end of this assessment period, however, senior licensee management had taken firm action with regard to these findings and plans for a major revision of the requalification program had been submitted to the NRC (later accepted).

The resident inspector noted the licensee's effective daily staff meetings, prioritization, coordination and tracking of departmental responsibilities, and frequent site management tours of plant facilities. There is an adequately sized onsite engineering support organization and the licensee has a strong and experienced corporate staff from which to draw support. It was also noted that there was

a high level of corporate support to the Haddam Neck Plant in the areas of safety analysis, design basis research, and probabilistic risk assessment. Senior management presence onsite has not been as evident as at their Millstone site, and NRC inspectors noted that corporate level engineering support such as technical evaluations for steam generator safety valve operability or equipment classification (MEPL) determinations were not always timely.

An adverse trend in licensee performance was identified involving individual procedural adequacy and compliance and the rising number of personnel and procedure-related errors. It was noted, for instance, that only three automatic plant trips occurred during this SALP period, but each one was caused by personnel and/or procedural errors. A general weakness in quality and specificity in certain procedures fostered some willingness on the part of plant personnel to deviate from procedures. Personnel were prone to completing activities without full documentation and without modifying procedure discrepancies involving improper or inadequate directions. Examples of this problem included safety injection check valve leak rate testing, core cooling/loss of AC testing, and locked valve checklist procedures. The licensee took strong corrective actions. Those included improved procedure review guidance coupled with management seminars with operating personnel to stress strict procedural compliance and the methodology for procedure revision. A recent lack of recurrence of this condition has been noted. Nonetheless, ongoing licensee attention to this matter is needed, especially during periodic (biennial) procedure reviews.

The licensee encourages problem identification from all staff levels. The Plant Information Reporting (PIR) system provides an excellent basis for problem identification, evaluation, reporting, management notification and corrective action followup. Most PIRs are followed up by the assignment of a Controlled Routing (CR) to track corrective action and all PIRs receive management and site review committee reviews. These management control systems have been effective in controlling the large volume of reactive activities generated at the plant. In recognizing the quality and thoroughness of the PIR/CR system, NRC has also noted that the volume of actions has become mildly burdensome to the plant staff. The number of PIRs increased from 138 in 1983 to 230 in 1984. The number of CRs increased from 1241 to 1692 in the same period. A small number of PIRs such as those related to spent fuel pool ion exchanger resin leaching, ventilation filter exhaustion, and a waste decay tank leak have not resulted in complete identification, documentation, or correction of the root cause of the problem. Other and more significant instances of ineffective problem closeout are discussed below under event reporting. Incomplete problem closeout may result from the large number of CRs awaiting action by plant personnel. The backlog of PIR/CR actions warrants management attention.

During this period, there has been a general improvement in licensee implementation of NRC reporting requirements. This is attributed to a better understanding of and more conservative licensee approach to the new NRC reporting requirements which became effective in January 1984. There has been, however, some inconsistency in the quality and content of Licensee Event Reports (LERs). While the LERs reporting the reactor cavity seal failure and a potential personnel overexposure to radiation were particularly good, other LERs including the degradation of reactor protection system wiring, containment isolation valve MS-TV-1212 failure, and a low temperature overpressure protection system failure lacked specificity, contained errors, or failed to identify the root cause of failure. There appears to be a gap in communication, in some cases, between the operating and maintenance personnel and the LER writer(s), such that pertinent information is lost or not correctly translated into the LER. Also, some LERs lack perspective on long term action to prevent recurrence. For instance, when procedural inadequacy is a factor in the cause of an event, evaluation of the effectiveness of the plant procedure review process was not included in or initiated by LERs (e.g. LERs 84-19, 84-24, 85-03).

Licensee committee activities were generally good during this period. Specific failures related to design change package review were identified and are discussed in Functional Area I of this report. The Plant Operations Review Committee (PORC) has effectively managed the large volume of review requirements, however, there is a tendency toward more cursory review when a large backlog has developed. This was evidenced by PORC failure to identify the ineffective or incomplete closeout of certain PIRs and LERs noted above. These examples were part of a large backlog of PORC review requirements which developed during the 1984 refueling outage. NRC inspector observation of several PORC meetings resulted in the conclusion that the detail of documentation in PORC meeting minutes does not reflect the level of deliberation of many PORC reviews or the answers to many concerns raised by PORC members. The Nuclear Review Board (NRB) has provided quality oversight of plant activities, though NRB reviews have been somewhat limited by the content of packages.

The NRC and the licensee have been concerned about the lack of definitive documentation of plant design and safety analysis bases. This situation makes it difficult to promptly evaluate the safety significance of component/system failures and to make timely safety evaluations of plant changes and modifications. The licensee has initiated significant compensatory programs including reanalysis of the plant accident analyses, recovery/development of plant system design basis documents, and performance of a full probabilistic risk assessment study for the Haddam Neck Plant. These programs demonstrate a strong licensee commitment to the continued safety and quality of plant operations.

In summary, major licensee strengths in plant operations were evident during this period, especially in regard to operator and support staff response to actual events. There were no violations of NRC requirements in this area. Initial operator qualification training was excellent. There was notably good licensee response to self-evident problems. Some less evident problems received very slow response. Initial licensee response to operator requalification program deficiencies did not meet NRC expectations, but the comprehensive nature of the recovery program and the final implementation schedule were acceptable. Deficiencies were also noted in PORC reviews, event reporting, corrective action followup, and procedure review and adherence. These deficiencies indicate a need for more vigorous and critical licensee self-appraisal.

Although a significant number of performance deficiencies were noted in this area, the performance rating was ultimately controlled by the substantive strengths identified. The results of corrective actions in this area have not yet had a chance to manifest themselves, and a consistent recent performance trend is assigned.

2. Conclusion

Rating: Category 1 (This rating reflects primarily the favorable emphasis on onsite operations activities. Most of the concerns noted are assessed in other functional areas.)

Recent Trend: Consistent

3. Board Recommendations

Licensee:

-- Improve the quality and aggressiveness of self-appraisal efforts.

-- Continue emphasis on operator requalification.

-- Continue initiatives to improve procedural review and adherence.

-- Assess the adequacy and timeliness of PIR/CR disposition.

NRC:

-- Perform special evaluation of the effectiveness of requalification program improvements.

-- Perform a special inspection of facility procedure adequacy and compliance.

B. Radiological Controls (373 hrs., 13%)

1. Analysis

The licensee's overall performance in this area, relative to the previous assessment period, is lower. In the last period, only minor problems were identified and no programmatic weaknesses were noted. In this period, more substantive problems were identified. These indicate that a minor programmatic breakdown has occurred.

The licensee's radiation protection program continues to be defined by generally good policies and procedures. Resident and specialist inspector reviews generally indicated good performance in contamination control, radiological surveillance, personnel monitoring, radiological waste management and effluent controls. Adequate staff was available to carry out the program and the personnel involved were found to be qualified and capable of performing in their assigned areas of responsibility.

During the assessment period, a special post-implementation review of the licensee's efforts involving the post-accident sampling and monitoring requirements of NUREG-0737 was performed. The review identified several deficiencies including improper component installation that would have prevented sampling of the containment atmosphere. (This matter is addressed in Functional Area I under design change control.) Other deficiencies found in the PASS area included inadequate procedures for system operation and chemical analysis. In October 1984, the NRC found that containment integrity would be technically violated when the containment air sampling system was operated at power. Such operation was prohibited as an interim action. By the end of the SALP period, the licensee had not amended the Technical Specifications to allow surveillance and testing of the containment air sampling system. This indicates a lack of timeliness and management support.

While decision making is usually at a level that ensures adequate management review, an exception during this period resulted in an event having substantial potential to expose a worker in excess of regulatory limits. In this instance, a technician, known by the licensee to be untrained, unqualified, and inexperienced, was assigned by an upgraded senior level technician to cover a steam generator task involving high dose rates and significant radiological hazards. Supervisors were unaware of this action due to insufficient oversight and communication. Subsequently, performance errors by the unqualified technician resulted in a breakdown in the established radiological controls and in an unplanned radiation exposure to the worker. Because the event was isolated and not in itself an indicator of programmatic deficiency, enforcement action was mitigated due to previous good performance. However, this event does indicate that management was not sufficiently aggressive in monitoring program compliance.

Management ineffectiveness was also demonstrated in findings which indicate that, while the licensee makes commendable efforts to identify discrepant situations (i.e., non-adherence to procedures, contamination events, and RWP problems), these efforts are generally confined to documenting the occurrences. Licensee followup actions were limited to interdepartmental notification of these discrepant conditions, without any effective control of, or feedback on, corrective actions to prevent recurrence. Interdepartmental authority and responsibility for identifying and verifying corrective measures were not effectively delineated. The licensee's identification of multiple similar problems (many repetitive) is indicative of a minor programmatic breakdown. However, effective corrective measures to address these deficiencies were not applied. The licensee committed to implement corrective action to address these deficiencies by May 1, 1985.

During this period, several deficient conditions involving the implementation of the QA program for radioactive material transport packages and radioactive waste management were identified. The licensee was not performing sufficient audits or effectively implementing all necessary quality measures for these particular areas. NRC inspection after the SALP period found that, while some QC program improvements were implemented, a satisfactory level of QC involvement had not been achieved. Other program elements associated with these areas were found to be effectively implemented with a well defined system of management control and oversight.

A stronger corporate commitment to ALARA is in the process of development as evidenced by actions initiated by senior management. These include new ALARA goals and performance objectives which have been made specific responsibilities of individual managers. A formalized ALARA job analysis and dose reduction program is currently in place. This program, however, primarily functions as an exposure estimating, tracking, and documentation system. Actual ALARA implementation is a function of job supervisors, whose training in this area has generally been weak. The licensee has initiated action to improve this condition.

Overall, the licensee's performance during major projects involving high levels of radioactivity demonstrated thorough planning and preparation, good procedure development, and the establishment of acceptable radiological controls. This was evident for work associated with the 1984 outage including refueling tasks, reactor coolant pump seal work, control rod drive shaft replacement, and cleanup after the seal failure event. Adequate management review and oversight was evident as demonstrated by sufficient personnel awareness of daily activities, and the effective use of planning meetings and schedules to reduce personnel exposure.

A formal training program for the radiation protection staff continued to be implemented, and provided sufficient technical and practical instructions to assure competence within the organization. One deviation was identified by NRC involving the documentation of a formal radwaste handler requalification program. The licensee implemented an effective radiation worker training program to assure that radiation workers are aware of radiological safety procedures and are able to implement them competently.

An effluent control and radiochemistry review indicated that the licensee was generally effective in implementing the program in accordance with regulatory requirements.

Additionally, the licensee has successfully completed corrective actions on several previously identified findings associated with post accident sampling and monitoring, and has successfully resolved these open items in a timely manner.

2. Conclusion

Rating: Category 2

Recent Trend: Consistent.

3. Board Recommendations

Licensee: Efforts should be made to strengthen management oversight and interdepartmental communications. An effective system for evaluating and correcting self-identified deficiencies should be developed. The licensee should expedite efforts to seek a Technical Specification Amendment for PASS containment isolation valves to allow resumption of full system surveillance.

NRC: Consider a special team inspection midway through the next SALP period to determine program status.

C. Maintenance (237 hrs., 8%)

1. Analysis

The previous SALP found licensee performance in this area to be Category 1. During this assessment period, routine inspections of ongoing maintenance activities were conducted by the resident inspector. One region-based inspection reviewed the licensee's performance of post-maintenance testing.

The licensee's preventive and corrective maintenance programs continue to be a strong asset to overall facility performance, and contributed significantly to the 417 days of continuous safe operation. Management support of preventive maintenance (PM) is evident by the wide scope of, and large effort devoted to, safety-related and non-safety-related PM activities. Management also reviews each component surveillance and operational failure to determine the cause and revise the PM program, as necessary, to prevent recurrence. Extension of PM activities to equipment in storage (spares) was highlighted by the NRC in November 1984 as an area for improvement. Licensee response to this item has not yet been inspected.

Corrective maintenance is conducted in a competent, professional manner. Repetitive repairs are rare. Maintenance instructions/procedures are normally appropriate to the difficulty of the job and to the qualifications of the technicians. An exception occurred when a weld repair to a high pressure safety injection pump seal line failed. The licensee concluded that the system had not been properly drained prior to welding. Work instructions did not detail the system draining. In another instance, an improperly sized gasket was installed in the low pressure safety injection system. Upon system startup, the gasket failed and a portion of the gasket material was pumped into the reactor head area, resulting in a significant effort to locate and retrieve the foreign material. These items were determined to be isolated and atypical.

In November 1983, the licensee implemented a computerized maintenance scheduling, documentation and tracking system (PMMS). While the PMMS program has been effective in tracking the large volume of maintenance activities, the level of detail in the documentation of work order instructions and close-out information could be improved. During this period, licensee and NRC followup of certain component failures such as condensate blowdown trip valve MS-TV-1212 was hampered because maintenance records did not detail the matter well enough for the root cause and generic applicability to be determined. NRC inspectors noted that licensee personnel unfamiliarity with the new automated work order system detracted from their confidence in the system and recommended further training in this area. Also, NRC noted that the capability of the PMMS system for

processing maintenance history and trending failure data had not been realized. Although no evidence of repeated or generic failures has been identified, continued emphasis on improving the PMMS capability is warranted.

The plant benefits from having strong instrumentation and controls (I&C), electrical, and mechanical maintenance staffs. There are experienced personnel in key roles, and the licensee has had a low overall turnover rate despite the replacement of both the I&C and maintenance department supervisors. Improvements in the maintenance technical training program scope and staff have also been implemented during this period.

There is a modest backlog of plant maintenance work. The licensee has effectively managed this situation through prioritization and overtime. However, electrical maintenance has about one-fifth of the department staff, about one-third of the maintenance backlog, and only one maintenance supervisor. Continued high activity in this area emphasizes the need for licensee management attention.

2. Conclusion

Rating: Category 1

Recent Trend: Consistent

3. Board Recommendations

Licensee: None

NRC: Maintain resident inspector coverage of this area, focusing on technician knowledge and skill in maintenance activities.

D. Surveillance (327 hrs., 11%)

1. Analysis

The previous SALP rated this area as Category 2. During this period, surveillance was reviewed by resident and region-based inspectors. NRC inspections covered routine surveillance and calibration activities, inservice inspection and testing (ISI/IST), containment leak rate testing (CLRT), and startup physics testing.

The routine surveillance testing program was adequately implemented in accordance with plant procedures. In general, the timeliness of management review of test results has improved since the previous assessment. During this period, events relating to all four channels of main steam flow being inoperable, a startup rate trip due to improper test equipment manipulation, and 2 out of 4 loss of flow trip channels being inoperable involved inadequate matching of the level of control in surveillance procedures to the technicians' qualifications and understanding of those procedures. This highlights the need for better supervisory and management review of surveillance to assure that procedures are compatible with the training and qualification of technicians. The lack of a master surveillance schedule was identified in 1982 by NRC inspectors. It was reidentified by the NRC a year later. This condition contributed to a violation for failure to perform fire damper inspections required by technical specifications. Although it took the licensee over one year to establish a complete and accurate master surveillance schedule, no further instances of missed surveillances have been identified. The licensee has implemented semi-annual verifications of the master surveillance data base to insure that the schedule remains current. The licensee also has initiated a long term surveillance improvement program which includes procedural and scheduling upgrades, surveillance compliance verification, and failure reporting.

During this period, the licensee completed a major upgrade of the instrumentation calibration program. Calibration of each installed gauge is scheduled and tracked within the automated Planned Maintenance Management System. Test equipment calibration is controlled by individual test procedures. One NRC identified violation for inadequate gauge calibration resulted from omission of seven gauges from the master calibration list. The licensee promptly corrected this deficiency, and no further omissions have been identified.

The ISI/IST program is adequately conducted by a qualified and knowledgeable staff. Corporate and contractor support are readily available. NRC inspectors did identify an inconsistency in the reporting of several pump and valve deficiencies. These non-conformances were dispositioned under the Plant Information Reporting (PIR) System rather than the Non-conformance Reporting (NCR) System.

The licensee initiated efforts to clarify interfaces between PIR and NCR reporting to insure effective management awareness and disposition of deficiencies.

For containment leak rate testing, management involvement and control for assuring quality, resolving technical issues, and responding to NRC initiatives were lacking. Problems identified included: (1) inadequate margin in the Type A test result to allow for "As Left" leakages for numerous penetrations isolated before the test; (2) insufficient test duration to allow the diurnal oscillations to dampen; (3) attempted use of a selected "window" of test data instead of more accurate leak rate test data for the total test; and (4) sensors not installed so as to mitigate the diurnal effect. These were compounded by an initial lack of licensee responsiveness to the inspector's findings and to an ongoing lack of responsiveness to previous issues raised by NRC in this area. There are seven (7) open unresolved items which are over eight years old. The licensee consistently stated that these items have been under review as part of their SEP response and the more recent ISAP program. However, no aggressive approach to resolution of these items has been taken. The CLRT problems were resolved for the next operating cycle after correction of the current CLRT data, development of an integrated vs. local leak rate correlation, and licensee commitment to address the other open items prior to the Type A test scheduled for the next refueling outage.

NRC review of the Cycle 13 startup physics test activities found improvement over previous startup physics tests, which had been generally good. All physics tests had been performed satisfactorily and all test data met acceptance criteria. Data sheets were properly signed and calculations were error free. This improvement can be attributed, in part, to an extensive effort by the reactor engineering staff to rewrite, update and clarify many of the procedures and data sheets. In addition, the licensee purchased new videotape equipment which greatly improved the quality of the core verification effort. Efforts to improve procedures and update equipment were apparent in the quality of the startup test program.

The licensee has augmented chemistry department staffing to facilitate implementation of improved quality control measures in this area. The present staffing levels were found to be adequate for conducting all required surveillance activities. However, the number of NRC and licensee identified problems and the extended intervals required to plan and implement effective corrective measures such as the master surveillance schedule and procedure upgrades, and to resolve the CLRT open items, indicate that additional licensee attention may be appropriate in this area.

The licensee's efforts to upgrade surveillance procedures and improve the calibration, startup physics testing, and inservice inspection programs have demonstrated the licensee's commitment to improvement in this area.

2. Conclusion

Rating: Category 2

Recent Trend: Improving

3. Board Recommendations

Licensee: Continue initiatives to upgrade surveillance procedures. Improve management control over items like CLRT issues in order to assure that resolution is not unduly delayed.

NRC: Review Appendix J implementation prior to next CLRT.

E. Fire Protection/Housekeeping (123 hrs., 4%)

1. Analysis

The previous SALP did not assign a rating category to this area due to insufficent inspection. During this SALP period, routine observations were made by the resident inspector and one programmatic inspection was conducted by a region-based inspector. The licensee is still working out the details of 10 CFR 50 Appendix R implementation, and no Appendix R inspection has been conducted yet.

The fire protection program is well defined and implemented by station procedures. Installed equipment is adequately maintained and tested with only minor exceptions. During this period, maintenance of fire barrier integrity was a significant problem. The licensee identified numerous instances (see LER chain in Section V.D of this SALP) where fire doors and penetration fire seals were compromised by plant or contractor personnel. NRC inspectors also identified two related violations: one for failure to inspect plant fire dampers, and another for failure to seal a penetration fire barrier. The licensee implemented corrective action for each fire barrier problem identified. However, weaknesses in general understanding of fire protection requirements and/or lack of respect for these requirements resulted in numerous violations (mostly licensee identified) before the fire barrier integrity issue was brought under control.

The fire brigade training program was well defined. There were adequate numbers of qualified operations and support personnel. Although quarterly fire brigade training sessions were given, each brigade member was not required to attend each session as specified in 10 CFR 50 Appendix R. This was identified during an NRC inspection early in the SALP period. The licensee took corrective action such that, by the end of the period, sufficient quarterly training sessions were held and each fire brigade member was required to attend at least one session per quarter. That or equivalent training has been implemented for each fire brigade member.

A member of the plant engineering staff is designated as the site fire protection coordinator. He performs onsite fire protection reviews and interfaces with corporate fire protection staff members. During this period the licensee completed a comprehensive review of the implementation of Appendix R requirements. This study included plant, corporate and consultant personnel and is indicative of management support to improvement in the fire protection program. Implementation of a corrective action program for those discrepancies identified is ongoing.

The licensee consistently maintains impressively high plant housekeeping conditions. Visiting NRC personnel are almost always impressed by the high standards maintained in this area. Although exceptions to the high housekeeping standard have been found (e.g., the Terry Turbine Room), such exceptions have required only cosmetic attention to meet the overall high standard. There has been no problem with graffiti onsite. These conditions are the result of overt management policy emanating from, and designed to further, employee pride in the workplace. A written station policy delineates responsibilities for maintenance of plant housekeeping. Frequent supervisor presence in the workplace and regular tours by plant management staff serve to reinforce this policy. Adequate plant services staff and support are allocated to housekeeping. As a result of the licensee's concerted effort, personnel instinctively maintain the high cleanliness standard. Disciplinary measures are not required to maintain these conditions.

The overall performance rating in this area would be higher if it were not for the multiple problems with fire barriers. As noted in the preceding, this problem now appears to be under control.

2. Conclusion

Rating: Category 2

Recent Trend: Improving

3. Board Recommendations

Licensee:

-- Maintain attention to fire barriers.

-- Discuss with NRC the status of findings and corrective actions related to the Appendix R implementation program.

NRC: None.

F. Emergency Preparedness (338 hrs., 12%)

1. Analysis

The previous SALP evaluation rated licensee performance in this area to be Category 1. During this assessment period, three inspections of emergency preparedness activities were conducted by NRC regional inspectors. One inspection evaluated licensee performance during the annual full-scale emergency exercise conducted on May 12, 1984. Also, after the SALP period, the March 30, 1985 annual emergency exercise was observed. This exercise was included in this analysis insofar as it reflected on the performance trend.

NRC inspections resulted in one violation for failure to provide required training to six personnel assigned emergency response duties. Additionally, six concerns related to the licensee's dose assessment program were identified. The licensee was responsive to these problems and has proposed or completed corrective actions in each area.

NRC observation of the annual emergency exercise on May 12, 1984 identified three significant deficiencies.

-- The information flow from the Control Room/Technical Support Center (CR/TSC) regarding plant parameter data and plant information was not timely and in some cases not clear.

-- According to the Emergency Action Levels, a General Emergency classification should have been declared at 8:45 a.m., based on a simulated loss-of-coolant accident and a simulated loss of the emergency core cooling system. This classification was delayed until approximately 10:00 a.m.

-- During the exercise, the TSC did not demonstrate the technical functions typically provided by a TSC. These functions include technical evaluations of plant conditions and development/organization of accident response and emergency repair activities. In particular, the TSC staffing including the number of responders, their experience, and timeliness of reporting did not support the performance of the required technical support responsibilities.

A management meeting was held June 1, 1984, at which the licensee proposed satisfactory corrective actions to address these problems. These actions were incorporated into NRC Region I Confirmatory Action Letter 84-10. During plant events on July 5 and August 21, 1984, involving a reactor coolant loop stop valve leak and the refueling cavity seal failure, respectively, the licensee assembled a highly effective event support organization in the TSC. This group consisted of management and supervisory personnel. Although the emergency organization was not implemented during these events,

NRC noted a potential conflict in function and work space between this group (which forms naturally during any event response) and the licensee's formal TSC responders (which should serve the same functions). To address this, the licensee added several supervisory personnel to the emergency call-up list. These personnel will support or relieve, as appropriate, the normal emergency support on-call personnel. After the SALP period, improved TSC performance was noted during the annual emergency drill.

The licensee has been responsive to NRC initiatives and acceptable responses were generally proposed. A long standing open issue regarding the location of the TSC was resolved during this SALP period. The licensee responded to NRC questions on this topic in a timely fashion. The result was licensee justification and accomplishment of relocation of the TSC from near the control room to the EOF.

The licensee's onsite emergency preparedness staff consists of one full time coordinator. In addition, ample corporate and contractor personnel are available as required to support emergency preparedness activities.

2. Conclusion

Rating: Category 2

Recent Trend: Improving

3. Board Recommendations

Licensee: Continue efforts to improve the coordination of emergency response activities.

NRC: None.

G. Security and Safeguards (156 hrs., 5%)

1. Analysis

The previous SALP found performance in this area to be Category 1. During this assessment period, three routine physical protection inspections were performed by region-based inspectors. Routine resident inspection continued throughout the SALP period.

Management interest in and attention to the physical protection program is evident and has resulted in no violations of NRC requirements during two consecutive assessment periods. Both site and corporate security management representatives are currently upgrading their audit programs, utilizing NRC inspection procedures for the physical protection program. This includes the incorporation of the generic features of these inspection procedures into a formal corporate audit plan and a site self-assessment program. The two programs are conducted independently under the Corporate System Security Director and the Site Security Supervisor, respectively. The site self-assessment program will be accomplished primarily by site security shift supervisors and is intended to keep them current with the detailed functional requirements of the security program and to provide a means for making improvements to the program. Evaluations and recommendations are encouraged from all personnel.

Renovation and refurbishing of the security building and general upgrading of supervisor's offices and the access control area was in progress during the SALP period. The purpose of this project was to improve the working environment for guards and provide privacy for discussions between supervisors and subordinates. The firearms range facility has also been improved over the past few years. These initiatives by plant management demonstrate their commitment to an effective security program.

The licensee reported a total of seven Security Event Reports during this period. Four events involved computer system difficulties causing some degree of system loss. The others involved a flooding incident which degraded security hardware, a peaceful demonstration, and a threat received by telephone. Appropriate compensatory measures for each event were implemented in a timely manner and in accordance with NRC requirements. Computer-related events were analyzed for cause, repairs were promptly effected, and down time was minimal. The event reports were well prepared and informative, reflecting the quality of supervision and attention to detail.

In 1984, the licensee accomplished an innovative solution to a problem affecting the set up of one alarm zone. Vibrations from nearby equipments and river water exposure had caused an unacceptable frequency of spurious alarms in this zone. Compensatory measures were implemented and a series of controlled experiments were

initiated to resolve the system problem. The solution involved the funding of maintenance, instrumentation and calibration, outside contract assistance, and interim compensatory actions, and reflects the high importance the licensee placed on maintaining a quality program.

Staffing of the licensee's security organization was consistent with the administrative, logistical and operational support needs of the security program. Human resources were allocated efficiently and were found to be professionally competent. Facilities, equipment and systems were effectively maintained. This degree of management attention further demonstrates the licensee's commitment to a quality program.

The licensee has expanded the security training program, particularly in the area of contingency response actions. Various drill scenarios have been developed and are constantly updated in response to current events. Licensee supervisors are required to confirm the capabilities of the security force by conducting random and impromptu drills on a frequent basis. This is done to reinforce formal and on-the-job training and to enable supervisors to determine the performance of the force under stress conditions. There has also been significant improvement in rapport with other plant functions as a direct result of their participation in such drills. Records indicated that the licensee had conducted 56 security drills during CY 1984. The training records were well organized and were accessible. The licensee continues to provide funding for career development opportunities for security personnel in an effort to provide depth in personnel qualification and to stimulate morale.

2. Conclusion

Rating: Category 1

Recent Trend: Improving

3. Board Recommendations

Licensee: None

NRC: Reduced region-based inspection priority for routine inspection effort.

H. Refueling and Outage Management (215 hrs., 7%)

1. Analysis

Previous licensee performance in this functional area has been Category 1. A 15-week refueling outage (August 1 - November 14, 1984) was conducted during this SALP period. Three NRC inspections were conducted by region-based inspectors during the refueling outage and the resident inspector reviewed licensee preparation for refueling and refueling activities. Areas reviewed included outage coordination, new fuel receipt, refueling operations, inservice inspection, radiological controls, and a refueling cavity seal failure.

The planning and coordination of outage activities continued to be a noteworthy strength in the licensee's management control system. Computer-tracked planning and aggressive supervisory control of plant activities enable the licensee to maintain accurate critical path monitoring and coordination of contracted work activities to maximize outage efficiency. The licensee also maintains round-the-clock management level supervision and coordination.

During this refueling outage, there were two events which challenged the licensee's ability to deal with unexpected conditions requiring significant expenditure and coordination of licensee assets. The first event occurred when the redesigned refueling cavity seal failed because of inadequate design. About 200,000 gallons of contaminated reactor grade water drained to the containment floor, causing significant problems with contamination cleanup and wetted-equipment. The second event involved the identification of 58 defective U-tubes during steam generator (SG) eddy current testing of SG-2 and SG-3. As a result, a major expansion of the SG eddy current inspection program was required. All U-tubes in each SG were inspected and the defective tubes were plugged. The licensee satisfactorily incorporated the seal failure recovery actions and the augmented SG inspection program into the outage schedule using a conservative approach to these two events. The outage was extended from 46 to 105 days because of the seal failure and SG work.

Maintenance and surveillance activities performed during the refueling outage were properly conducted as described in previous sections of this assessment. Adequate staffing levels were maintained through contracted health physics, quality control and intermediate maintenance personnel.

2. Conclusion

Rating: Category 1

Recent Trend: Consistent

3. Board Recommendations

Licensee: None.

NRC: None.

See page 27a

I. Design Change Control/Quality Assurance (310 hrs., 11%)

1. Analysis

Design Change Control (DCC) and Quality Assurance (QA) are addressed as a separate functional area to highlight significant strengths and weaknesses. Four NRC inspections were conducted by region-based inspectors during this SALP period. DCC/QA activities were observed by the resident inspector throughout the period.

The licensee has a strong commitment to high quality. QA philosophy emanates from senior level management and emphasizes proper performance the first time (proper planning and implementation) and that QA is everyone's job. The QA organization is not looked upon as the central control for quality, line management is. Understanding of this commitment to quality is evident at all levels of the organization. Notwithstanding, instances of poor performance and non-aggressive management followup of these instances may contribute to a weakening of the quality/safety ethic at the working levels of the organization. For example, several concrete imbedment anchors for seismic supports in the diesel generator rooms did not have sufficient thread engagement. Despite specific installation procedure acceptance criteria, quality control (QC) signed off on the incorrect installation. Engineering and construction personnel approved the installation because, in their judgement, the thread engagement discrepancy was not significant. Upon NRC identification, the discrepant anchors were formally dispositioned to "use as is" and QC inspectors were cautioned to be more careful. The licensee did not take action on the construction and engineering personnel willingness to deviate from the installation procedure in this case. However, as a result of other procedural compliance problems, the licensee has taken action to strengthen the correct usage of procedures by all plant personnel. Also, licensee QC identified that the reactor cavity inflatable seals had been modified (by pressing pins through the solid rubber section of the seal) without an approved procedure, material certification for the pins, or quality control inspection. Nonconformance reports were written on these deficient practices and were subsequently dispositioned to "use as is" based on post-maintenance inspection and verification of material certification documents. In discussions with the licensee, NRC found that this modification had been initiated on a "risk" basis in order to expedite its implementation pending satisfactory resolution of quality requirements at a later time. The licensee considered that management knowledge of the necessity to resolve all outstanding quality issues prior to refilling the refueling cavity provided adequate assurance of the fulfillment of quality requirements. However, the licensee bypassed the normal procedures used to expedite and control time-sensitive maintenance and limit after-the-fact determination of quality. No strong licensee effort to prevent recurrence was observed.

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The QA audit program is well defined and implemented. The scope, planning, scheduling and execution of plant audits is thorough and receives appropriate management review. Audit findings are accurate and valid and plant corrective action is generally effective and timely. In one case, an NRC inspector noted that his concern over ineffective disposition of inservice testing non-conformances had not been resolved by corrective action for a similar finding in a plant audit dated July 6, 1984. Plant Information Reports identifying inservice testing program nonconformances did not provide the controls for effective disposition required by the nonconformance reporting system. Further licensee action was necessary to resolve this issue. One violation was cited for not auditing all corrective action programs. Although difficulty was experienced in resolving which systems fall into the category of corrective action programs, once the safety concern was understood, senior licensee management provided prompt support to resolve this issue. The licensee has also implemented a computer-based trending program which monitors quality-related inputs (NCRs, audit findings, NRC findings, etc.) throughout the utility organization. This program is in its initial implementation, but has the potential to be an effective tool for long term monitoring of quality-related activities.

While the QA audit program successfully reviews the correct implementation of safety-related activities from a documentation review standpoint, QA/QC surveillance of ongoing activities has been less effective. Specifically, observation of ongoing activities, technical review of observed procedures, and QA/QC involvement in evolutions such as plant startup testing and radioactive waste transportation have been weak. The licensee recognized this problem and has made an effort, especially during outages, to observe more ongoing activities. There was adequate QA/QC coverage of the containment leak rate test in August 1984. Plant personnel have indicated, however, that QA/QC staffing limitations prevent further expansion of this effort. NRC inspection in April 1985 (after the SALP period) indicated that radwaste QA/QC continued to be a weakness, in that QA coverage was an after-the-fact instead of an in-process review. Licensee management attention to improving the QA surveillance effort is indicated.

Several component/design failures, including the post accident containment air sample valve, the containment high range radiation monitors and the reactor refueling cavity pneumatic seal revealed significant weaknesses in the licensee's DCC program. These included the level of detail/justification documented in design packages, inadequate construction details, inadequate pre-operational testing, and inadequate review by management review bodies. NRC inspection identified five violations in these areas. Three of these resulted in escalated enforcement actions. The licensee responded to each identified problem. A task group headed by senior management was formed to evaluate and revise the DCC program to re-

quire more detail, documentation, and control of future design changes. However, the licensee focused corrective actions on new changes and conducted only limited reviews of previously completed design change packages. After several problems were identified in separate areas of different changes, NRC prescribed, in an Order on the license, comprehensive corrective action including an independent review of old design changes. By the end of the assessment period, the licensee had implemented a comprehensive revision to the DCC program procedures and conducted specific training in these procedures with all affected personnel. The ordered independent review is underway.

One further problem identified during the period involved an inaccurate list of quality-related systems and components (MEPL). The licensee had recognized this problem and had a low priority project ongoing to correct it. In general, the licensee had compensated for this condition by conservative interpretation of system QA boundaries. However, one violation was identified where a component was maintained without quality control because of incorrect QA classification. As a result, the MEPL update project was given higher priority, and satisfactory interim actions have been implemented to insure correct classification of quality-related components.

2. Conclusion

Rating: Category 2

Recent Trend: Improving

3. Board Recommendations

Licensee: Continue implementation of DCC/QA program improvements and review the effectiveness of the QA/QC surveillance effort.

NRC: Perform a programmatic review of licensee quality assurance activities focusing on design change control and QA/QC surveillance.

J. Licensing Activities

1. Analysis

The basis of this appraisal was the licensee's performance in support of licensing actions that were either completed or active during the current rating period. These consisted of amendment requests, exemption requests, responses to generic letters, TMI items, SEP topics, and other actions.

At the start of the SALP rating period, there were 68 active licensing issues. During the 18 month period, 22 issues were completed and 29 new issues were added. Thus, at the completion of the rating period, 75 active issues remain. The licensee's staffing is adequate with only occasional difficulties with backlog. Two vacancies have recently been filled in the licensing organization and improved performance in this area is expected. The licensee and NRC are meeting regularly to coordinate efforts to reduce the backlog of licensing actions. The licensee has built up their technical staff and management such that most safety issues can be resolved without outside assistance.

Licensing activity during this SALP period has been at a high level. In addition to the routine actions and completion of a number of SEP items, major activities have included a fuel reload, approval of exemptions from 10 CFR 50 Appendix R, and an incident involving the failure of the reactor cavity seal used during refueling. These activities showed the involvement of licensee management in prior planning of activities and in exercising explicit control of the licensing activities. The staff was pleased with the outstanding commitment to safety demonstrated by corporate management after the reactor cavity seal failure. It was obvious that management played a significant role in responding to the event.

In the resolution of technical issues, the licensee has exhibited an understanding of the issues and a conservative approach has been routinely employed. For example, the information submitted in conjunction with the resolution of fire protection issues displayed clear understanding of staff concerns with the level of fire protection at Haddam Neck. The licensee's commitments and the justification provided in support of the fire protection program and alternate safe shutdown exemption request were based on sound fire protection engineering principles. The licensee's performance for other individual licensing actions was similarly competent and generally timely. However, the licensee's submittals for the degraded grid voltage issue were characterized as not so timely or complete.

In conclusion, management attention and involvement with matters of nuclear safety are consistently evident. The licensee's resources are adequate and the staff is well trained, providing a satisfactory

performance with respect to operational safety. The licensee's responses were generally timely and the proposed resolutions to licensing issues are usually technically sound and thorough.

2. Conclusion

Rating: Category 1

Recent Trend: Consistent

3. Board Recommendations

Licensee: As indicated in Sections B and D, the licensee should aggressively pursue licensing resolution in the areas of 10 CFR 50 Appendix J compliance and operation of the post-accident sample system at power.

NRC: None.

V. SUPPORTING DATA AND SUMMARIES

A. Investigations and Allegations Review

There were no investigative activities during this SALP period.

B. Escalated Enforcement Actions

1. Civil Penalties

A civil penalty of $80,000 was assessed on December 13, 1984, for violations of design control and committee review requirements related to the August 21, 1984 refueling cavity seal failure.

2. Orders

A confirmatory order was issued June 13, 1984, on commitments for emergency response capability.

An order modifying the license, issued on December 13, 1984, related to the August 21, 1984 refueling cavity seal failure. The order required independent review of the design change program and corrective actions for identified deficiencies.

3. Confirmatory Action Letters

A confirmatory action letter was issued on June 5, 1984 regarding corrective actions for significant deficiencies identified by the NRC during review of the annual emergency exercise on May 12, 1984.

C. Management Conferences Held During the Assessment Period

1. On November 14, 1983, an enforcement conference was held at the NRC Region I office to discuss the post accident sample system discrepancies found during NRC inspection 50-213/83-25.

2. On November 29, 1983, a SALP management meeting was held at the corporate office in Berlin, Connecticut to discuss the SALP report for the period September 1, 1982 - August 31, 1983.

3. On June 1, 1984, a management meeting was held at the corporate office in Berlin, Connecticut to discuss significant deficiencies related to the May 12, 1984 annual emergency exercise and documented in NRC Inspection Report 50-213/84-10.

4. On October 1, 1984, an enforcement conference was held at NRC Region I to discuss design control deficiencies related to the August 21, 1984, refueling cavity seal failure. These deficiencies were documented in NRC Inspection Report 50-213/84-23.

5. On December 6, 1984, an enforcement conference was held at NRC Region I to discuss a potential radiation over-exposure event which was documented in NRC Inspection Report 50-213/84-24.

6. On December 17, 1984, a management meeting was held at the Millstone site in Waterford, Connecticut to discuss licensed operator requalification program deficiencies documented in NRC Inspection Report 50-213/84-31.

D. Licensee Event Reports

Tabular Listing

Type of Events

A.	Personnel Error	13
B.	Design/Manf./Constr./Install	5
C.	External Cause	0
D.	Defective Procedure	3
E.	Component Failure	11
X.	Other	10
	Total	42

Licensee Event Reports Reviewed

Report Nos. 83-15 through 85-02

Causal Analysis (Review Period January 1, 1982 - February 28, 1985)

Five sets of common mode events were identified:

a. LERs 84-01, 84-03, 84-06, 84-08 and 84-18 reported fire door problems caused by inadequate personnel understanding and respect for installed fire barriers.

b. LERs 84-04 and 84-22 reported inoperable penetration fire seals caused by maintenance/construction personnel failing to follow plant procedures.

c. LERs 83-04 and 84-12 reported failures of the containment penetration local leak rate tests. Two check valves (CC-CV-721 and 885) were particular contributors to the failure of both these successive refueling interval tests.

d. LERs 84-16 and 85-01 reported failures of automatic containment isolation valve MS-TV-1212 to trip properly.

e. LERs 84-09, 84-21 and 84-25 reported plant trips caused by personnel error and inadequate procedures. These were the only unplanned trips during the assessment period.

Thirty eight percent of the LERs submitted during this assessment period involve personnel or procedural errors as causal factors. This high percentage of personnel and management related errors, when compared to 5 and 17 percent reported in the previous two SALP evaluations, was noted as an adverse trend.

TABLE 1

INSPECTION HOURS SUMMARY (9/1/83 - 2/28/85)

HADDAM NECK PLANT

		HOURS	% OF TIME
A.	Plant Operations	739	25
B.	Radiological Controls	373	13
C.	Maintenance	237	8
D.	Surveillance	327	11
E.	Fire Protection/Housekeeping	123	4
F.	Emergency Preparedness	338	12
G.	Security and Safeguards	156	5
H.	Refueling & Outage Management	215	7
I.	Design Change Control/Quality Assurance	310	11
J.	Licensing Activities	109*	4
	Total	2927	100

*Operating Reactors Licensing Activities performed by Region I personnel. NRR personnel time is not included.

Note: Allocations of Inspection Hours vs. Functional Areas are approximations based on inspection report data.

TABLE 2

VIOLATION SUMMARY (9/1/83 - 2/28/85)

HADDAM NECK NUCLEAR POWER PLANT

I. Number and Severity Level of Violations and Deviations

Severity Level	
Severity Level I	0
Severity Level II	1
Severity Level III	2
Severity Level IV	7
Severity Level V	4
Deviations	1
TOTAL	15

II. Violations and Deviations vs. Functional Area

	FUNCTIONAL AREAS	Severity Levels I	II	III	IV	V	DEV
A.	Plant Operations						
B.	Radiological Controls			1	2	1	1
C.	Maintenance						
D.	Surveillance					1	
E.	Fire Protection & Housekeeping				2		
F.	Emergency Preparedness				1		
G.	Security Safeguards						
H.	Refueling & Outage Management						
I.	Design Change Control/Quality Assurance		1	1	2	2	
J.	Licensing Activities						
	Subtotals	0	1	2	7	4	1
	Total			15			

III. Summary

Inspection Report No.	Inspection Date	Severity Level	Functional Area	Violation
83-22	9/26-30/83	IV	E	Failure to perform Tech Spec surveillance
83-24	10/3-7/83	V	I	Inadequate audit of Plant Information Report system
83-25	10/24-28/83	III	I	Post-accident sample system inoperable
83-26	11/14-18/83	V	B	Failure to follow a transuranic analysis procedure
83-28	12/5-8/83	IV	F	Failure to provide required training
84-03	2/1-3/30/84	V	D	Failure to control gauge calibration
84-11	6/26-29/84	IV	B	Failure to follow receipt inspection procedures
		IV	B	Failure to conduct a quality control program
		DEV	B	Rad Waste handler requalification program not properly implemented
84-14	8/29-10/31/84	IV	E	Failure to seal a fire penetration barrier
		V	I	Inadequate field change review procedures
84-22	8/25-28/84	IV	I	Design basis for Emergency Diesel Generatorss not correctly translated into procedures
84-23	8/21-9/4/84	II*	I	Failure of safety committees to identify an unreviewed safety question
		II*	I	Inadequate design of the refueling cavity seal

*One aggregate Severity Level II violation was assigned for these two violations.

Inspection Report No.	Inspection Date	Severity Level	Functional Area	Violation
84-24	10/22-23/84	III**	B	Inadequate health physics technician qualifications
		III**	B	Failure to provide training in radiation protection procedures
		III**	B	Failure to provide positive control over high radiation area work.
84-26	11/13-16/84	IV	I	Failure to maintain quality control of a safety-related component
85-03	2/12-15/85	***	D	Inoperable Reactor Protective System (RPS) loss of flow channels
		***	D	Inadequate RPS surveillance procedure

**One aggregate Severity Level III violation was assigned for these three violations.

***Enforcement action not yet issued

TABLE 3

INSPECTION REPORT ACTIVITIES (9/1/83 - 2/18/85)

HADDAM NECK NUCLEAR POWER PLANT

Inspection Report No.	Inspection Hours	Areas Inspected
83-20	54	Routine resident
83-21	71	Routine resident
83-22	48	Fire Protection
83-23	42	Radiological Controls
83-24	24	Quality Assurance
83-25	144	TMI Action Plan Implementation
83-26	64	Radiological Controls
83-27	78	Routine resident
83-28	60	Emergency Preparedness
84-01	29	Security and Safeguards
84-02	96	Routine resident
84-03	167	Routine resident
84-04	28	Non-radiological Chemistry Program
84-05	102	Followup on IE Bulletins
84-06	50	Emergency Preparedness
84-07	135	Routine resident
84-08	22	Design Change Control
84-09	70	Quality Assurance/Training
84-10	228	Emergency Preparedness
84-11	37	Radwaste Transportation
84-12	86	Routine resident

Inspection Report No.	Inspection Hours	Areas Inspected
84-13	29	Containment Leak Rate Testing
84-14	352	Routine resident
84-15 (cancelled)		
84-16	24	Radiological Controls
84-17	20	Operator Licensing Examinations
84-18	24	Loss of AC Event
84-19	64	Degraded Grid Voltage
84-20	45	Security & Safeguards
84-21	56	Inservice Inspection Program
84-22	78	Loss of Offsite Power
84-23	63	Cavity Seal Failure
84-24	32	Review of Exposure Event
84-25	21	Containment Integrated Leak Rate Test
84-26	106	Followup on NRC Generic Letter 83-28
84-27 (cancelled)		
84-28	101	Routine resident
84-29	32	Security and Safeguards
84-30	24	Radiological Controls
84-31	28	Requalification Training
84-32	60	Routine resident
85-01	100	Routine resident
85-02	30	Startup Testing
85-03	9	Inoperable Loss Of Flow Trip

TABLE 4

TABULAR LISTING OF LERs BY FUNCTIONAL AREA

HADDAM NECK PLANT

	AREA	NUMBER/CAUSE CODE	TOTAL
A.	Plant Operations	1/A, 2/B, 1/D, 5/E, 2/X	11
B.	Radiological Controls	1/A	1
C.	Maintenance	2/A, 1/D	3
D.	Surveillance	3/A, 6/E, 5/X	14
E.	Fire Protection/Housekeeping	6/A, 1/B, 1/D, 1/X	9
F.	Emergency Preparedness	NONE	
G.	Security and Safeguards	NONE	
H.	Refueling and Outage Management	1/B	1
I.	Design Change Control/Quality Assurance	1/B	1
J.	Licensing Activities	2/X	2
		TOTAL	42

Cause Codes

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

TABLE 5

LER SYNOPSIS (9/1/83 - 2/28/85)

HADDAM NECK NUCLEAR POWER PLANT

LER No.	Type	Summary Description
83-15-3L	30 day	Pressurizer level instrument failure
83-16-3L	30 day	Failed charging pump bearing thermocouple
83-17-1P	Prompt	Post accident sample system inoperable
83-18-3L	30 day	Charging pump out of service due to seal leakage
83-19-3L	30 day	Low pressure safety injection pump start timer slow
83-20-3L	30 day	Loss of containment control air
83-21-3L	30 day	Loss of containment control air
83-22-3L	30 day	Failed volume control tank outlet valve control circuit
83-23-3L	30 day	Diesel generator 2B assumed load greater than the governor setting
83-24-3L	30 day	Inadequate service water to the Containment Air Recirculation (CAR) fans
83-25-3L	30 day	Failure of the control rod motion slave cycler
84-001-00	30 day	Fire doors inoperable
84-002-00	30 day	Screenwell fire detection system inoperable
84-003-00	30 day	Inoperable fire door
84-004-00	30 day	Inoperable fire barrier
84-005-00	30 day	Potential non-conservative 3-loop operating condition
84-006-00	30 day	Inoperable fire door
84-007-00	30 day	Degraded cable penetration fire barriers
84-008-00	30 day	Inoperable fire door
84-009-00	30 day	Total loss of offsite power/reactor trip

LER No.	Type	Summary Description
84-010-00	30 day	Reactor coolant system overpressure protection system inoperable
84-011-00	30 day	Containment integrated leak rate test failure
84-012-00	30 day	Containment local leak rate test failure
84-013-00	30 day	Reactor cavity seal failure
84-014-00	30 day	Loss of offsite power; diesel generator failed to pickup load
84-015-00	30 day	Steam generator tube degradation
84-016-00	30 day	Slow containment isolation valve
84-017-00	30 day	Degraded reactor protection system wiring
84-018-00	30 day	Inoperable fire door
84-019-00	30 day	Containment isolation valves improperly opened
84-020-00	30 day	Potential personnel overexposure during maintenance
84-021-00	30 day	Spurious high startup rate trip during physics testing
84-022-00	30 day	Inoperable fire barrier penetration seal
84-023-00	30 day	Failures of Westinghouse circuit breaker relays
84-024-00	30 day	False steam flow indication in reactor protection system
84-025-00	30 day	Reactor trip due to inadvertent trip of Reactor Coolant Pump #3
84-026-00	30 day	Manual reactor trip due to voltage regulator malfunction
84-027-00	30 day	Reactor protection system overpower setpoint drift
84-028-00	30 day	Out of specification main steam safety valve settings
84-029-00	30 day	Spurious load runback due to nuclear instrument setpoint drift
85-001-00	30 day	Containment isolation valve failed to open (MS-TV-1212)
85-002-00	30 day	Reduced Containment Air Recirculation fan flow

TABLE 6

UNPLANNED AUTOMATIC SCRAMS

Date	Power Level	Cause
8/1/84	0%	Loss of offsite AC power during plant shutdown due to operator/procedure error.
11/3/84	0%	High startup rate trip due to technician error.
11/20/84	100%	Loss of flow due to inadvertent shutdown of number three reactor coolant pump.

FORCED OUTAGES/POWER REDUCTIONS

Date	Power Level	Cause
3/13/84	100% to 5%	Suspected control rod malfunction.
11/09/84	25% to 0%	Main turbine generator problems.
11/15/84	25% to 0%	Manual trip due to main generator voltage regulator cycling.

ENCLOSURE 3

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT 50-245/85-99

NORTHEAST NUCLEAR ENERGY COMPANY

MILLSTONE NUCLEAR STATION UNIT 1

(660 MWe BOILING WATER REACTOR - GENERAL ELECTRIC DESIGN)

ASSESSMENT PERIOD: SEPTEMBER 1, 1983 - FEBRUARY 28, 1985

BOARD MEETING DATE, MAY 6, 1985

TABLE OF CONTENTS

I. INTRODUCTION

A. Purpose and Overview

The Systematic Assessment of Licensee Performance (SALP) is an integrated NRC staff effort to collect information periodically and evaluate licensee performance. SALP supplements the normal regulatory processes used to ensure compliance to NRC regulations. It is intended to be sufficiently diagnostic to support allocation of NRC resources and to be meaningful to licensee efforts to improve plant safety.

An NRC SALP Board met on May 6, 1985 to assess licensee performance in accordance with NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." A summary of the guidance and evaluation criteria is provided in Section II of this report.

This report assesses licensee performance at Millstone Unit 1, a General Electric designed Boiling Water Reactor, for the 18-month period from September 1, 1983 through February 28, 1985.

B. SALP Board Members

R. Starostecki, Director, Division Reactor Projects (DRP), SALP Board Chairman
W. Kane, Deputy Director, DRP
R. Bellamy, Chief, Emergency Preparedness and Radiological Protection Branch, Division of Radiation Safety and Safeguards (DRSS)
J. Durr, Chief, Engineering Programs Branch, Director, Division of Reactor Safety (DRS)
E. Wenzinger, Chief, Project Branch 3, DRP
E. McCabe, Chief, Projects Section 3B, DRP
L. Rubenstein, Assistant Director, Core and Plant Systems, Division of Systems Integration, Office of Nuclear Reactor Regulation (NRR)
J. Shea, Licensing Project Manager, ORB 5, NRR
J. Shedlosky, Senior Resident Inspector

Other Attendees

D. Lipinski, Resident Inspector
D. Osborne, Licensing Project Manager, NRR
R. Summers, Project Engineer, Projects Section 3B

C. Background

1. Licensee Activities

This General Electric designed Boiling Water Reactor operated at full power from the beginning of the assessment period through the end of cycle 9 with one exception. That was a two-day forced outage

for replacement of a failed recirculation pump seal assembly. A scheduled refueling outage was conducted from April 14 through June 28, 1984. The major effort during that outage was the non-destructive evaluation of Class 1 and 2 stainless steel piping systems to detect and repair intergranular stress corrosion cracking (IGSCC). From the return to power through the end of the assessment period, the unit operated at full power except for a two-day forced outage to correct valve packing leakage in the containment.

There have been no automatic or manual reactor trips during the assessment period. The last unanticipated reactor trip occurred during August 1983. The reactor availability and capacity factors for 1983 were 95.6 percent and 93.5 percent, respectively, and 78.8 and 75.2 percent in 1984. However, excluding the April 14 through June 28 refueling outage, these factors were 99.4 and 96.7 percent, respectively, for the eighteen-month assessment period. (These factors were computed by the resident inspectors using data from the licensee's monthly operation reports.)

2. Inspection Activities

One NRC resident inspector was assigned to Millstone Units 1 and 2 for the entire appraisal period. A second resident inspector was on site for eight months of the eighteen-month period.

Total NRC inspection hours (both resident and region-based) expended for Unit 1 were 2110. This correlates to 1407 inspection hours per year.

NRC Emergency Preparedness Inspection Teams observed full scale emergency exercises on October 5, 1983 and October 12, 1984.

There were no investigations during the assessment period.

Tabulations of Violations and Inspection Activities are provided at the end of the SALP report.

II. CRITERIA AND RATINGS

Licensee performance is assessed in prescribed functional areas significant to nuclear safety and the environment. One or more of the following criteria are used to assess each functional area.

1. Management involvement 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

These criteria are not limiting; others are used where appropriate.

The SALP Board classifies each functional area as being in one of three performance categories. These 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 safety 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 safety is being achieved.

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

The SALP Board also categorized the performance trend by comparing the overall performance during the last fourth of the SALP period to the overall performance during the entire SALP period. This trend was evaluated as "Improving," or as "Consistent" (essentially unchanged), or as "Declining."

III. SUMMARY OF RESULTS

A. Overall Facility Evaluation

* Overall, licensee performance was good during this SALP period. Performance of the plant operators was notably professional in regard to taking prompt action to prevent plant conditions from developing into unplanned shutdowns. Operations and operations support have performed well and have interacted effectively, and the unit is currently in its longest operating run (275 days as of May 6, 1985). There were no automatic reactor trips during the SALP period, and analysis of licensee event reports showed a low rate of personnel errors. The onsite safety review committtee was evaluated as thorough and effective overall. QA auditing and monitoring of operational activities were found to be good and well received by facility management. Instances of deficient licensee self-appraisal were, however, evident.

The radiation protection and housekeeping programs were effectively applied to reduce contamination and improve area access. Millstone 1 is an exceptionally clean Boiling Water Reactor. Also, radiation protection measures were carefully planned and implemented for significant in-service-inspection work in the primary containment drywell. But there were multiple lapses in worker adherence to routine radiation protection procedures and repetitive problems with low level radwaste shipments to South Carolina. These lapses indicate a need to upgrade first level supervision of such activities as well as to improve worker compliance with routine radiation protection controls.

Design control was noted to be deficient, with improper installation of the Post-Accident Sampling System (PASS) the noteworthy example. Corrective measures on this item are in progress as a result of identification of design control problems at the licensee's Haddam Neck plant.

* In some cases, the licensee has not provided timely responses to the NRC. One such case involved shelf-life control for perishables and environmental controls for welding electodes. Another involved untimely responses in the Licensing area. Untimeliness was not noted, however, in the more significant issues.

* In summary, licensee performance has been strong in plant operations and control of major activities. There has, however, been a significant lapse in design control and lapses in radiation protection. Responses to the NRC need to be more timely. There is a need for more effective licensee self-appraisal.

B. Overall Evaluation of Training

* As shown by the operational performance of the plant, the training program has been effective overall. Licensee training initiatives have been noteworthy, including an upgrading through training staff expansion in size and authority. A training department screening process has been

*Asterisked lines are common to Units 1 and 2.

implemented to correct a problem with operator performance on initial
* NRC licensing examinations. An onsite plant specific simulator project
* is in process. Requalification training has been satisfactory and is
* expected to improve when the simulator is placed in operation. Training
* of non-operators was good, with Instrument and Controls department
* training noted to be particularly effective.

C. Facility Performance

Functional Area	Category Last Period (9/1/82-8/31/83)	Category This Period (9/1/83-2/28/85)	Recent Trend
1. Plant Operations	2	1	Consistent
2. Radiological Controls	1	2	Consistent
3. Maintenance	1	1	Consistent
4. Surveillance	2	1	Consistent
5. Fire Protection/Housekeeping	1	1	Improving
6. Emergency Preparedness	2	1	Consistent
7. Security & Safeguards	1	1	Consistent
8. Refueling & Outage Management	1	2	No Basis
9. Licensing Activities	1	1	Consistent

*Asterisked lines are common to Units 1 and 2.

IV. PERFORMANCE ANALYSIS

A. Plant Operations (714 hrs., 34%)

1. Analysis

This area encompasses engineering support, design control, training, and staffing as well as the overall conduct of facility operations. During the preceding assessment period, a category 2 rating was assigned. Overall performance was judged to have been good, however, several lapses indicated that increased attention to detail was required. The licensee has vigorously addressed the areas indicated in the last SALP.

No unplanned scrams during reactor operation have occurred since August 1983. There have been notable occurrences when prompt operator action has minimized an operating transient and kept the plant on line. One example was operator action in response to a stuck-open moisture separator drain tank normal level valve on February 6, 1985. Because the valve is remotely operated with air, recognizing the problem of the valve shaft sticking and then freeing the valve was not a straight-forward evolution. Free-flowing steam through the moisture separator drain tank had resulted in a turbine trip in the past. In this recent case, the situation was recognized and proper action taken to remotely free the valve. Such attention to detail contributed to the plant being on line uninterrupted for 275 days as of the May 6 SALP Board meeting. This is one indication of high quality performance by the operating staff. (Training effectiveness is discussed later in this section.)

Overall, the control room function was assessed as effective.
* Other than routine security measures, access to the control room
* was not specifically limited. Documents sent to the control room
* were not specifically pre-screened to avert unnecessary burdening
* of the operators. But, business with the control room was required
* to be conducted through one of the two senior licensed operators
* on duty, and specific permission was required to enter the marked
* areas near the control panels. Pre-briefings for evolutions were
* assessed as thorough, appropriate, and well-presented. The operators' desk was repositioned to provide a better view of the panels. Procedures and drawings were found to be readily available and appropriately used. Despite a lack of formal status boards, shift turnover controls and degraded equipment lists appeared adequate, in that operators were found to be aware of plant conditions.

Although a high state of training and knowledge is indicated by the excellent plant operating record, the results of operator licensing examinations suggest a decline in training program effectiveness. Approximately one-half of the candidates for initial operator and senior operator licenses were unsuccessful in NRC administered ex-

*Asterisked lines are common to Units 1 and 2.

aminations. Personnel reassignments and a perceptible decline in the morale of the training department may have contributed to this decline in training effectiveness. However, an effective requalification training program is administered in a six week classroom series and one week of contracted simulator training. The examinations administered are generally thorough and challenging. Operators who fail an exam section are evaluated by the training department, which reports directly to the corporate management, and may be removed from licensed duties. A plant specific simulator is to be installed as part of a program to significantly upgrade licensed operator training. Training department staffing includes licensed operators and is expanding to meet simulator training needs. These factors are indicators of a sound and improving operator training program.

A strong sense of forehandedness was evident during several planned power reductions for corrective maintenance. These ranged from routine replacement of Recirculation Motor-Generator brushes to more challenging work such as repairing a pipe break in extraction steam piping and rebuilding a Feedwater Regulating Valve. Two brief shutdowns were conducted to correct significant failures. During October 1983, one of two redundant seals of the "A" Reactor Recirculation Pump failed. The licensee began contingency planning in case of a failure of the second seal. Very late on November 25, 1985, early symptoms of seal failure were observed and a shutdown was commenced. The pump seals were replaced without incident and a startup was commenced early on November 28, 1985. Early on August 2, 1984, a rise in measured drywell sump leakage was observed. Power was reduced to less than 1% and a variety of problems with small valves were repaired. The unit was returned to power and drywell sump leakage returned to a typically low value. Overall, the success of plant operators and technicians in the diagnosis and repair of problems is noteworthy.

During the preceding SALP, the perception of a lack of licensee sensitivity to issues affecting the reliability of onsite emergency power sources was highlighted. During the current period, modifications were made to control the environment of critical Emergency Gas Turbine Generator (EGTG) components. Improvement in the performance of the EGTG during surveillance start-ups and full load runs has been observed. The licensee has also placed increased emphasis on matters involving the Emergency Diesel Generator (EDG). An experienced senior engineer holding a current maritime license for Diesel plants has been assigned responsibility for coordinating EDG matters. A region-based Diesel specialist reviewed EDG performance, vendor inspection programs and results, and commented favorably on EDG reliability. These efforts in the area of emergency power are typical of licensee efforts in other areas.

*Asterisked lines are common to Units 1 and 2.

* Region-based inspectors reviewed QA audit schedules and plans,
* documentation of 11 QA audits, 3 semi-annual QA review reports to
* management, the QA monitor schedule, and 6 QA monitor reports. The
* resident inspector observed one monitoring evolution and reviewed
* the documentation of another. QA audits are done by the corporate
* staff and generally have a broad scope. The audit staff is small
* and aggressive, with good communication with senior management and
* the PORC. QA audit schedules and results are reviewed by the PORC.
* The monitor program is conducted by the onsite QA staff. It pro-
* vides site managers with a separate view of the performance of per-
* sonnel and evolutions. Corrective actions on audit and monitor
* findings generally are implemented promptly. The licensee is re-
* viewing the monitor program to identify ways to enhance its utility.
* Overall, the audit and monitor programs are considered to be posi-
* tive contributors to quality and safety.

* Several meetings of the PORC were attended by inspectors at inter-
* vals during the period. The PORC reviews were critical, thorough, and involved considerable discussion. One violation, the failure of PORC to approve a change in the method of monitoring effluent radioactivity, is ascribed more to error on the part of operating personnel than to a shortcoming of PORC oversight of plant operations. Subsequently, a detailed review of document control revealed that the violation was an isolated event and resulted in the closing of previously unresolved or open issues in procedures and drawing control.

Analysis of LERs indicates a high level of performance. The ratio of personnel-related events to facility-related events remains very low at 0.06. This compares favorably with a ratio of 0.12 attained during the previous SALP cycle and 0.18 for a "typical" BWR of NUREG/CR-2378. The ratio of management-related events to facility-related events increased from 0.09 to 0.12 during the cycle. (The "typical" BWR achieved a management-related to facility-related event ratio of 0.18.) This increase was due to the failure to correct recurring problems with the security system equipment, with Isolation Condenser Containment Isolation Valve 1-IC-3, and the design deficiencies relating to the containment isolation function of the Post-Accident Sample System. LERs, both those submitted under
* the requirements in effect prior to January 1, 1984 and under the
* new requirements in force since then, were timely and complete.
* When additional information later developed concerning reported
* events, updated LERs have been submitted.

2. Conclusion

Rating: Category 1.

Recent Trend: Consistent.

*Asterisked lines are common to Units 1 and 2.

3. Board Recommendation

Licensee: Provide a more vigorous self-appraisal function in order to achieve better internal identification of problem areas such as the high failure rate on initial operator qualification.

NRC: None.

B. Radiological Controls (318 hrs., 15%)

1. Analysis

* The licensee's performance for this period is degraded from the
* performance noted in the previous assessment. While no violations
* were noted in the last assessment, five violations were identified
* in the current period. This is particularly noteworthy since the
* radiation protection program was initially subjected to reduced in-
* spection effort due to previously observed good performance.

* The licensee's radiation protection program continues to be defined
* by generally good policies and procedures. Resident and specialist
* inspector reviews of this area generally indicated consistent good
* performance in the area of contamination control, personnel moni-
* toring, radiological surveillance and job control, instrumentation
* reliability and effluent control. However, during this period both
* resident and specialist inspectors observed increased deficiencies
* involving procedure establishment, implementation and maintenance.
* For example, on two separate occasions, the licensee performed tasks
* that were beyond the work that was authorized and allowed by job
* specific radiation work permits. Though these occurrences were
* identified to the licensee, corrective measures were not effective
* enough to prevent recurrence a short time later.

* Other procedural deficiencies noted this period included the imple-
* mentation of a change to the liquid waste discharge procedure without
* administrative and technical review, and failure to adhere to the
* containment requirements of a special procedure used for fuel re-
* constitution. Additionally, on one occasion, the licensee failed
* to implement procedures to prevent recurrence of conditions that
* resulted in an inadvertent sustained intake of airborne radioactive
* materials by a worker. For this event, corrective action was not
* initiated until the item was identified by an inspector 30 days
* later. Several other procedural problems noted this period rein-
* forced the perception that violations are repetitive and indicative
* of a minor programmatic breakdown, particularly in view of the lic-
* ensee's previously observed ability to adequately establish, imple-
* ment and maintain procedures.

* While reviews by both resident and specialist inspectors generally
* indicate acceptable performance relative to the transportation of
* radioactive materials, the State of South Carolina identified ten
* discrepant shipments received at the burial facility in Barnwell,
* South Carolina. The latest of these, identified March 11, 1985
* (outside this current assessment period) caused the State to suspend
* the licensee's State radioactive waste transport permit for one year
* and assess a $5,000 civil penalty. Previously, the State had as-
* sessed a $3,000 civil penalty for a discrepant shipment received
* in December 1984, and formally notified the licensee of a discrepant

*Asterisked lines are common to Units 1 and 2.

* shipment received in October 1984. Several other deficiencies between September 1983 and August 1984 were orally conveyed to the licensee by the State. This indicates that the licensee has not been effectively implementing this portion of the program or effecting adequate corrective action. Since multiple and repetitive violations were identified, programmatic breakdown is evident.

* Radioactive waste management was not reviewed this period. Effluent control and radiochemistry review indicated that the licensee was effectively implementing that program in accordance with regulatory requirements.

* To reduce solid radioactive waste generation, the licensee established a corporate performance goal for 1984 of ten percent less than the three year 1981 through 1983 average. A sixteen percent reduction was attained. A 1985 goal was set for a ten percent reduction from the 1982 through 1984 average.

* The licensee has implemented a formal ALARA program designed to analyze specific tasks and effect dose reduction methods, as well as monitor task performance relative to performance goals. Records of the effort are generally complete, well maintained and available. Reviews of this area indicate that the program is generally effective but does not always achieve established goals. The effectiveness of the program has recently been enhanced by a corporate policy which makes specific ALARA goals the responsibility of individual managers.

* Overall, the licensee's performance during major projects involving high levels of radioactivity demonstrated thorough planning and preparation, good procedure development, and the establishment of acceptable radiological controls. This was evident for the Unit-1 IHSI/Weld Overlay, Extraction Steam Line Replacement, and TIP Overhaul. Adequate management review and oversight is usually evident as demonstrated by sufficient awareness of daily activities, the establishment of generally effective inter-departmental communications and cooperation, and the effective use of planning meetings and schedules to reduce personnel exposure.

* An adequate staff is available to carry-out the program, and the personnel involved are qualified and capable of performing satisfactorily in their assigned areas of responsibility. A formalized training program for the radiation protection staff continued to be implemented and provided sufficient technical and practical instructions to assure competence. The licensee also implements a generally effective radiation worker training program to assure that radiation workers are aware of radiological safety procedures and able to implement them competently.

*Asterisked lines are common to Units 1 and 2.

* Additionally, the licensee has successfully completed corrective
* actions on several previously identified findings, and has success-
* fully resolved open items in a timely manner.

2. Conclusion

* Rating: Category 2

* Recent Trend: Consistent.

3. Board Recommendations

* Licensee: Evaluate specific training for first-level supervisors
* as a measure for improving adherence to requirements. Upgrade
* adherence to routine radiation protection requirements by individual
* workers.

* NRC: None.

*Asterisked lines are common to Units 1 and 2.

C. Maintenance (347 hrs., 16%)

1. Analysis

* Maintenance received the close attention of both resident and region-based inspectors during the assessment period. During the previous two SALP periods, ratings of Category 1 were assigned. No areas of general weakness were noted during those periods.

* In mid-1984, the overall maintenance program received a comprehensive NRC review using a standard NRC Region I audit plan. Job Orders, Maintenance Requests, Machinery History Cards, Plant Incident Reports, Licensee Event Reports, Monthly Operating Reports, and the Daily Activities Log were audited. No reportable equipment degradation or failures were disclosed which had not been documented as Licensee Event Reports or which were missing from the Monthly Operating Reports. Records showed no repetitive maintenance beyond routine lubrication, cleaning, and valve packing adjustment for nine key systems. Machinery History Cards were being maintained manually for each system to the component level. Machinery History Cards were found to be accurate and timely. The accuracy and completeness of maintenance documentation and the close and consistent involvement of supervisors in day-to-day maintenance were noted as significant strengths.

* Another aspect of the NRC programmatic assessment involved maintenance personnel. Interviews with maintenance technicians, supervisors, and Quality Assurance inspectors showed that all had a working knowledge of skills necessary to conduct and document maintenance evolutions. The involvement of foremen and supervisors in field work was found to be consistent and extensive. The maintenance staff is a mix of experienced personnel present since construction, other experienced personnel from aircraft and shipbuilding industries, and newer personnel. A degreed staff engineer is also assigned directly to the maintenance department. The staff and supervision of the maintenance department were found to be notable strengths.

* A second programmatic inspection was conducted during November 1984 by region-based inspectors. The inspection was directed toward post-maintenance and post-modification testing. The inspectors reviewed 35 safety-related work packages from the Maintenance Department and 15 packages from the Instrumentation and Controls Department to verify correct classification and appropriate post-maintenance testing. The program was found to include written procedures, criteria, and responsibilities for post-maintenance testing. The inspection concluded that an acceptable program is in place and is being implemented.

*Asterisked lines are common to Units 1 and 2.

* The licensee implemented a corporate-wide maintenance management
* system during the present SALP period. Maintenance is still per-
* formed to departmental procedures. However, the authorization and
* control documents have been replaced by a central computerized sys-
* tem, the Production Maintenance Management System (PMMS). The sys-
* tem is used to schedule preventive and corrective maintenance. It
* will retain the machinery history type of information which had
* previously been recorded in departmental records. Since each
* equipment is being identified within the centralized and auto-
* mated system, machinery history will be available throughout the
* corporation. Preventive maintenance actions may be reviewed based
* on equipment history and revised or re-scheduled based on perfor-
* mance data. The system's data base records material and man-power
* usage and is used for resource management. Maintenance, and sur-
* veillance may then be prioritized and scheduled.

* The resident inspectors observed portions of 39 maintenance evolu-
* tions for procedural compliance, safety, work practices, and docu-
* mentation. No breakdowns in program implementation were observed.

* Procedurement practices and storage were examined by a team of re-
* gion-based inspectors. Two areas of weakness were noted: shelf-life
* criteria for perishable items and control of the storage environment
* for low hydrogen stainless steel and nickel welding electrodes.
* Insufficient management involvement was apparent in both cases.
* Concerns regarding shelf-life controls previously arose during an
* inspection in mid-1982. A followup inspection late in 1983 found
* only informal controls. Although the licensee fulfilled his com-
* mitment to establish a more formal program for shelf-life determin-
* ation and control, an audit conducted late in 1984 found little
* evidence of program implementation. Specifically, shelf-life data
* had not been requested from vendors and shelf-life had not been
* evaluated during QA acceptance inspection. Additionally, the audit
* sample included solenoid valves with shelf-life limitations due to
* certain internal construction materials. Although the valves had
* been the subject of both a vendor service letter and an NRC Bulletin,
* the valve shelf-life had not been included in the licensee's program.
* Concerns related to the storage of low-hydrogen welding electrodes
* arose during an inspection in mid-1983. These electrodes are stored
* in ovens at elevated emperature to limit moisture absorption. Re-
* sponsibility for calibration of the oven temperature monitors had
* not been established. The inclusion of these monitors in a regular
* calibration remained outstanding through the end of the inspection
* period. Together, these items reflect a lack of attention to the
* details of program implementation.

The equipment classification program was reviewed during the assess-
ment period. The broad scope of the audit involved evaluating
samples of safety-related systems, purchace orders, and Plant Design
Change Requests (PDCRs) to determine proper component classification

*Asterisked lines are common to Units 1 and 2.

commensurate with system application. The current manual program was judged to be effective. An automated system is planned for incorporation in the Production Maintenance Management System.

Vendor interfaces were also examined during the assessment period. The program was found to contain the essential attributes of Regulatory Guides 1.33 and 1.38 and the NUTAC report "Vendor Equipment Technical Information Program." Interviews with key personnel and document review indicated acceptable program implementation.

QA involvement in post-maintenance testing was closely audited. It was concluded that the post-maintenance test program at Millstone 1 is aggressively implemented and well supported by plant management.

The involvement of Quality Assurance in modifications was generally thorough. An example was their involvement in the Induction Heating Stress Improvement (IHSI) and weld overlay work on the Recirculation System. Review of the calibration of welding equipment, welding operator training, receipt inspection of thermocouple wire, work practices, and documentation packages of a total of 53 QA surveillance reports provided the basis for this judgement.

2. Conclusion

* Rating: Category 1

* Recent Trend: Consistent

3. Board Recommendation

* Licensee: Improve shelf-life program and storage program for
* welding electrodes.

NRC: None.

*Asterisked lines are common to Units 1 and 2.

D. Surveillance (333 hrs., 16%)

1. Analysis

Surveillance received the attention of the resident inspectors and region-based specialists. An increase in inspection effort was made in response to the decline in performance to Category 2 observed during the preceding assessment period. The resident inspectors observed a total of 52 surveillance tests. NRC reviews addressed containment leak rate testing, hydrostatic testing, in-service inspection (ISI), core power distribution surveillance, chemistry analyses, and a detailed technical review of radiation monitor calibration procedures.

* A master Surveillance Control List correlates surveillances to lic-
* ense requirements and receives PORC oversight. Individual depart-
* mental controls are effectively used to schedule and track comple-
* tion of surveillances. NRC audit of 12 Unit 1 and 20 Unit 2 tech-
* nical specifications confirmed timely completion. The plant design
* change request system requires a positive statement of the need for
* associated changes to operating procedures, surveillance procedures,
* and technical specifications. The Engineering Department must make
* that assessment, and PORC must review it. NRC audit of 4 Unit 1
* and 7 Unit 2 technical specification amendments verified that sur-
* veillance procedures were updated when technical specifications were
* changed. (A Unit 2 exception to this was found involving failure
* to update ex-core power range nuclear instruments after a 1975 de-
* sign change.) Site QA monitors surveillance testing. NRC witnessed
* one QA "monitor" of surveillance on Unit 1 and reviewed 4 surveil-
* lance "monitor" reports by QA. The reports were found to be critical
* and to reference INPO guidelines. Such reports are forwarded to
* the unit superintendent for action and to the corporate QA manager
* for trending.

A detailed review of the Hydrostatic Test Program used at Millstone 1 assessed the conformance of the program and its implementation to the requirements of both Technical Specifications and ASME Boiler and Pressure Vessel Code Section XI. Additionally, selected tests were observed and test records were independently analyzed. All aspects reviewed either conformed explicitly to code requirements or were reconciled as acceptable.

The containment leak rate test was performed in accordance with the prescribed regulations and guidelines. Test personnel were cognizant of the physical meaning of the test results. The knowledge of those who performed the test was generally good. However, test control and planning seemed to be insufficent at times. Management involvement and control to assure quality was insufficient to prevent confusion over test activities. Excessive external factors interfered with the testing. There was lack of continuity of test personnel, inaccurate preplanning for the test, and inadequate QA

*Asterisked lines are common to Units 1 and 2.

involvement. The licensee considered repair of leaky valves during the test. That would have resulted in a "failed" test. This shows inadequate technical understanding of these activities.

* Detailed technical review of procedures, practices and, where ap-
* propriate, independent calculation of results of specific aspects
* of Surveillance disclosed no significant problems. The aspects reviewed include Core Power Distribution Monitoring, Chemistry, Radiation Monitor Calibration, and In-Service Inspection. The application of a computer-aided Ultrasonic Data Recording and Processing System (UDRPS) was a technical inovation which was favorably commented upon by both a metallurgist and a Non-Destructive Evaluation specialist from the regional office. UDRPS was used for additional evaluation of stainless steel reactor recirculation system piping. This was not required by the NRC or the ASME Boiler and Pressure Vessel Code, but has been used in addition to conventional ultrasonic testing to gather significantly more data during non-destructive examinations. The use of this equipment did result in recording substantially more pipe weld data than was previously available.

In another effort to learn about potential defects, the licensee had a weld radiograph taken during plant construction electronically image-enhanced. This was done after a through-wall axial defect opened in the base metal during induction heating stress improvement (IHSI) of a recirculation system jet pump riser weld. The original radiograph did not show any defects, but the image-enhanced version clearly showed a defect in the base metal.

The Instrument and Control Department has developed several programs which have improved the reliability of plant equipment. Specifically, these have improved the reliability of safety-related instruments associated with the Reactor Protection System and the Emergency Core Cooling Systems, and have also improved the reliability of the Emergency Gas Turbine Generator. By trending the contact resistance of micro-switches within instruments, the licensee has been able to limit instrument setpoint drift by replacing components at the first sign of degradation. Likewise, various parameters of the Emergency Gas Turbine Generator are included in trending programs. Those programs, along with new system alignment procedures, have improved the reliability and operating performance of the gas turbine during the SALP assessment period.

2. Conclusion

* Rating: Category 1

Recent Trend: Consistent.

*Asterisked lines are common to Units 1 and 2.

3. Board Recommendation

* Licensee: Upgrade QA of critical surveillance testing such as
* containment integrated leak rate testing.

NRC: None.

*Asterisked lines are common to Units 1 and 2.

E. Fire Protection/Housekeeping (42 hrs., 2%)

1. Analysis

* The licensee has submitted an Appendix R exemption request and no
* Appendix R inspection has been conducted yet. Fire protection and
* housekeeping received both resident and region-based inspections.
* These efforts included a detailed programmatic inspection by a fire
* protection specialist. Because of incorporation of fire protection
* and housekeeping checks in daily resident inspector tours, the
* actual inspection effort expended on fire protection and housekeep-
* ing is significantly more than the tabulated total.

The facility is generally kept clean and graffitti-free. A high state of cleanliness is readily observed in the reactor building, where extensive areas have been made accessible without the use of protective clothing. Three of the four reactor building below grade corner rooms, the reactor water cleanup system pump room and the shutdown cooling system pump and heat exchanger rooms have all been cleaned. Access controls remain in several of these areas because of high radiation fields. But all may be entered without protective clothing. The licensee continues to make steady improvements in plant housekeeping. Management inspections are conducted both during the operating cycle and then more frequently during outages. Supervisors for work-in-progress are required to accompany the superintendent inspecting an area. There is a very strong emphasis on housekeeping during these inspections.

* In contrast with the station interior, large yard areas are heavily
* cluttered with spare, excess or staged equipment including a large
* quantity of material and trailers labelled as radioactive. This
* condition has degraded over the appraisal period.

* Indoctrination in matters pertaining to housekeeping and fire pro-
* tection is provided to new employees, and to all employees on an
* annual basis. Formal lesson plans and multi-media instruction
* methods are employed. Fire Brigade training consists of actual
* fire-fighting at an off-site training center, formal training lec-
* tures and demonstrations, and fire drills (including back-shift
* drills). Both specialist and resident inspectors commented favor-
* ably on the effectiveness of fire protection training.

The programmatic inspection included detailed review of licensee measures to control ignition sources, solid and liquid combustibles, transient combustibles, and general housekeeping. These were deemed to be adequate. The organization for fire protection was found to be adequately staffed.

*Asterisked lines are common to Units 1 and 2.

2. Conclusion

* Rating: Category 1

Recent Trend: Improving.

3. Board Recommendation

* Licensee: Address the cluttered yard condition. Resolve Appendix
* R implementation.

* NRC: None.

*Asterisked lines are common to Units 1 and 2.

F. Emergency Preparedness (169 hrs., 8%)

1. Analysis

* The previous SALP evaluation rated licensee performance in this area
* to be Category 2 based principally upon the corrective actions not
* being completed for two significant findings noted during the Emer-
* gency Preparedness Appraisal conducted on January 4-14, 1982. These
* were (1) installation of the High Range Monitoring and Sampling
* Systems for the Unit 1 Stack and the Unit 2 Vent, and (2) estab-
* lishment of an integrated emergency plan training/retraining program
* to ensure that lesson plans are developed and training is accom-
* plished for each functional area of emergency activity, including
* radiation protection during emergencies, emergency repair/corrective
* actions, search and rescue, and radwaste operations.

* During this assessment period an inspection was conducted on Febru-
* ary 21-24, 1984. At that time, it was noted that corrective actions
* were complete on Item (1). The "Emergency Preparedness Training
* Program" for Item (2) was only prepared in draft form but contained
* a revised training lesson plan format and testing requirements.
* The training of the emergency response personnel with the new pro-
* gram was scheduled to be completed by June 30, 1984. Re-inspection
* of this area has not yet been completed. However, it does not ap-
* pear that the final documentation of the Emergency Preparedness
* Training Program received adequate management attention since the
* time to correct the item exceeded two years.

* The licensee conducted a full scale emergency exercise on October
* 5, 1983, and another full scale exercise on October 12, 1984. The
* licensee's execution and participation in both of the exercises were
* satisfactory. No major discrepancies were noted and the improvement
* items observed in 1983 did not recur during the 1984 exercise. It
* was also noted that the corrective actions described by CAL 84-10
* dated June 5, 1984, that was issued after the May 12, 1984 Haddam
* Neck exercise, had been completed prior to the October 12, 1984
* Millstone exercise.

* During 1984, a temporary TSC was established within the Millstone
* EOF as a result of a lack of space in the reactor buildings. A new
* TSC for the Millstone site is being constructed as a part of Unit
* 3 and is scheduled to be available for the 1985 emergency exercise.

* The licensee has been responsive to NRC initiatives. Acceptable
* responses were proposed with the exception of the training item
* noted above.

*Asterisked lines are common to Units 1 and 2.

* The licensee's onsite emergency preparedness staff consists of one
* full time coordinator. At least two contractor personnel have pro-
* vided assistance during the past year. Corporate personnel are
* available as required to support emergency preparedness activities.

2. Conclusion

* Rating: Category 1.

* Recent Trend: Consistent

3. Board Recommendation

* Licensee: Evaluate measures for assuring timely completion of
* action items.

* NRC: None.

*Asterisked lines are common to Units 1 and 2.

G. Security and Safeguards (63 hrs., 3%)

1. Analysis

* During the assessment period, there were two routine physical protection inspections by region-based inspectors. Routine resident inspections continued throughout the assessment period. Two Level IV violations were identified by a region-based inspector. One Level IV violation was identified by a resident inspector. The violations were administrative in nature. Corrective actions were accomplished immediately. Similar violations did not recur.

* Management attention to the security program has been evident and has focused on insuring security effectiveness at the operating units while maintaining separation between the operating units and the unit still under construction. The licensee plans to bring all three units under one multiple unit site security program in December 1985. Both site and corporate management personnel are directly involved in this project and in planning for the increased security staffing necessary to support the expanded program. Other activities involved include system and equipment turnovers, integration of existing and new systems, and monitoring the installation and completion of barrier construction and related modifications. The smoothness with which these activities are being accomplished is indicative of management involvement in the planning, scheduling and coordination of the project.

* The licensee was in the process of modifying and submitting an integrated Site Security Plan and a Unit 3 Low Enriched Fuel Protection Plan to the NRC. These plans were scheduled to be resubmitted in April 1985. The two plans were reviewed on site by a region-based inspector for overall content and compliance with NRC regulations and were found to be generally consistent with the spirit and intent of the regulations. However, a detailed review of the plans by NRC/NMSS remains to be conducted.

* A comprehensive corporate security audit program continues to be a strength of this licensee and demonstrates the licensee's commitment to a quality security program. Audits are conducted on the Security Plan, Safeguards Contingency Plan and Training and Qualification Plans throughout the year such that the overall audit program is completed by year's end. The in-depth scope of the audit program, which uses both USNRC Inspection Procedures and licensee requirements, has contributed to reducing incidents of non-compliance especially during the later portion of this assessment period. This performance improvement is particularly significant in light of the fact that two major outages occurred during this period.

*Asterisked lines are common to Units 1 and 2.

* The licensee hired a new security force contractor during this
* period. The transition went smoothly and satisfactory performance
* was sustained through the changeover and subsequent period.

* The event reporting system is consistent with NRC requirements. The
* licensee reported thirteen security events during this period. Ten
* of these resulted from computer and/or multiplexer system failures.
* A potentially unmonitored access path into a security area was dis-
* covered and reported. One event was caused by a failed door alarm
* switch and one involved a security officer who was inattentive to
* his duties. The reports were timely and generally complete. Im-
* provement in the quality of some reports to include greater detail
* is, however, needed. For example, event report 85-001, pertaining
* to both Units 1 and 2, stated that alarm capability had been lost
* on a locked security door. The report failed to describe the type
* of door (it was not a standard personnel door), the area involved,
* results of the search to identify possible tampering, or other
* material facts needed to determine the significance of the event.
* More recent reports have, however, shown improvement in the scope
* of details discussed.

* Security organization staffing is currently adequate to meet the
* existing security program requirements. Staffing plans and funding
* to meet expanded site needs for inclusion of Unit 3 are already in
* place and demonstrate management's sensitivity to prior planning.
* Additions to the security force are already being made. Both cor-
* porate and site security management representatives are directly
* involved in assuring the application of quality training and quali-
* fication standards for existing and new employees.

* A potential training weakness in SAS operations involving its pri-
* mary function was identified by an NRC inspector early in this
* period. The licensee immediately initiated remedial training to
* correct the potential deficiency.

2. Conclusion

* Rating: Category 1.

* Recent Trend: Consistent.

3. Board Recommendation

* None.

*Asterisked lines are common to Units 1 and 2.

H. Refueling and Outage Management (124 hrs., 6%)

1. Analysis

Performance in refueling and allied areas received ratings of Category 1 for the past two assessment periods. During this SALP period, the plant underwent a refueling and large scale In-Service-Inspection (ISI) outage from April 14, 1984 through June 28. 1984.

Refueling preparations received close scrutiny. Procedures, including vendor procedures, were prepared and submitted to the Plant Operations Review Committee well in advance of the outage. Those procedures were independently reviewed by NRC inspectors and found to contain sufficient detail for the evolutions described. Analyses of recurring evolutions to specify work practices so as to maintain exposures "As Low As Reasonably Achievable (ALARA)" were conducted well in advance. The depth and accuracy of planning reflects well on the forehandedness of individuals in key positions and strong management support for planning.

The fuel receipt inspection activities, for example, reflected a high degree of pride and professionalism. Personnel involved included 3 engineers, 3 technicians, and 10 quality assurance inspectors. All personnel were certified jointly by the fuel vendor and the licensee as "Level I Fuel Inspectors" as a minimum. Inspections for this type of fuel involve numerous measurements with special gauges as well as visual examination. Both inspection conduct and results documentation were well executed.

A major outage objective was the ultrasonic testing of all accessible service-sensitive welds in the Reactor Recirculation, Isolation Condenser, Core Spray, Reactor Water Clean-Up, and Shutdown Cooling Systems. The licensee displayed strong technical initiative in introducing an automated "Ultrasonic Data Recording and Processing System" (UDRPS) to aid in flaw evaluation. Large scale application of Induction Heating Stress Improvement (IHSI) to 88 Reactor Recirculation System welds, 6 weld overlays, and weld/piping replacement work efforts were conducted based upon the ultrasonic testing program results. Both region-based and resident inspectors commented upon the highly effective management involvement in contractor control and quality assurance as well as in the high degree of technical competence displayed by the Northeast Utilities Non-Destructive Examination engineers.

* The licensee has committed personnel and financial resources to
* computer-based outage planning. The detail provided by these sys-
* tems has proven to be a key ingredient in successful outage planning.
* Schedules for activities are interfaced and analyzed by the computer
* which provides schedules along a critical path, identification of
* near-critical activities, and schedules for activities within cer-
* tain areas of the plant and by organizations supporting the outage.

*Asterisked lines are common to Units 1 and 2.

However, during 1983, errors were made in the installation of the Post-Accident Sampling System (PASS) design change, rendering the PASS sampling capability from the Shutdown Cooling System inoperable. Because of the reluctance to contaminate the newly installed system, a full test of the PASS was not conducted until specifically requested by NRC Region I. The operability test showed that a key valve had been installed so as to render the PASS unable to draw a reactor coolant sample from the Shutdown Cooling System. This inoperability was not revealed during acceptance testing planned and conducted as part of the modification. The tests had been approved by senior engineering staff as well as the Plant Operations Review Committee. In response to this collective error of the plant staff, a Task Force led by the Vice President of Nuclear Operations conducted a review of modification acceptance testing. As a result of this failure, a Level III Violation and a Civil Penalty (mitigated to zero) were issued. A later Region I post-maintenance, post-modification test program inspection revealed no further errors.

Inspection findings documented a lack of licensee follow-through to verify complete implementation of commitments made to the NRC. The licensee had failed to place locks on all containment isolation valves addressed in the Systematic Evaluation Program. In addition, three isolation valves were not isolated to meet an additional commitment. However, the unlocked valves were properly positioned, and blank flanges had been installed in lieu of the additional isolation valves. The failure to comply with the commitments therefore was significant from the administrative control viewpoint but had no safety impact.

2. Conclusion

* Rating: Category 2.

Recent Trend: No Basis.

3. Board Recommendation

* Licensee: Improve self-assessment to identify items such as failure
* to follow through on commitments and design modifications.

* NRC: None.

*Asterisked lines are common to Units 1 and 2.

I. Licensing

1. Analysis

This functional area had been rated Category 1 during the previous SALP assessment period. Stable performance has been observed. In general, the licensee's performance in licensing matters shows high-level management involvment, clear understanding of technical issues and responsiveness to NRC initiatives. The basis of this appraisal was the licensee's performance in support of licensing actions that were either completed or active during the rating period. These actions consisted of 9 license amendments, one implementation schedule extension (concerning Environmental Qualification of valve operators), 12 completed multi-plant licensing actions (chiefly NUREG-0737 items), 28 completed plant-specific licensing actions (chiefly SEP items), and several ongoing actions. The ongoing actions include "Emergency Capability" (NUREG-0737 Supplement 1,) Fire Protection (10 CFR 50 Appendix R), containment purge and vent issues, post-accident hydrogen control, and piping integrity. (Specific licensing actions are tabulated at the end of this functional area.) Although additional efforts are needed to resolve the remaining active issues, the licensee has thus far been responsive to staff concerns and priorities.

The licensee has exhibited an understanding of the issues in the resolution of technical questions with a conservative approach routinely employed when a potential for safety significance exists. One example of this related to primary containment inerting. Combustible gas control during reactor operation and post-accident period depends on limiting the oxygen concentration to less than 5%. Millstone 1 has a technical specification oxygen limit of 4% but normally operates with levels of about 1%. This extra measure of conservatism typifies the importance which the licensee attaches to safety.

A number of commitments for analysis and implementation schedules have been missed through the assessment period, however. Some of these omissions have resulted from confusion involving Integrated System Analysis Programs (ISAP) and the implementation of so-called "living schedules." One example of a lack of timely response is the 10 CFR 50 Appendix J exemption request which has been an open item since 1977. In light of the generally good performance in the more safety significant aspects of licensing, the scheduling and commitment difficulties experienced have been given relatively little weight in this appraisal. However, additional licensee effort is needed to assure proper observance of schedules and commitments.

* In summary, licensee performance was good overall, but with recur-
* rent response timeliness problems.

2. Conclusion

* Rating: Category 1.

* Recent Trend: Consistent.

3. Board Recommendation

* Licensee: Improve management of licensing activities to avoid late
* responses. Improve coordination of activities with NRR in regard
* to schedule, prioritization, and project status.

TABULATION OF LICENSING ACTIONS

Multi-Plant Actions (Completed)

-- Mark I Containment Long Term Program Implementation
-- Control of Heavy Loads Over Spent Fuel Pool (NUREG-0612)
-- Reactor Protection System Power Supply
-- Technical Specifications Defining Operability for Safety Systems
-- Implementation of NUREG-0313, Revision 1
-- NUREG-0737, Item II.B.3.2, Post Accident Sampling System Modifications
-- NUREG-0737, Item II.K.3.30, Small Break LOCA Methods
-- NUREG-0737, Item II.K.3.45, Manual Depressurization
-- NUREG-0737, Item II.K.3.31, Compliance with 10 CFR 50.46
-- NUREG-0737, Technical Specifications
-- NUREG-0737, Item II.K.3.16, Challenges and Failures of Relief Valves
-- NUREG-0737, Item II.K.3.28, Verify Qualification of Accumulators on Auto Depressurization System Valves

Plant Specified Actions (Complete)

-- Integrated Structural Analysis (SEP)
-- Missiles (SEP)
-- Seismic Design (SEP)
-- Motor Operated Valves (SEP)
-- Leak Detection (SEP)
-- Water Chemistry (SEP)
-- Battery Instrumentation and TS Limits (SEP)
-- Activity Limits (SEP)
-- Audits of Emergency and Security Plans Relating to Generic Letters 82-17 and 82-23
-- Review of Modified Amended Security Plans per Eisenhut Memorandum May 16, 1983
-- Integrated Leak Rate Test in Less Than 24 Hours
-- Evaluation of NNECO Quality Assurance Report Submitted by NNECO letter June 9, 1983
-- Required ATWS Actions Generic Letter 83-28
-- Administrative Technical Specification Changes
-- Technical Specification Clarification Related to Fire Protection Detection

-- Response to NNECO November 18, 1983 Station Training
-- Recirculation Line Pipe Crack Clamps
-- New Steam Unnel Ventilation System Isolation by Radiation Signals
-- Evlauation of Advanced-Higher Enrichment-Fuel Assemblies
-- Evaluation of NNECO Isolation Condenser Submittal dated March 27, 1984 Relating to Pipe Integrity
-- Reload 9 Evaluation
-- Evaluate Recirculation and Connecting Piping Fixes
-- Subcooled Post Design Base's Loss of Coolant Accident Radiolysis Evaluation
-- The Need for Recombiners - Response to GL 84-09
-- Environmental Statement Update
- Recirculation Loop Decontamination in Preparation for Non-Destructive Weld Testing of All Welds
-- Inspection of Stainless Steel Piping Per GL 84-11
-- Delection of Meteorological and Terrestrial Appendix B Technical Specifications

In addition to the completed actions listed above, there were specific ongoing activities associated with the requirements relative to Supplement 1 to NUREG-0737 "Emergency Capability," Appendix R - Fire Protection exemption requests, containment purge and vent requirements, the need for post accident hydrogen recombiners, and detection and repair of pipe weld cracks in the primary coolant recirculation piping.

V. SUPPORTING DATA AND SUMMARIES

A. Investigations and Allegations

None.

B. Escalated Enforcement Actions

1. Civil Penalties

A civil penalty associated with a Severity Level III Violation was issued July 11, 1984. That civil penalty, which was mitigated entirely, resulted from installation errors in the Post Accident Sampling System.

2. Orders

A June 19, 1984 Order confirmed the implementation schedule for outstanding items within the TMI Task Action Plan concerning emergency response planning.

3. Confirmatory Action Letters

None.

C. Management Conferences

An enforcement conference was held on November 14, 1983 to discuss violations identified in the implementation of the Haddam Neck Plant Post Accident Sampling System. A Notice of Violation was issued, in the matter, for the Haddam Neck and Millstone Unit 1 plants on July 11, 1984.

D. Licensee Event Reports

1. Tabular Listing

Type of Events:

(A)	Personnel Error	2
(B)	Design/Man./Const./Install.	3
(C)	External Cause	2
(D)	Defective Procedure	1
(E)	Component Failure	25
(X)	Other	5
	Total	38

Licensee Event Reports Reviewed:

Report Nos. 83-26 to 85-02, including 13 Security and 5 Environmental Reports common to both Units 1 and 2.

2. Causal Analysis

Seven sets of common mode events were identified. The first two are common to Units 1 and 2:

a. There were ten reports which involved the failure of station security equipment. The predominant failures involved the security process computers and their communications link multiplexers (Security Reports 83-05 and -06; LER's 84-01, -02, -10, -13, -14, -16, -20 and 85-02).

b. There were five reports which involved the detection of radionuclides in shellfish or aquatic flora gathered within 500 feet of the discharge into Long Island Sound, of which the concentrations exceeded the control station average by greater than a factor of ten (Environmental Reports 83-04,-05, and -06; LERs 84-03, and -07.) This has been an ongoing situation, and the licensee has submitted a technical specification change request to change this reporting requirement. Licensee analysis (LADTAP code) shows a negligible effect on the "most exposed person," with an increased exposure of 0.15% the normal background radiation.

c. There were two reports of the failure of the motor operator for the Isolation Condenser initiation valve 1-IC-3 due to improper operation of limit switches (LERs 84-15 and -18).

d. There were two reports of inoperability of the Reserve Station Service Transformer, both due to insulator problems, one failure and one excessive salt contamination.

e. One report addressed twenty-three welds which were rejected following NDT for IGSCC (LER 84-08).

f. One report addressed ten hydraulic snubbers which failed functional testing (LER 84-09).

g. One report addressed three Target Rock safety-relief valves which failed to open at their required setpoint pressure during testing with steam (LER 84-12).

3. Licensee Event Report Analysis

An analysis of Licensee Event Reports (LER) indicates a high level of performance. However, because 10 CFR 50.73 redefined the requirements for submitting an LER, there was a change to the data base on January 1, 1984.

The ratio of personnel-related events to facility-related events remains very low at 0.06. This compares favorably with a ratio of 0.12 attained during the previous SALP cycle and 0.18 for a "typical" BWR of NUREG/CR-2378.

The ratio of management-related events to facility-related events increased from 0.09 to 0.12 during the cycle. (The "typical" BWR of NUREG/CR-2378 achieved a management related to facility related event ratio of 0.18.) This increase was due to the failure to correct recurring problems with the security system equipment, the Isolation Condenser Containment Isolation Valve 1-IC-3 and the design deficiencies relating to the containment isolation function of the Post Accident Sampling System.

TABLE 1

TABULAR LISTING OF LER's BY FUNCTIONAL AREA

MILLSTONE NUCLEAR STATION, UNIT 1

	AREA	NUMBER/CAUSE CODE					TOTAL
A.	Plant Operations		1/C	8/E			9
B.	Radiological Controls				5/X		5
C.	Maintenance & Modifications	1/B					1
D.	Surveillance	2/B,	1/C,	6/E			9
E.	Fire Protection/Housekeeping		1/D				1
F.	Emergency Preparedness						0
G.	Security & Safeguards	2/A		11/E			13
H.	Refueling & Outage Management						0
I.	Licensing Activities						0
				TOTAL			38

Cause Codes

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

TABLE 2

INSPECTION HOURS SUMMARY (9/1/83 - 2/28/85)

MILLSTONE NUCLEAR STATION, UNIT 1

		Hours	% of Time
A.	Plant Operations	714	34
B.	Radiological Controls	318	15
C.	Maintenance	347	16
D.	Surveillance	333	16
E.	Fire Protection/Housekeeping	42	2
F.	Emergency Preparedness	169	8
G.	Security and Safeguards	63	3
H.	Refueling and Outage Management	124	6
I.	Licensing Activities	--	--
	TOTAL	2110	100

Note: Licensing personnel time is not included in SALP.

TABLE 3

VIOLATION SUMMARY (9/1/83 - 2/28/85)

MILLSTONE NUCLEAR STATION, UNIT 1

A. Number and Severity Level of Violations

Severity Level I	0
Severity Level II	0
Severity Level III	2
Severity Level IV	8
Severity Level V	0
Deviation	0
Total	10

B. Violation by Functional Area

Functional Area	Severity Level I	II	III	IV	V	DEV
1. Plant Operations						
2. Radiological Controls			1	4		
3. Maintenance & Modifications						
4. Surveillance				1		
5. Fire Protection & Housekeeping						
6. Emergency Preparedness						
7. Security and Safeguards				3		
8. Refueling and Outage Management*			1			
9. Licensing Activities						
Totals	0	0	2	8	0	0

*In the analysis sections of this SALP, the Level III Violation related to the PASS modification installation and testing is reviewed from the viewpoint of inadequacies in managing the non-recurrent evolution of system installation and testing and is included in outage management.

C. Summary

Inspection Report No.	Inspection Dates	Severity Level	Functional Area	Violation
*83-16	9/26-30/83	IV	7	Failure to control security keys.
*		IV	7	Failure to acknowledge security alarms.
83-20	10/30-11/4/83	IV	2	Failure to properly review procedural change.
84-07	4/2-6/84	VII	8	Failure to properly install the liquid Post-Accident Sampling System.
84-11	5/6-6/9/84	IV	2	Failure to follow Radiation Work Permit (RWP).
84-13	5/29-6/1/84	IV	2	Failure to follow RWP.
		IV	2	Failure to control internal exposure.
85-02	1/14-2/24/85	IV	4	Failure to calibrate nuclear instrumentation.
*		IV	7	Failure to maintain a clear isolation zone.
85-03	12/28/84	III	2	Failure to control free-standing liquid in a solid waste shipment.

*Asterisked lines are common to Units 1 and 2.

TABLE 4

REACTOR TRIP AND OUTAGE SUMMARY (9/1/83 - 2/28/85)

MILLSTONE NUCLEAR STATION, UNIT 1

A. UNPLANNED AUTOMATIC SCRAMS

There were no automatic scrams during the eighteen-month appraisal period.

B. FORCED OUTAGES

	DATES	POWER LEVEL	CAUSE
1.	11/26-28/83	Shutdown from 100 percent power.	Repair of a defective recirculation pump seal.
2.	8/2-4/84	Shutdown from 100 percent power.	Repack leaking instrument isolation valve located in the primary containment.

TABLE 5

INSPECTION REPORT SUMMARY (9/1/83 - 2/28/85)

MILLSTONE NUCLEAR STATION, UNIT 1

Report Number Inspector(s)	Inspection Hours	Areas Inspected
83-16 (Specialist)	27	Station security program and implementation.
83-17 (Resident)	65	Routine inspection including followup of gas turbine trip.
83-18 (Resident)	50	Routine inspection including followup on Post-Accident Sampling System installation error and reactor core power distribution calculations.
83-19 (Specialist)	14.5	Quality Assurance Program including storage.
83-20 (Specialist)	55	Radioactive effluent control and monitoring.
83-21 (Resident)	39	Routine inspection, including high containment leakage rate.
84-01 (Resident)	57	Routine inspection including repairs to turbine extraction steam piping.
84-02 (Resident)	74	Routine inspection including repairs to safeguards pump and potential for containment vent header cracking.
84-03 (Specialist)	30	Emergency Preparedness Program.
84-04 (Specialist)	31	Radioactive materials packaging and transportation.
84-05 (Resident)	91	Routine inspection including emergency diesel operability, maintenance and preventive maintenance, emergency gas turbine generator voltage regulator operability, liquid effluent analysis, and preparations for refueling/maintenance outage.
84-06 (Specialist)	17	Nonradiological chemistry analysis including quality control of analytical measurements.

Report Number Inspector(s)	Inspection Hours	Areas Inspected
84-07 (Specialist)	89	Post-accident monitoring equipment installations made to implement commitments of a Confirmatory Order dated March 14, 1983.
84-08 (Resident)	135	Routine inspection including refueling/maintenance activities, chemical decontamination of reactor recirculation system, non-destructive examination of Class I and service sensitive Class II per SECY-83-267C and NUREG-0313, inter-granular stress corrosion cracking (IGSCC) repair with weld overlay, installation of safeguards electrical bus undervoltage (UV) equipment, and radiation protection during outage.
84-09 (Specialist)	6	Emergency diesel generator maintenance.
84-10 (Specialist)	5.5	Quality Assurance for design, installation and operation of PASS.
84-11 (Resident)	186	Routine inspection including refueling/maintenance activities, inservice inspections, reactor vessel inspections, inspection of containment vent header piping, IGSCC repair with weld overlay, and radiation protection during outage.
84-12 (Specialist)	40	Repair of IGSCC detected in reactor piping.
84-13 (Specialist)	26	Radiation protection during a refueling/maintenance outage.
84-14 (Specialist)	15	Station security program and implementation.
84-15 (Specialist)	19	Fire protection/prevention program.
84-16 (Specialist)	6	Emergency diesel generator maintenance.
84-17 (Licensing Examiner)	None	Administration of NRC licensed operator examinations.
84-18 (Specialist-Resident)	56	Containment local and integrated leak rate testing.

Report Number Inspector(s)	Inspection Hours	Areas Inspected
84-19 (Resident)	155	Routine inspection including refueling/maintenance activities, the primary containment integrated leak rate test, safeguards electrical bus testing, the integrated safeguards system actuation testing, the feedwater coolant injection sub-system test, the reactor vessel and recirculation hydrostatic test and reactor startup testing, and maintenance.
84-20 (Resident-Specialist)	145	Routine inspection including licensee response to operational incidents, excessive containment unidentified leakage, containment isolation valve motor failure, and the review of the licensee's analysis of containment penetration anchor loads.
84-21 (Resident)	90	Routine inspection including licensee response to single control rod scrams and a review of the mechanical snubber surveillance program.
84-22 (Licensing Examiner)	16	Administration of NRC licensed operator examinations and review of requalification training program.
84-23 (Specialist-Resident)	179	Emergency preparedness exercise.
84-24 (Specialist)	26.5	Radiation protection program.
84-25 (Specialist)	56	Special inspection of NRC Generic Letter 83-28 for equipment classification and vendor interface.
84-26 (Resident)	46.5	Routine inspection including containment isolation function of PASS lines, Emergency Gas Turbine Generator (EGTG) operability after finding an air-start system failure.
84-27 (Resident)	117	Routine inspection including EGTG operability following transmission line transients, and verification of commitments concerning flooding, off-normal operating procedures, locked containment isolation valves, surveillance testing, Reactor Protective System power supply isolation devices, degraded grid voltage procedures, and EGTG improvements.
85-01 (Specialist)	32.5	Quality Assurance Audits, Surveillance and Monitors.

Report Number Inspector(s)	Inspection Hours	Areas Inspected
85-02 (Resident)	113	Routine inspection including nuclear instrumentation calibration, compliance with 10 CFR 50.54 for a senior licensed operator in the Control Room, a reactor recirculation system flow anomaly resulting in a reduction in reactor jet pump efficiency, and loss of power at Emergency Operations Facility.
85-03 (State of South Carolina)	None	Radioactive waste shipment deficiencies.

TABLE 6

LER SYNOPSIS (9/1/83 - 2/28/85)

MILLSTONE NUCLEAR STATION, UNIT 1

LER No.	Summary Description
83-26	Emergency Gas Turbine Generator shutdown because of a defective speed switch cable.
83-27	Setpoint drift, isolation condenser initiation time delay relay.
83-28	Offgas radiation monitor failure.
83-29	Setpoint drift, high drywell pressure switch.
83-30	Inoperable containment isolation valve 1-MS-6.
83-31	APRM Channel failed to trip when placed in an inoperable condition.
83-32	Excessive drywell leakage due to recirculation pump seal failure.
83-33	Standby Gas Treatment Subsystem B degraded by inoperable heater due to a defective relay.
83-34	Reserve Station Service Transformer Inoperable to correct oil leak.
83-35	Reserve Station Service Transformer Inoperable due to salt on insulator.
*ETS83-04	Ag-110m and Co-60 in oysters, within 500 feet of discharge, in levels greater than the control station by a factor of ten.
*ETS83-05	Co-60 in aquatic flora, within 500 feet of discharge, in levels greater than the control station by a factor of ten.
*ETS83-06	Co-60 in oysters, within 500 feet of discharge, in levels greater than the control station by a factor of ten.
*SEC83-05	Security-related computer failure, loss of alarm surveillance.
*SEC83-06	Security-related computer failure, loss of alarm surveillance.
*84-01	Security-related multiplexer failure, loss of alarm surveillance.
*84-02	Security-related computer failure, loss of alarm surveillance.
*84-03	Ag-110m in oysters, within 500 feet of discharge, in levels greater than the control station by a factor of ten.

*Asterisked lines are common to Units 1 and 2.

LER No.	Summary Description
*84-04	Potential unmonitored access to security area.
*84-05	Local leak rate testing of containment isolation valves identified 10 needing corrective actions.
84-06	Electronic noise causing nuclear instrument RPS trip during a refueling outage, reactor had been in cold shut down.
*84-07	Co-60 in aquatic flora, within 500 feet of discharge, in levels greater than the control station by a factor of ten.
84-08	Rejection of 23 piping welds after discovery of intergranular stress corrosion cracking during inservice inspection.
84-09	Failure of 10 of a total of 94 hydraulic snubbers during functional testing. Seven were found out of adjustment, two with worn seals, and one with an incorrectly installed poppet valve.
*84-10	Security-related computer failure, loss of alarm surveillance.
84-11	Failure of condenser bay area fire detection, low thermal supervisory air pressure.
84-12	Failure of four out of six safety-relief valves to open within one percent of specified set point.
*84-13	Security-related multiplexer failure, partial loss of alarm surveillance.
*84-14	Security-related multiplexer switch failure, loss of alarm surveillance.
84-15	Failure of containment isolation valve motor-operator, isolation condenser out of standby service.
*84-16	Security-related computer failure, intermittent loss of alarm surveillance.
84-17	Excessive primary containment leakage, valve packing failed.
84-18	Failure of containment isolation valve motor-operator, isolation condenser out of service.
*84-19	Security guard not performing duties.
*84-20	Security-related multiplexer failure, partial loss of alarm surveillance.

*Asterisked lines are common to Units 1 and 2.

LER No.	Summary Description
84-21	Failure to maintain primary containment integrity during surveillance testing of post accident sampling system during reactor power operation. However, remote manual isolation valves had no automatic containment isolation function.
*85-01	Security-related, failed door switch.
*85-02	Security-related computer failure, intermittent loss of alarm surveillance.

*Asterisked lines are common to Units 1 and 2.

ENCLOSURE 4

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT 50-336/85-99

NORTHEAST NUCLEAR ENERGY COMPANY

MILLSTONE NUCLEAR STATION UNIT 2

(870 MWe PRESSURIZED WATER REACTOR, COMBUSTION ENGINEERING DESIGN)

ASSESSMENT PERIOD: SEPTEMBER 1, 1983 - FEBRUARY 28, 1985

BOARD MEETING DATE, MAY 6, 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 information periodically and evaluate licensee performance. SALP supplements the normal regulatory processes used to ensure compliance with NRC regulations. It is intended to be sufficiently diagnostic to support allocation of NRC resources and to be meaningful to licensee efforts to improve plant safety.

An NRC SALP Board met on May 6, 1985 to assess licensee performance in accordance with NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." A summary of the guidance and evaluation criteria is provided in Section II of this report.

This report assesses licensee performance at Millstone Unit 2, a Combustion Engineering designed Pressurized Water Reactor, for the 18-month period from September 1, 1983 through February 28, 1985.

B. SALP Board Members

R. Starostecki, Director, Division Reactor Projects (DRP), SALP Board Chairman
W. Kane, Deputy Director, DRP
R. Bellamy, Chief, Emergency Preparedness and Radiological Protection Branch, Division of Radiation Safety and Safeguards (DRSS)
J. Durr, Chief, Engineering Programs Branch, Division of Reactor Safety (DRS)
E. Wenzinger, Chief, Project Branch 3, DRP
E. McCabe, Chief, Projects Section 3B, DRP
L. Rubenstein, Assistant Director, Core and Plant Systems, Division of Systems Integration, Office of Nuclear Reactor Regulation (NRR)
D. Osborne, Licensing Project Manager, ORB 5, NRR
J. Shedlosky, Senior Resident Inspector, Millstone Units 1 and 2

Other Attendees

D. Lipinski, Resident Inspector
J. Shea, Licensing Project Manager, NRR
R. Summers, Project Engineer, Projects Section 3B, DRP

C. Background

1. Licensee Activities

This Combustion Engineering designed Pressurized Water Reactor was in an extended refueling/maintenance outage at the beginning of the assessment period. That outage, which began on May 28, 1983, was

extended significantly after it was found that the reactor vessel thermal shield had cracked at the points at which it was attached to the core support barrel. The thermal shield was removed. The outage ended when the turbine was placed on line on January 15, 1984.

A forced outage occurred, after a month of operation, when testing identified multiple resistance temperature detector channels with excessive sensor response times. Following repairs, the plant operated at full power for 271 days until a scram was caused by main steam isolation valve closure due to a valve actuator failure on November 15. There was a shutdown on November 28 to protect the turbine after a feedwater heater tube rupture. Then, the plant operated at full power from December 1 until the end of core full power life on January 24, 1985. The reactor was shut down for a fourteen week refueling/maintenance outage on February 16.

Extensive inspections and maintenance of the steam generators were scheduled for the outage. The licensee committed significant resources to remove sludge from the steam generator secondary. The sludge has been considered responsible for pitting degradation of steam generator tubes.

The reactor availability and capacity factors for 1983 were 34.2 percent and 32.4 percent, respectively; and 93.5 and 87.6 percent in 1984. However, excluding the 1983 and 1985 refueling outages, these factors were 99.3 and 93.6 percent, respectively, for the eighteen month assessment period. (These factors were computed by the resident inspectors using data from the licensee's monthly operation report.)

2. Inspection Activities

One NRC resident inspector was assigned to Millstone Units 1 and 2 for the entire appraisal period. A second resident inspector was on site for eight months of the eighteen month period.

Total NRC inspection hours (both resident and region-based) expended on Unit 2 were 2158. This is equivalent to 1439 inspection hours per year.

NRC Emergency Preparedness Inspection Teams observed full scale emergency exercises on October 5, 1983 and October 12, 1984.

There were no investigations conducted during the assessment period.

Tabulations of Violations and Inspection Activities are appended to this report.

II. CRITERIA AND RATINGS

Licensee performance is assessed in prescribed functional areas significant to nuclear safety and the environment. One or more of the following criteria is used to assess each area.

1. Management involvement 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

These criteria are not limiting; others are used where appropriate.

Based upon the SALP Board assessment, each functional area evaluated is classified into one of three performance categories. These 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 safety 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 safety is being achieved.

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

The SALP Board also trended licensee performance over the SALP assessment period by comparing the overall performance for the last fourth of the assessment period to the overall performance for the entire SALP period. The trend is identified as "Improving," "Consistent" (essentially unchanged), or "Declining."

III. SUMMARY OF RESULTS

A. Overall Facility Evaluation

* Overall, licensee performance was good during this SALP period. Plant operator performance was considered highly professional. There are two unplanned trips during the 18-month SALP period, but overall effective operator and operations support performance and coordination was shown by a 271 day continuous run at power in 1984. Licensee event report review showed a typical ratio of personnel-related to facility-related events and a relatively low (and decreasing) ratio of management-related to facility-related events. Onsite safety review committee performance was assessed as thorough and effective overall. QA auditing and monitoring of operational activities were found to be good and well received by facility management. Instances of deficient licensee self-appraisal were, however, evident.

* The radiation protection and housekeeping programs were effectively applied to major activities. Good housekeeping has resulted in the primary containment being accessible without protective clothing. Major activities involving high radiation fields (ex: steam generator work) were carefully planned and controlled. But there were multiple lapses in worker adherence to routine radiation requirements and repetitive problems with low level radwaste shipments to South Carolina. These lapses indicate a need to upgrade first level supervision of such activities as well as to improve worker compliance with radiation protection controls.

* In some cases, the licensee has not provided timely responses to the NRC. One such case involved shelf-life control for perishables and environmental controls for welding electrodes. Another involved untimely responses in the Licensing area. Untimeliness was not noted, however, in the more significant issues.

* In summary, licensee performance has been strong in plant operations and control of major activities. Significant lapses were noted in radiation protection. Responses to the NRC need to be more timely. There is a need for more effective licensee self-appraisal.

B. Overall Evaluation of Training

* As shown by the operational performance of the plant, the training program has been effective overall. Licensee training initiatives have been noteworthy, including upgrading through training staff expansion in size and authority. A training department screening process has been implemented to correct a problem at Unit 1 with operator performance on initial NRC licensing examinations. An onsite plant specific simulator project is in process. Requalification training has been satisfactory and is expected to improve when the simulator is placed in operation. Training of non-operators was good, with Instrument and Controls department training noted to be particularly effective.

*Asterisked lines are common to Units 1 and 2.

C. Facility Performance

Functional Area	Category Last Period (9/1/82-8/31/83)	Category This Period (9/1/83-2/28/85)	Recent Trend
1. Plant Operations	2	1	Consistent
2. Radiological Controls	1	2	Consistent
3. Maintenance	1	1	Consistent
4. Surveillance	1	1	Consistent
5. Fire Protection/Housekeeping	1	1	Consistent
6. Emergency Preparedness	2	1	Consistent
7. Security & Safeguards	1	1	Consistent
8. Refueling & Outage Management	1	1	Improving
9. Licensing Activities	2	1	Consistent

IV. PERFORMANCE ANALYSIS

A. Plant Operations (748 hrs., 35%)

1. Analysis

Operations, which includes engineering support, design changes and modifications, and management effectiveness received resident inspection and the attention of twenty-one region based inspectors. During the preceding SALP period, a rating of Category 2 was assigned. Performance during that period was marred by several operational errors and unplanned releases of radioactive material.

During this SALP period, two unplanned reactor scrams from power occurred. Operator attentiveness has minimized unexpected transients and avoided a challenge to safeguards equipment operation on several occasions. The best examples were events involving the steam generator feedwater system. All occurred from full power. In each case corrective actions stopped the transient and dampened steam generator level oscillations. On June 5, 1984, the inadvertent trip of a high pressure heater drain pump was detected and corrective actions taken before the steam generator level transient caused a reactor trip. (Forty percent of total feedwater flow is from the heater drain system.) In a second event, a reduction in feedwater heating resulted from the failure of an extraction steam valve positioner on November 5, 1984. Although no control room annunciator alarmed, operators minimized the reactivity addition. On January 13, 1985 operators recognized the failure of a steam generator feedwater regulating valve automatic control while at full power and maintained manual valve control through the end of the operating cycle. Such action contributed to safely accomplishing a 271 day turbine-generator on line period ending in November 1984. In a later example, operators manually scrammed the reactor on November 28, 1984 to protect the turbine from damage due to water intrusion when the rupture of feedwater heater tubes flooded the heater.

Overall, control room performance was evaluated as highly professional and effective. Other than normal security measures, control room access was not restricted. Documents sent to the control room were not specifically pre-screened to avert undue burdening of the operators. But business with the control room was required to be conducted through one of the two senior licensed operators on duty, and specific permission was required for non-operators to enter the marked-off areas near the control panels. Pre-evolution briefings of operators were evaluated as thorough, appropriate, and well-presented. Procedures and drawings were readily available. There was strong management emphasis on procedure adherence. Despite a lack of formal status boards, shift turnover controls and degraded equipment lists were found to be adequate in that the operators were found to be knowledgeable of equipment and activity status. The

*Asterisked lines are common to Units 1 and 2.

"mimic" control panel layout provided was considered to be an effective operator aid and was updated as changes occurred. Watchstander demeanor was considered professional. A change was initiated to reposition the operators' desks and seating to provide a better view of the control panels. There was a notable absence of extraneous material.

During this assessment period, there were no unplanned releases of radioactive material and no personnel errors of an operational nature resulted in a reportable event. This is in contrast with three 1983 refueling outage events in which personnel errors contributed to part or all of the cause. Past problems have been evaluated internally through reviews conducted by Operations Department supervision and externally through a program supported by reviews by station and INPO personnel. The licensee evaluates the human interface in every operational problem to determine the root cause and appropriate corrective actions. Occurrences of superior performance are also examined in search of procedural, hardware or training improvements. Evaluations are reviewed by station management.

Of the reportable events during the 1983 refueling outage, two involved errors with instrumentation and one involved transporting a heavy load over irradiated fuel. The instrumentation problems were improper safety injection tank level and degraded thermal margin/low pressure reactor trip functions in two reactor protection system (RPS) channels. The safety injection tank level problem was caused by the introduction of water into level instrument reference columns incident to modification to those instruments. The degraded RPS trip functions were caused by reversed nuclear instrument cables between upper and lower power range detectors. Contributing to the error in reversing the instrument cables were inadequate system drawings and procedures resulting from modifications made during the initial plant start-up in 1975 and during 1981. In both cases, control room operators observed and acted promptly on early indications of an abnormal situation.

* The onsite Plant Operations Review Committee (PORC) has been observed to examine issues in a deliberate manner which established a reasonably high confidence that issues important to safety have been evaluated. The resident inspectors attended 13 PORC meetings without prior notification and found that the members maintained high standards. This was apparent in meetings held after the November 15, 1984 reactor trip to evaluate any potential safety problems. The series of PORC meetings conducted to review both the steam generator secondary chemical cleaning process and the reconstitution of irradiated fuel assemblies to remove leaking fuel rods patiently examined each process and attempted to thoroughly develop any latent safety issue. The committee did not hesitate to generate

*Asterisked lines are common to Units 1 and 2.

* commitments which required resolution or to return packages for additional work. The resident inspectors concluded that PORC review quality is uninfluenced by the schedule for an activity.

The licensee is revising piping and instrument drawings. Drawing standards have been developed by the corporate organization. Individual drawings are being completely revised following full verification of components by engineering and operations personnel. The program involves significant input from operations to select a format for each drawing in order to provide the best use to those people. The drawings are to be produced by corporate computer-aided design equipment. These initial drawings are the beginning of what is expected to be a larger program.

* Inspectors reviewing licensed operator training and requalification have observed an ongoing evolution. Training Department responsibilities expanded from simply instructing personnel to authority for pre-examination screening. An effective requalification training program is administered in a six week classroom series and one week of contractor simulator training. Region I licensing examiners participated in the requalification program, providing a section of the examination and conducting in-plant walk-throughs. The inspectors observed that the program has developed into a more meaningful exercise which requires licensed operators to maintain their level of plant knowledge. Annual examination quality has been improving. Operators failing a section of the examination receive a performance evaluation by the training department, which reports directly to corporate management, and may be removed from licensed duties. Training department staffing, which includes individuals with senior operators' licenses, is expanding to meet the requirements of simulator training. The simulator is under construction and expected to be in use in 1985. There is good communication between the training supervisor and the NRC licensing examiners. There is good cooperation between the operating and training staffs, and the actions in progress should improve the already sound program.

The ratio of personnel-related events to facility-related events has increased from 0.21 during the last SALP cycle to 0.28. (The "typical" PWR of NUREG/CR 2378 is 0.26.) This ratio reflected personnel errors associated with transporting loads over irradiated fuel, improper safety injection tank level indication, and missing surveillance tests. The ratio of management-related events to facility-related events decreased from 0.24 in the last SALP cycle to 0.19. This compared favorably to the "typical" PWR ratio of 0.29.

* LERs, both those submitted prior to January 1, 1984 and under the new requirements in force since then, were timely and complete. When additional information later developed concerning reported events, updated LERs have been submitted.

*Asterisked lines are common to Units 1 and 2.

* Region-based inspectors reviewed QA audit schedules and plans,
* documentation of 11 QA audits, 3 semi-annual QA review reports to
* management, the QA monitor schedule, and 6 QA monitor reports. The
* resident inspector observed one monitoring evolution and reviewed
* the documentation of another. QA audits are done by the corporate
* staff and generally have a broad scope. The audit staff is small
* and aggressive, with good communication with senior management and
* the PORC. QA audit schedules and results are reviewed by the PORC.
* The monitor program is conducted by the onsite QA staff. It pro-
* vides site managers with a separate view of the performance of
* personnel and evolutions. Corrective actions on audit and monitor
* findings generally are implemented promptly. The licensee is re-
* viewing the monitor program to identify ways to enhance its utility.
* Overall, the audit and monitor programs are considered to be posi-
* tive contributors to quality and safety.

Control of vendor supplied services and equipment was reviewed. The licensee was found to be implementing the essential elements of Regulatory Guides 1.33 and 1.38 in an affirmative manner for conventional services and components. Weaknesses were discovered in the Quality Control of computer codes for safety analyses. Specifically, procedures did not address measures to notify code users of code changes, corrections to codes in which errors are identified, and re-analysis of studies done with superseded codes. Communications between the licensee and NRC Vendor Programs Branch inspectors affirmed the licensee's commitment to improve. One deficiency, however, warrants further emphasis. The licensee's official list of "Qualified Users" of the RETRAN code included persons who had never run that code. Many aspects of reactor plant quality are affected by activities by persons whose qualifications are certified by the licensee without NRC licensing. The deficient certification of individuals to conduct pressurized water reactor safety analyses using a sophisticated computer code (RETRAN) is a significant flaw in management involvement in the assurance of quality at a fundamental level.

2. Conclusion

Rating: Category 1

Recent Trend: Consistent.

3. Board Recommendations

Licensee: Upgrade controls over computer codes, and particularly of associated qualification certifications.

NRC: None.

*Asterisked lines are common to Units 1 and 2.

B. Radiological Controls (271 hrs., 12%)

1. Analysis

* The licensee's performance for this period is degraded from the performance noted in the previous assessment. While no violations were noted in the last assessment, five violations were identified in the current period. This is of particular note since the radiation protection program was subject to reduced inspection effort due to previously observed good performance.

* The licensee's radiation protection program continues to be defined by generally good policies and procedures. Resident and specialist inspector reviews of this area generally indicated consistent good performance in the area of contamination control, personnel monitoring, radiological surveillance and job control, instrumentation reliability and effluent control. However, during this period, both residents and specialist inspectors observed increased deficiencies involving procedure establishment, implementation and maintenance. For example, on two separate occasions, the licensee performed tasks that were beyond the work that was authorized and allowed by job specific radiation work permits. Though these occurrences were identified to the licensee, corrective measures were not effective enough to prevent recurrence a short time later.

* Other procedural deficiencies noted during this period included the implementation of a change to the liquid waste discharge procedure without administrative and technical review, and failure to adhere to the containment requirements of a special procedure used for fuel reconstitution. Additionally, on one occasion, the licensee failed to implement procedures to prevent recurrence of conditions that resulted in an inadvertent sustained intake of airborne radioactive materials by a worker. For this event, corrective action was not initiated until the item was identified by an inspector 30 days later. Several other procedural problems noted this period reinforced the perception that violations are repetitive and indicative of minor programmatic breakdown, particularly in view of the licensee's previously observed ability to adequately establish, implement and maintain procedures.

* During this assessment period, a special post implementation review of the licensee's efforts involving the post-accident sampling and monitoring requirements of NUREG-0737 was performed. The review identified several deficiencies including the improper installation of a portion of the reactor coolant sample acquisition pipe for Unit 1. That would have prevented sample collection for certain modes of operation. This finding was in nonconformance with an associated Confirmatory Order previously issued to the licensee, and indicated that the licensee did not subject the implementation of post-accident modifications to thorough or technically sound review and test.

*Asterisked lines are common to Units 1 and 2.

* (This case was indicative of generic deficiencies in the licensee's
* programs for plant modifications and engineering design changes.)
* In response, licensee management initiated an ambitious program to
* revise and upgrade design control practices. Review of the licen-
* see's corrective measures in this area, so far, indicate an under-
* standing of the technical issues as exemplified by technically
* sound, thorough approaches and corrective actions.

* While reviews by both resident and specialist inspectors generally
* indicate acceptable performance relative to the transportation of
* radioactive materials, the State of South Carolina identified ten
* discrepant shipments received at the burial facility in Barnwell,
* South Carolina. The latest of these, identified March 11, 1985
* (outside this current assessment period) caused the State to suspend
* the licensee's state radioactive waste transport permit for one year
* and assess a $5,000 civil penalty. Previously, the state assessed
* a $3,000 civil penalty for a discrepant shipment received in Decem-
* ber 1984, and formally notified the licensee of a discrepant ship-
* ment received in October 1984. Other deficiencies for the period
* between September 1983 and August 1984 were orally conveyed to the
* licensee by the State. This indicates that the licensee has not
* been effectively implementing this portion of the program or effect-
* ing sufficient corrective action. Since multiple and repetitive
* violations were identified, programmatic breakdown is evident.

* Radioactive waste management was not reviewed this period. Effluent
* control and radiochemistry review indicated that the licensee was
* effectively implementing the program in accordance with regulatory
* requirements.

* To reduce solid radioactive waste generation, the licensee estab-
* lished a corporate performance goal for 1984 of ten percent less
* than the three year 1981 through 1983 average. A sixteen percent
* reduction was attained. The 1985 goal is for a ten percent reduc-
* tion from the 1982 through 1984 average.

* The licensee has implemented a formal ALARA program designed to
* analyze specific tasks and effect dose reduction methods as well
* as to monitor task performance relative to performance goals. Records
* of the effort are generally complete, well maintained and available.
* Reviews of this area indicate that the program is generally effec-
* tive but does not always achieve established goals. The effective-
* ness of the program has recently been enhanced by a corporate policy
* which makes ALARA goals the specific responsibility of individual
* managers.

* Overall, the licensee's performance during major projects involving
* high levels of radioactivity demonstrated thorough planning and pre-
* paration, good procedure development, and the establishment of ac-
* ceptable radiological controls. This was evident for the Unit-2

*Asterisked lines are common to Units 1 and 2.

Thermal Shield Project and the Unit-1 IHSI/Weld Overlay, Extraction Steam Line Replacement, and TIP Overhaul. Adequate management review and oversight is usually evident as demonstrated by sufficient awareness of daily activities, the establishment of generally effective inter-departmental communications and cooperation, and the effective use of planning meetings and schedules to reduce personnel exposure.

Steam generator work involving high radiation fields is discussed in the Refueling and Outage Maintenance functional area.

An adequate staff is available to carry-out the program, and the personnel involved are qualified and capable of performing satisfactorily in their assigned areas of responsibility. A formalized training program for the radiation protection staff continued to be implemented and provided sufficient technical and practical instructions to assure competence in the organization. The licensee also implements a generally effective radiation worker training program in an effort to assure that radiation workers are aware of radiological safety procedures and are able to implement them competently.

Additionally, the licensee has successfully completed corrective actions on several previously identified findings, and has successfully resolved open items in a timely manner.

2. Conclusion

Rating: Category 2.

Recent Trend: Consistent.

3. Board Recommendations

Licensee: Continue recent emphasis on improving radioactive material transportation controls. Assure better adherence to radiation protection procedures by workers.

NRC: Implement full inspection program for all elements of radiation protection, emphasizing radioactive material transportation and radioactive waste processing.

*Asterisked lines are common to Units 1 and 2.

C. Maintenance (339 hrs., 16%)

1. Analysis

* Maintenance received the close attention of both resident and region-based inspectors during the assessment period. During the previous two SALP periods, ratings of Category 1 were assigned. No areas of general weakness were noted during those periods. The present SALP period included a refueling and maintenance outage extending from the beginning of the period into January 1984.

* During mid-1984, the overall maintenance program received a comprehensive review using a standard NRC Region I audit plan. Job Orders, Maintenance Requests, Licensee Event Reports, Plant Incident Reports, Monthly Operating Reports, and Daily Activities Log were audited. No reportable events or equipment failures were disclosed which had not been documented as Licensee Event Reports or which were missing from the Monthly Operating Reports. Records showed no repetitive maintenance activities beyond routine activities such as valve packing adjustment, lubrication, and cleaning for nine key systems. The accuracy and completeness of maintenance documentation and the close and consistent involvement of supervisors in day-to-day maintenance were noted as particular strengths.

* Another aspect of the NRC programmatic assessment involved maintenance personnel. Interviews with maintenance technicians, supervisors, and Quality Assurance inspectors showed that all had a working knowledge of skills necessary to conduct and document maintenance evolutions. The involvement of foremen and supervisors in field work was found to be consistent and extensive. The maintenance staff is a mix of experienced personnel present since construction, other experienced personnel from aircraft and shipbuilding industries, and newer personnel. A degreed staff engineer is also assigned directly to the maintenance department. The quality of the staff and supervision of the maintenance department was found to be a notable programmatic strength.

* A second programmatic inspection was conducted during November 1984 by region-based inspectors. The inspection was directed toward post-maintenance and post-modification testing. Inspectors reviewed 24 safety-related work packages from the Maintenance Department and 7 packages from the Instrumentation and Controls Department to verify correct classification and appropriate post-maintenance testing. The program was found to include written procedures, criteria, and responsibilities for post-maintenance testing. The inspection concluded that an acceptable program is in place and is being implemented.

*Asterisked lines are common to Units 1 and 2.

The licensee has a major program to extend the life of the steam generators (SGs). There has been extensive inspection of SG tubes for pitting defects and potential denting. Chemical cleaning and high pressure water lancing are being used to remove metallic sludge from the secondary of the SGs. To arrest tube pitting, tighter SG secondary water specifications are being established. Also, the licensee is replacing copper bearing alloys in the feedwater system. Resident inspection of this major SG maintenance has identified strong management controls and careful worker adherence to procedures.

The licensee demonstrated a sensitivity to incipient component degradation and to possible generic issues through an aggressive program to improve charging pump performance. Millstone 2 uses 3 positive displacement pumps as charging pumps and as high head safety injection pumps. After approximately 5000 hours of operation, the licensee observed an increase in the pump packing leakage and an increase in the frequency of pump repacking. Consultation with other owners indicated that this was typical. Non-destructive examination of the pump blocks revealed hairline cracks in the pump bores, apparently induced in-service. Destructive evaluation by an outside laboratory did not disclose major internal flaws in the blocks. Although the phenomenon causes increased packing leakage and wear, it does not render the pumps incapable of delivering the high head injection flow rates shown to be needed by safety analysis. The licensee reported the generic aspects of his findings per 10 CFR 21. This issue has received the scrutiny of regional metallurgy specialists and the resident inspectors. The licensee continues the initiative to extend pump performance via an engineering department research program.

* The licensee implemented a corporate-wide maintenance management
* system during the present SALP period. Maintenance is still per-
* formed to departmental procedures. However, the authorization and
* control documents which have been replaced by a central computer-
* ized system, the Production Maintenance Management System (PMMS).
* The system is used to schedule preventive and corrective maintenance.
* It retains the machinery history type of information which had pre-
* viously been recorded in departmental records. Since each equipment
* is being identified within the centralized and automated system,
* machinery history will be available throughout the corporation.
* Preventive maintenance may be reviewed based on equipment history
* and revised or re-scheduled based on performance data. The system's
* data base records material and man-power usage and is used for re-
* source management. Maintenance and surveillance may then be pri-
* oritized and scheduled.

*Asterisked lines are common to Units 1 and 2.

* The resident inspectors observed portions of 26 maintenance evolu-
* tions for procedural compliance, safety, work practices, and documentation. Additionally, a region-based inspector conducted a detailed review of maintenance pertaining to the Reactor Protective System (RPS) scram breakers. No breakdowns in program implementation were observed.

* Procurement practices and storage were examined by a team of region-
* based inspectors. Two areas of weakness were noted: shelf-life
* criteria for perishable items and control of the storage environment
* for low hydrogen stainless steel and nickel welding electrodes.
* Insufficient management involvement is apparent in both cases.
* Concerns regarding shelf-life controls previously arose during an
* inspection in mid-1982. A followup inspection late in 1983 found
* only informal controls. Although the licensee fulfilled his com-
* mitment to establish a more formal program for shelf-life determin-
* ation and control, an audit in late 1984 found little evidence of
* actual program implementation. Specifically, shelf-life data had
* not been requested from vendors and shelf-life had not been evalu-
* ated during QA acceptance inspection. Additionally, the audit
* sample included solenoid valves with shelf-life limitations due to
* certain internal construction materials. Although the valves had
* been the subject of both a vendor service letter and an NRC Bulletin,
* the valve shelf-life had not been included in the licensee's program.
* Concerns related to the storage of low-hydrogen welding electrodes
* arose during an inspection in mid-1983. These electrodes are stored
* in ovens at elevated temperature to limit moisture absorption.
* Responsibility for calibration of the oven temperature monitors had
* not been established. The inclusion of these monitors in a regular
* calibration program remained outstanding through the end of the
* inspection period. The temperature monitors were apparently over-
* looked in calibration program revisions and reviews. Together,
* these items reflect a lack of sufficent attention to the details
* of program implementation.

The equipment classification program and post-maintenance testing programs were reviewed. An extensive review of safety-related systems purchase orders, and Plant Design Change Requests (PDCRs) resulted in the conclusion that an adequate program to maintain system integrity is in place. The existing Materials, Equipment, Parts List (MEPL) is being monitored as part of the computer-based Production Maintenance Management System (PMMS). A sample of 31 work orders classified as safety-related and 10 work orders classified as non-safety-related were reviewed to evaluate proper classification as well as proper specification and completion of post-maintenance testing. The program and its implementation were found to be well executed and well supported by plant management.

*Asterisked lines are common to Units 1 and 2.

2. Conclusion

* Rating: Category 1.

* Recent Trend: Consistent.

3. Board Recommendation

* Licensee: Improve shelf-life program and storage program for welding electrodes.

* NRC: None.

*Asterisked lines are common to Units 1 and 2.

D. Surveillance (298 hrs., 14%)

1. Analysis

Surveillance received the attention of the resident inspectors and region-based specialists. During the preceding two appraisal periods, ratings of Category 1 were applied. No continuing problems or deficiencies have been observed. The resident inspectors observed a total of 56 surveillance tests.

* A master Surveillance Control List correlates surveillances to license requirements and receives PORC oversight. Individual departmental controls are effectively used to schedule and track completion of surveillances. NRC audit of 12 Unit 1 and 20 Unit 2 technical specifications confirmed timely completion. The plant design change request system requires a positive statement of the need for associated changes to operating procedures, surveillance procedures, and technical specifications. The Engineering Department must make that assessment, and PORC must review it. NRC audit of 4 Unit 1 and 7 Unit 2 technical specification amendments verified that surveillance procedures were updated when technical specifications were changed. (A Unit 2 exception to this was found involving failure to update ex-core power range nuclear instruments after a 1975 design change.) Site QA monitors surveillance testing. NRC witnessed one QA "monitor" of surveillance on Unit 1 and reviewed 4 surveillance "monitor" reports by QA. The reports were found to be critical and to reference INPO guidelines. Such reports are forwarded to the unit superintendent for action and to the corporate QA manager for trending.

A review of the In-Service Inspection (ISI) program and the factors involved in a request for relief from the ASME Boiler and Pressure Vessel Code Section XI requirement for volumetric examination of reactor coolant pump casing welds indicate a sound technical approach to ISI problems. Staffing, including the Level III Engineer and inspection personnel, appears be adequate for the tasks at hand. Contractors are used as required for specific tasks and are adequately controlled by the licensee. The ISI program is presently in the last period of the first 10-year inspection interval. Region-based specialist inspectors concluded that the ISI program is of superior quality, indicating effective application of quality assurance principles.

Several innovations have been included in the licensee's programs. An Example is computer-based vibration analysis equipment. This has provided a higher degree of automation with a more portable vibration spectral analysis unit. Also, seismic piping snubbers have been tagged to allow recording inspection data with bar code reading equipment. This provides a positive method of traceability of inspection results to individual snubbers and to the time and

*Asterisked lines are common to Units 1 and 2.

date of inspection. A third example is the use of computer-based ultrasonic data recording and analysis equipment (UDRPS). This is not required by the NRC or the ASME Boiler Presure Vessel Code but has been used as a tool, in addition to conventional ultrasonic testing, to gather significantly more data during non-destructive examinations of welds.

* Detailed technical review of procedures and, where appropriate,
* independent calculation of results of specific aspects of surveil-
* lance disclosed no significant problems. The aspects reviewed include Containment Leak Rate Testing, Chemistry, and Radiation Monitor Calibration.

An example of particularly good performance is the performance of corporate QA audits to provide positive assurance that the In-Service Inspection (ISI) program at Unit 2 is attaining the requirements of Technical Specifications. An example of an area of weakness is the low level of QA oversight over key activities such as Containment Leak Rate Testing and post-refueling Start-Up Testing.

2. Conclusion

* Rating: Category 1.

Recent Trend: Consistent.

3. Board Recommendation

* None.

*Asterisked lines are common to Units 1 and 2.

E. Fire Protection/Housekeeping (42 hrs., 2%)

1. Analysis

* The licensee has submitted an Appendix R exemption request and no
* Appendix R inspection has been conducted yet. Fire protection and
* housekeeping received both resident and region-based inspections.
* These efforts included a detailed programmatic inspection by a fire
* protection specialist. Because of incorporation of fire protection
* and housekeeping checks in daily resident inspector tours, the
* actual inspection effort expended on fire protection and housekeep-
* ing is significantly more than the tabulated total.

Unit 2 is generally graffiti free. The licensee has made steady improvements in plant housekeeping. Management inspections are conducted both during the operating cycle and, with greater frequency, during outages. Strong emphasis is placed on housekeeping during those inspections. Improvements have been made in the auxiliary building during the SALP appraisal period. Several areas within the auxiliary building have been cleaned and painted and sections of the enclosure building have been cleaned. Areas which need to be improved are the enclosure building, equipment access hatch area, the auxiliary building refueling water storage tank pipe chase area, and the safeguards pump rooms.

Along with plant housekeeping, radiological cleaning and housekeeping have held down the number of contaminated areas. The fuel storage area has been recovered after extensive work was performed in the cask washdown pit to prepare the thermal shield sections for shipment. The containment is accessible during a refueling outage. Protective clothing is not required except for the loop areas, the lower (-22 foot elevation) penetration areas and the area adjacent to the refueling cavity. Of these, the penetration areas are candidates for cleaning. Other than these areas, radiation levels are so low and contaminated areas so controlled that the containment may be entered during outages without the need for a Radiation Work Permit (RWP).

* In contrast with the station interior, large yard areas are heavily
* cluttered with spare, excess or staged equipment, including a large
* quantity of material labelled as radioactive. This condition has
* degraded over the appraisal period.

* Indoctrination in matters pertaining to housekeeping and fire pro-
* tection is provided to new employees, and to all employees on an
* annual basis. Formal lesson plans and multi-media instruction
* methods are employed. Training for Fire Brigade members includes
* actual fire-fighting at an off-site training center, formal class-
* room training, and fire drills (including back-shift drills). Both
* resident and specialist inspectors commented favorably on the ef-
* fectiveness of fire protection training.

*Asterisked lines are common to Units 1 and 2.

* The programmatic inspection included detailed review, licensee meas-
* ures to control ignition sources, solid and liquid combustibles,
* transient combustibles, and general housekeeping. These were deemed
* to be adequate. The organization for fire protection was found to
* be adequately staffed.

There was one violation: penetrations through fire barriers were not appropriately sealed.

2. Conclusion

* Rating: Category 1.

Recent Trend: Consistent.

3. Board Recommendation

Licensee: Address the cluttered yard condition. Upgrade housekeeping in areas noted as candidates for improvement. Resolve Appendix R implementation.

* NRC: None.

*Asterisked lines are common to Units 1 and 2.

F. Emergency Preparedness (250 hrs., 11%)

1. Analysis

* The previous SALP evaluation rated licensee performance in this area
* to be Category 2 based principally upon the corrective actions not
* being completed for two significant findings noted during the Emer-
* gency Preparedness Appraisal conducted on January 4-14, 1982. These
* were (1) installation of the High Range Monitoring and Sampling
* Systems for the Unit 1 Stack and the Unit 2 Vent, and (2) estab-
* lishment of an integrated emergency plan training/retraining program
* to ensure that lesson plans are developed and training is accom-
* plished for each functional area of emergency activity (including
* radiation protection during emergencies, emergency repair/corrective
* actions, search and rescue, and radwaste operations).

* During this assessment period an inspection was conducted on Febru-
* ary 21-24, 1984. At that time, it was noted that corrective actions
* were complete on Item (1); however, the "Emergency Preparedness
* Training Program" for Item (2) was only prepared in draft format,
* but contained a revised training lesson plan format and testing
* requirements. The training of the emergency response personnel with
* the new program was scheduled to be completed by June 30, 1984.
* Re-inspection of this area has not yet been completed. However,
* it does not appear that the final documentation of the Emergency
* Preparedness Training Program received adequate management attention
* since the time to correct the item exceeded two years.

* The licensee conducted a full scale emergency exercise on October
* 5, 1983, and another full scale exercise on October 12, 1984. The
* licensee's execution and participation in both of the exercises was
* considered to be satisfactory as evaluated by the NRC inspection
* team. No major discrepancies were noted and the improvement items
* observed in 1983 did not recur during the 1984 exercise. It was
* also noted that the corrective actions described by CAL 84-10 dated
* June 5, 1984, issued after the May 12, 1984 Haddam Neck exercise,
* had been completed prior to the October 12, 1984 Millstone exercise.

* During 1984, a temporary Technical Support Center (TSC) was estab-
* lished within the Millstone EOF as a result of a lack of space in
* the reactor buildings. A new TSC for the Millstone site is being
* constructed as a part of Unit 3 and is scheduled to be available
* for the 1985 emergency exercise.

* The licensee has been responsive to NRC initiatives and acceptable
* responses were generally proposed with the exception of the training
* item noted above.

*Asterisked lines are common to Units 1 and 2.

* The licensee's onsite emergency preparedness staff consists of one
* full time coordinator. At least two contractor personnel have pro-
* vided assistance during the past year. Corporate personnel are
* available as required to support emergency preparedness activities.

2. Conclusion

* Rating: Category 1.

* Recent Trend: Consistent

3. Board Recommendation

* Licensee: Evaluate measures for assuring timely completion of action
* items.

* NRC: None.

*Asterisked lines are common to Units 1 and 2.

G. Security and Safeguards (62 hrs., 3%)

1. Analysis

* During the assessment period, there were two routine physical pro-
* tection inspections by region-based inspectors. Routine resident
* inspections continued throughout the period. Two Level IV violations
* were identified by a region-based inspector and one Level IV viola-
* tion was identified by a resident inspector. The violations were
* administrative in nature! Corrective actions were accomplished im-
* mediately. Similar violations did not recur.

* Management attention to the security program has been evident and
* has focused on insuring security effectiveness at the operating
* units while maintaining separation between the operating units and
* the unit still under construction. The licensee plans to bring all
* three units under one multiple unit site security program in Decem-
* ber 1985. Both site and corporate management personnel are directly
* involved in this project and in planning for the increased security
* staffing necessary to support the expanded program. Other activi-
* ties involved include system and equipment turnovers, integration
* of existing and new systems and monitoring the installation and
* completion of barrier construction and related modifications. The
* smoothness with which these activities are being accomplished is
* indicative of management involvement in the planning, scheduling
* and coordination of the project.

* The licensee was in the process of modifying and submitting an in-
* tegrated Site Security Plan and a Unit 3 Low Enriched Fuel Protec-
* tion Plan to the NRC. These plans were scheduled to be resubmitted
* in April 1985. The two plans were reviewed on site by a region-
* based inspector for overall content and compliance with NRC regula-
* tions and were found to be generally consistent with the spirit and
* intent of the regulations. However, a detailed review of the plans
* by NRC/NMSS remains to be conducted.

* A comprehensive corporate security audit program continues to be
* a strength of this licensee and it demonstrates the licensee's com-
* mitment to a quality security program. Audits are conducted on
* portions of the Security Plan, Safeguards Contingency Plan and
* Training and Qualification Plans throughout the year such that the
* overall audit program is completed by year's end. The in-depth
* scope of the audit program which uses both USNRC Inspection Proce-
* dures and licensee requirements has contributed to reducing inci-
* dents of non-compliance especially during the later portion of this
* assessment period. This performance improvement is particularly
* significant in light of the fact that two major outages occurred
* during this period.

*Asterisked lines are common to Units 1 and 2.

* The licensee obtained a new security force contractor during this
* period. The transition went smoothly and satisfactory performance
* was sustained through the changeover and subsequent period.

* The event reporting system is consistent with NRC requirements.
* The licensee reported a total of thirteen security event reports
* during this period. Ten of these resulted from computer and/or
* multiplexer system failures. A potentially unmonitored access path
* into the protected area was discovered and reported. One event was
* caused by a failed door alarm switch and one involved a security
* officer who was inattentive to his duties. The reports were timely
* and generally complete. Improvement in the quality of the reports
* to include greater details is, however, necessary. For example,
* event report 85-001, pertaining to both Units 1 and 2, stated that
* alarm capability had been lost on a locked security door. The re-
* port failed to describe the type of door (it was not a standard
* personnel door), the area involved, results of a search to identify
* possible tampering, or other material facts needed to determine the
* significance of the event. More recent reports have, however, shown
* improvement in the scope of details discussed.

* Security organization staffing is currently adequate to meet the
* existing security program requirements. Staffing plans and funding
* to meet expanded site needs for inclusion of Unit 3 are already in
* place. Additions to the security force are already being made.
* Both corporate and site security management representatives are
* directly involved in assuring the application of quality training
* and qualification standards for existing and new employees.

* A potential training weakness in Secondary Alarm Station operations
* involving its primary function was identified by an NRC inspector
* early in this period. The licensee immediately initiated remedial
* training to correct the potential deficiency.

2. Conclusion

* Rating: Category 1.

* Recent Trend: Consistent.

3. Board Recommendation

* None.

*Asterisked lines are common to Units 1 and 2.

H. Refueling and Outage Management (148 hrs., 7%)

1. Analysis

This area had been rated Category 1 during the previous SALP period. Improvements were noted during the 1983 refueling outage. That outage increased significantly in length and complexity after discovery of a failed reactor vessel thermal shield. The challenge presented by the thermal shield failure was aggressively met by the licensee's management and staff. Special computer-controlled remote milling equipment was designed and developed for the removal process. That process was complicated by requirements to work underwater for shielding from intense (40,000 R per hour) radiation sources. Since the work was initially started in the refueling cavity, controls were implemented to maintain water quality and to protect the reactor vessel and reactor coolant system from debris. A small amount of debris of this type poses a significant threat to the nuclear fuel.

The installation of steam generator nozzle dams during the 1983 refueling outage had been accompanied by problems which demonstrated poor overall coordination and lack of integrated testing prior to assembly in areas of high (30 R per hour) radiation fields. Significant improvements were made to the entire nozzle dam system and to the installation training conducted for radiation workers. Modifications provided means of testing the seal air inflation systems prior to entry into high radiation areas and greatly simplified the installation process. The radiation workers for the 1985 refueling outage were provided with a high quality installation training program. Training lectures included a video tape demonstration and the use of new steam generator mock-ups which included the tent areas and all obstructions within those areas. These modifications demonstrate that the licensee has examined each detail of the installation process, including problems experienced in 1983, and implemented modifications which greatly improved the system. The effectiveness of these improvements is indicated by the radiation exposure expended in 1985. This was one-fifth of the exposure experienced in 1983. A major factor in the reduction was the assigning of direct responsibility for improvement to a single senior engineer. He was tasked with resolving all 1983 deficiencies and making other improvements considered to be necessary.

The inspector observed a high level of professional conduct and performance by craft personnel assigned to the actual effort of installing the nozzle dams in 1985. It is the inspector's opinion that this occurred because of a professional working relationship that developed during the radiation worker mock-up training program between the workers and station engineering and radiation protection personnel. The workers were walked through each detail of the installation procedure by craft supervision. Those individuals per-

formed to the standards expected when directing a person within a confined area with significant radiation fields. There was excellent coordination of responsibilities between the craft personnel, radiation protection technicians and the project engineers. Steam generator entries had to be limited to from three to five minutes for purposes of exposure control. Personnel performed their tasks within these times, which include entry and exit through a small manway.

* The licensee has committed personnel and financial resources to
* computer based outage planning. The detail provided by these sys-
* tems has proven to be a key ingredient in successful outage planning.
* Schedules for activities are interfaced and analyzed by the computer,
* which provides schedules along a critical path, identification of
* near-critical activities, and schedules for activities in certain
* areas of the plant and by organizations supporting the outage.

As is evident from the planning for and conduct of the current refueling outage, the licensee's performance in this area has shown recent improvement.

2. Conclusion

* Rating: Category 1.

Recent Trend: Improving.

3. Board Recommendation

* None.

*Asterisked lines are common to Units 1 and 2.

I. Licensing

1. Analysis

In general, the licensing functions for Millstone Unit 2 are properly carried out. The licensee exhibits a willingness to be responsive and to improve performance. Better coordination of licensing activities to avoid late responses should be pursued. There were delays in getting responses to some licensing actions.

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 rating period. These actions consisted of amendment requests, exemption requests, responses to generic letters, TMI items, and other actions. (Specific licensing actions are tabulated at the end of this functional area.)

The licensee's management and its staff have demonstrated sound technical understanding of issues involving licensing actions. For the majority of licensing actions, the licensee's submittals are technically sound, thorough, and well referenced. They generally exhibit conservatism when considering safety significance. During the review of the Technical Specification change authorizing the use of the temporary equipment hatch door, the licensee indicated a clear understanding of the associated safety and licensing issues. Care had been taken in the design of the door as well as in the development of administrative controls to govern its use. Similarly, the licensee's request for relief from Volumetric Examination to AMSE Code Section XI on welds of the cast stainless steel reactor coolant pump casing was found to be adequately prepared and stated. The reviewer for the snubber Technical Specification change found the licensee's staff technically competent, responsive, and willing to clarify outstanding snubber issues. In resolving the environmental qualification of electric equipment important to safety, the reviewer stated that the licensee demonstrated a clear understanding of issues and provided technically sound and thorough approaches to the resolution of equipment qualification deficiencies in almost all cases.

The licensee's responsiveness appears to vary widely on different technical issues. For example, questions concerning the technical specification change or snubbers was promptly clarified by the licensee via conference calls and prompt submittals. Likewise, for the review of the containment equipment hatch door, arrangements for the on-site inspection of the door were made promptly by the licensee along with prompt response to the reviewer's questions. However, other licensing actions have not received the same degree of responsiveness. An example would be the delay in getting a response from the licensee on the Pressurizer Level Band. Other is-

sues such as the Control of Heavy Loads took considerable time to close a number of open items. The request for additional information on a number of items such as NUREG-0737 Item II.E.4.7 "Containment Isolation Dependability," NUREG-0737 Item II.F.2.3 "Inadequate Core Cooling Instrumentation," and Degraded Grid Voltage Procedure were late and/or incomplete and required additional submittals. The NRC reviewer's efforts to resolve the control room issues on fire protection required the licensee to make a number of submittals with some requested information not always provided in a timely manner. The licensee does, however, exhibit a willingness to be responsive as evidenced by the number of briefings given to the staff. Examples include briefings on fuel leakage, spent fuel disposition plans and chemical cleaning of steam generators. These briefings have been very thorough and well received by the staff.

During the present rating period the licensee's management demonstrated active participation in licensing activities and kept abreast of all current and anticipated actions. During the review of Item II.B.3.2 of NUREG-0737, "Post Accident Sampling Modification," there was consistent evidence of prior planning and assignment of priorities. However, management control of the "PTS Curve Changes" was not as rigorous. This submittal, although technically sound, was late. In general, the submittals reflect good quality and proper management control to assure quality. However, responses to staff questions need to receive more management control to assure timely submittals.

During the appraisal period the licensee lost at least two licensing staff personnel who were directly involved with Millstone Unit 2. The licensee's current level of staffing appears to be adequate and the caliber of personnel is excellent.

* In summary, licensee performance was good overall, but with recur-
* rent response timeliness problems.

2. Conclusion

* Rating: Category 1.

* Recent Trend: Consistent.

3. Board Recommendation

* Licensee: Improve management of licensing activities to avoid late
* responses. Improve coordination of activities with NRR in regard
* to schedule, prioritization, and project status.

NRC: None.

*Asterisked lines are common to Units 1 and 2.

TABULATION OF LICENSING ACTIVITIES

31 Multi-Plant actions (9 completed). Included in this category are:

-- Control of Heavy Loads (C-10)
-- Technical Specification Surveillance for Hydraulic/Mechanical Snubbers (B-22 and B-17)
-- Environmental Qualificiation of Electrical Equipment Important to Safety (B-60)

32 Plant-Specific actions (20 completed). Included in this category are:

-- Relief from Inservice Inspection Requirements
-- Pressurizer Level Band
-- PTS Curve Changes
-- Cycle 6 Reload
-- SG Tube Sleeving
-- Measurement Uncertainties
-- Outage Equipment Hatch Door
-- Fire Protection (in-progress)

23 TMI (0737) actions (9 completed). Included in this category are:

-- Item II.F.2.3, Inadequate Core Cooling Instrumentation (F-26) (in-progress)
-- Item II.E.4.2, Containment Isolation Dependability (F-19) (in-progress)
-- Item II.B.3.2, Post Accident Sampling Modification (F-12)

V. SUPPORTING DATA AND SUMMARIES

A. Investigations and Allegations Review

There have been no investigations conducted at Millstone Unit 2.

One allegation was made by a former employee of a contractor after leaving the site. That allegation reported general information concerning drug and/or alcohol abuse at Unit 2 and another reactor licensee by employees of an on-site sub-contractor. Individuals who may have been involved were not identified. The NRC inquiry failed to identify any corroborating information. The licensee has a drug and alcohol abuse program in place. That program is suported by the station security personnel and programs.

B. Escalated Enforcement Actions

1. Civil Penalties

None.

2. Orders

An order was issued on December 14, 1983 to confirm the implementation schedule for outstanding items within the TMI Task Action Plan.

An order was issued on June 14, 1984 to confirm the implementation schedule for outstanding items within the TMI Task Action Plan concerning emergency response planning.

3. Confirmatory Action Letters

None.

C. Management Conferences

None.

D. Licensee Event Reports

1. Tabular Listing

Type of Events:

(A)	Personnel Error	7
(B)	Design/Man./Const./Install.	8
(C)	External Cause	1
(D)	Defective Procedure	1
(E)	Component Failure	16
(X)	Other	6
	TOTAL	39

2. Licensee Event Reports Reviewed:

Report Nos. 83-26 to 85-02, including 13 Security and 5 Environmental Reports common to both Units 1 and 2.

3. Causal Analysis

Seven sets of common mode events were identified. The first two are site-related, common to Units 1 and 2:

a. There were eleven reports which involved the failure of station security equipment. The predominant failures involved the security process computers and their communications link multiplexers (Security Reports 83-05 and -06; LER's 84-01, -02, -10, -13, -14, -16, -20 and 85-01,-01).

b. There were five reports which involved the detection of radionuclides in shellfish or aquatic flora gathered within 500 feet of the discharge into Long Island Sound, of which the concentrations exceeded the control station average by greater than a factor of ten (Environmental Reports 83-04, -05, and -06; LERs 84-03, and -07). The licensee has evaluated this as not significant and has submitted a request for a change to the reporting requirement.

c. Personnel error contributed to the cause in five plant-related events (LERs 83-28, 84-03, -07, -08 and 85-01).

d. One report addressed five pipe restraints which became undersized when schedule 40 pipe replaced standard wall pipe (LER 83-31).

e. One report addressed excessive containment leakage through fourteen containment isolation valves (LER 84-05).

4. Licensee Event Report Analysis

An analysis of Licensee Event Reports (LERs) indicates a consistent level of performance. However, because 10CFR 50.73 redefined the requirements for submitting an LER, there was a change to the data base on January 1, 1984.

The ratio of personnel-related events to facility-related events increased from 0.21 in the last SALP cycle to 0.28. The "typical" PWR ratio from NUREG/CR 2378 is 0.26. This ratio reflected personnel errors associated with transporting loads over irradiated fuel, improper safety injection tank level indication and missing surveillance tests.

The ratio of management related events to facility events decreased from 0.24 in the last SALP cycle to 0.19. This compared favorably to the "typical" PWR of NUREG/CR2378 with a ratio 0.29.

TABLE 1

TABULAR LISTING OF LER's BY FUNCTIONAL AREA

MILLSTONE NUCLEAR STATION, UNIT 2

	AREA	NUMBER/CAUSE CODE					TOTAL
A.	Plant Operations	1/A	3/B			1/X	5
B.	Radiological Controls					5/X	5
C.	Maintenance & Modifications	1/A	2/B		1/D	1/E	5
D.	Surveillance	1/A	1/B	1/C		4/E	7
E.	Fire Protection/Housekeeping	1/A	1/B				2
F.	Emergency Preparedness						0
G.	Security & Safeguards	2/A				11/E	13
H.	Refueling & Outage Management	1/A	1/B				2
I.	Licensing Activities						0
						TOTAL	39

Cause Codes

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

TABLE 2

INSPECTION HOURS SUMMARY (9/1/83 - 2/28/85)

MILLSTONE NUCLEAR STATION, UNIT 2

		Hours	% of Time
A.	Plant Operations	748	35
B.	Radiological Controls	271	12
C.	Maintenance	339	16
D.	Surveillance	298	14
E.	Fire Protection/Housekeeping	42	2
F.	Emergency Preparedness	250	11
G.	Security and Safeguards	62	3
H.	Refueling and Outage Management	148	7
I.	Licensing Activities	not considered	
	TOTAL	2158	100

TABLE 3

VIOLATION SUMMARY (9/1/83 - 2/28/85)

MILLSTONE NUCLEAR STATION, UNIT 2

A. Number and Severity Level of Violations

Severity Level I	0
Severity Level II	0
Severity Level III	1
Severity Level IV	6
Severity Level V	2
Deviation	1
TOTAL	10

B. Violation by Functional Area

Functional Area	Severity Level I	II	III	IV	V	DEV
1. Plant Operations					1	
2. Radiological Controls			1		1	
3. Maintenance & Modifications				1		
4. Surveillance				1		
5. Fire Protection & Housekeeping				1		1
6. Emergency Preparedness						
7. Security and Safeguards				3		
8. Refueling and Outage Management						
9. Licensing Activities						
Totals	0	0	1	6	2	1

C. Summary

Inspection Report No.	Inspection Dates	Severity Level	Functional Area	Violation
*83-23	9/26-30/83	IV	7	Failure to control security keys.
*		IV	7	Failure to acknowledge security alarms.
84-02	1/27-27/84 & 2/15/84	IV	3	Failure to control a design change and supply proper procedures and drawings.
84-15	6/11-15/84	IV	4	Failure to perform surveillance of fire detection instruments.
		IV	5	Failure to provide three-hour fire barrier between zones of switchgear rooms.
		Deviation	5	Sleeves not provided for fire protection piping at building internal walls.
84-22	10/24-26/84	V	1	Failure to follow procedures for fuel storage building integrity.
85-03	1/14-2/24/85	V	2	Failure to follow radiation protection procedures.
*		IV	7	Failure to maintain a clear isolation zone.
85-04	28/84	III	2	Failure to control free standing liquid in a solid waste shipment.

*Asterisked lines are common to Units 1 and 2.

TABLE 4

REACTOR TRIP AND OUTAGE SUMMARY (9/1/83 - 2/28/85)

MILLSTONE NUCLEAR STATION, UNIT 2

A. UNPLANNED AUTOMATIC SCRAMS

	DATE	POWER LEVEL	CAUSE
1.	1/11/84	Reactor trip from 15 percent power.	Low steam generator level resulting from a transient in manual control which took place during system alignment.
2.	11/15/84	Reactor trip from 100 percent power.	Thermal margin/low presssure trip resulting from main steam isolation valve (MSIV) closure. MSIV actuator piston seals failed due to aging.

B. FORCED OUTAGES

	DATE	POWER LEVEL	CAUSE
1.	2/13-18/84	Shutdown from 100 percent power.	Reactor Coolant System resistance temperature detector response times greater than allowed.
2.	11/28-29/84	Shutdown from 100 percent power.	Low pressure feedwater heater tube rupture.

TABLE 5

INSPECTION REPORT SUMMARY (9/1/83 - 2/28/85)

MILLSTONE NUCLEAR STATION, UNIT 2

Report Number Inspector(s)	Inspection Hours	Areas Inspected
83-22 (Specialist & Resident)	221	Emergency preparedness exercise.
83-23 (Specialist)	27	Station security program and implementation.
83-24 (Specialist)	22	Special inspection of fuel cladding failures and manufacturing/design errors.
83-25 (Resident)	129	Routine inspection including activities during extended refueling/maintenance outage, removal of reactor core support barrel thermal shield, steam generator tube sleeving and plugging, service water system improvements, fuel assembly and radiation protection.
83-26 (Resident)	65	Routine inspection including activities during extended refueling/maintenance outage, steam generator welded tube plug repairs, milling crack-arresting holes in reactor core support barrel, modifications to the Emergency Safety Features Actuation System (ESFAS), and spurious initiation of ESFAS.
83-27 (Specialist)	14.5	Quality Assurance Program including Category I storage.
83-28 (Specialist)	55	Radioactive effluent control and monitoring.
83-29 (Resident)	55	Routine inspection including reactor refueling and surveillance program implementation.
83-30		CANCELLED
83-31 (Specialist-Resident)	23	Preventive maintenance and surveillance of RPS trip breakers.
84-01 (Specialist-Resident)	160	Routine inspection including containment integrated and local leak rate testing, reactor startup and power ascension testing, partial actuations of ESFAS.

Report Number Inspector(s)	Inspection Hours	Areas Inspected
84-02 (Resident)	15	Special inspection-two RPS channels partially inoperable when nuclear instrumentation detector cables were reversed.
84-03 (Specialist)	16	Special inspection of quality assurance as applied to computer codes used in reactor analysis.
84-04 (Resident)	126	Routine inspection including RPS RTD operability.
84-05 (Specialist)	30	Emergency Preparedness Program.
84-06 (Specialist)	31	Radioactive material packaging and transportion.
84-07 (Resident)	95	Routine inspection including the RCS high point vent modification, liquid effluent radiation monitors.
84-08 (Specialist)	21	Nonradioactive chemistry analysis including quality control of analytical measurements.
84-09 (Specialist)	88	Post-accident monitoring equipment installations made to implement a Confirmatory Order dated March 14, 1983.
84-10 (Resident)	62	Routine inspection including control rod drop, replacement and investigation of a charging pump block and RPS trip breaker preventive maintenance.
84-11 (Specialist)	5.5	Quality Assurance for design, installation and operation of PASS.
84-12 (Resident)	65	Routine inspection including actions taken following a control rod drop and removal of fuel pin end caps for metallographic analysis.
84-13 (Specialist)	6	Radiation protection.
84-14 (Specialist)	15	Station security program and implementation.
84-15 (Specialist)	19	Fire protection/prevention program including administration, equipment maintenance and surveillance and fire brigade training.

Report Number Inspector(s)	Inspection Hours	Areas Inspected
84-16 (Specialist)	8	Repeated cracking of the charging pump blocks.
84-17 (Specialist)	20	Inservice inspection program including licensee requested relief from reactor coolant pump cast stainless weld examinations.
84-18 (Resident)	70	Routine inspection including licensee response to control rod drop incidents and review of previously reported open items.
84-19 (Licensing Examiner)	16	Administration of NRC licensed operator examinations and review of requalification training program.
84-20 (Resident-Specialist)	160	Routine inspection including licensee response to control rod drop incidents and maintenance.
84-21 (Resident)	73	Routine inspection including licensee response to control rod drop incidents, a potential primary to secondary steam generator leak, the reconstitution of irradiated reactor fuel assemblies, and followup on radioactive waste shipment problems.
84-22 (Specialist)	26.5	Radiation protection including fuel reconstitution.
84-23 (Specialist)	56	Special inspection of NRC Generic Letter 83-28 for equipment classification and vendor interface.
84-24 (Resident)	89.5	Routine inspection including licensee response to reactor trip from MSIV closure, manual reactor trip because of flooded feedwater heater, operability of feedwater check valves, fuel reconstitution, and Type 13 radioactive waste shipment (53,600 Ci).
84-25 (Resident)	29	Routine inspection including performance of RPS and safeguards instrument isolation devices.
84-26 (Licensing Examiner)	19	Licensed operator requalification including the administration and grading of one section of the requalification examination, and walk-throughs for 12 licensed operators.
84-27 (Licensing examiner)	None	Administration of NRC licensed operator examinations.

Report Number Inspector(s)	Inspection Hours	Areas Inspected
85-01 (Specialist)	122	Inspection of Bulletins concerning as-built seismic pipe restraint and base plate stress analysis and valve weights used in stress analysis.
85-02 (Specialist)	32.5	Quality Assurance Audits, Surveillance and Monitors.
85-03 (Resident)	65	Routine inspection including preparations for a refueling/maintenance outage, end of cycle power coastdown reactor limitations, error to input parameters of small break Loss Of Coolant Accident analysis, potential unmonitored radioactive release to the sanitary sewer system, compliance with 10 CFR 50.54 for a senior reactor operator in the Control Room, and review of actions taken in response to NRC Bulletin 84-03, Reactor Cavity Seal Failure.
85-04 (State of South Carolina)	None	Radioactive waste shipment deficiencies.

TABLE 6

LER SYNOPSIS (9/1/83 - 2/28/85)

MILLSTONE NUCLEAR STATION, UNIT 2

LER No.	Summary Description
83-26	Mechanical damage to two fuel assembly upper end fitting components.
83-27	Pressurizer safety valve failed to open at the required set point.
83-28	4500 pound load transported over irradiated fuel assemblies.
83-29	Lack of seismic support for tubing associated with containment wide-range pressure instruments.
83-30	Potential seismic degradation to Enclosure Building Filtration System during fuel movement.
83-31	Five pipe restraints became undersized when schedule 40 versus standard wall pipe was installed in portions of the service water system.
83-32	Failure of emergency diesel generator load sequencer.
83-33	Power Operated Relieve Valve Seat leakage due to foreign material.
*ETS83-04	Ag-110m and Co-60 in oysters, gathered within 500 feet of discharge, in levels greater than the control station by a factor of ten.
*ETS83-05	Co-60 in aquatic flora, gathered within 500 feet of discharge, in levels greater than the control station by a factor of ten.
*ETS83-06	Co-60 in oysters, gathered within 500 feet of discharge, in levels greater than the control station by a factor of ten..
*SEC83-05	Security-related computer failure, loss of alarm surveillance.
*SEC83-06	Security-related computer failure, loss of alarm surveillance.
84-01	Two ESAS actuations with the reactor in Mode 2.
84-02	Reactor Scram, low steam generator level.
84-03	Low level in two of four Safety Injection Tanks due to water in dry reference legs.
84-04	Thermal margin/low pressure reactor trip inoperable in two of four RPS channels due to reversed nuclear instrument detector cables.

*Asterisked lines are common to Units 1 and 2.

LER No.	Summary Description
84-05	Local leak rate in excess of specified due to leakage through 14 valves in closed cooling water and containment sump penetrations.
84-06	Reactor Coolant System temperature sensing RTD response time in excess of allowed.
84-07	Missed monthly surveillance of Thermal Margin/Low Pressure trip.
84-08	Fire Protection - NRC audit found missing surveillance of detectors and fiberglass pipe breaching fire barrier between switchgear rooms.
84-09	Improperly rated fire protection door between 480 volt switchgear rooms.
84-10	Failure of spent fuel storage area radiation monitors on three occasions because of defective photomultiplier tubes, in each case three of the four installed monitors were operable.
84-11	Reactor Trip - Thermal margin/low pressure function resulting from a MSIV closure.
84-12	Manual Reactor Trip to protect turbine from damage due to water flooding the extraction steam system following tube ruptures in a feedwater heater.
*84-01	Security-related, multiplexer failure, loss of alarm surveillance.
*84-02	Security-related, computer failure, loss of alarm surveillance.
*84-03	Ag-110m in oysters, gathered within 500 feet of discharge, in levels greater than the control station by a factor of ten.
*84-04	Security-related, discovery of potential unmonitored access into the protected area.
*84-07	Co-60 in aquatic flora, gathered within 500 feet of discharge, in levels greater than the control station by a factor of ten.
*84-10	Security-related, computer failure, loss of alarm surveillance.
*84-13	Security-related, multiplexer failure, partial loss of alarm surveillance.
*84-14	Security-related, multiplexer switch failure, loss of alarm surveillance.
*84-16	Security-related, computer failure, intermittent loss of alarm surveillance.

*Asterisked lines are common to Units 1 and 2.

LER No.	Summary Description
*84-19	Security-related, guard not performing duties.
*84-20	Security-related, multiplexer failure, partial loss of alarm surveillance.
85-01	Error in assumed parameters for small break LOCA analysis.
*85-01	Security-related, failed vital area door switch.
*85-02	Security-related, computer failures, intermittent loss of alarm surveillance.

*Asterisked lines are common to Units 1 and 2.

ENCLOSURE 5

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

Docket Nos. 50-213; 50-245; 50-336 MAY 20 1985

Northeast Nuclear Energy Company
ATTN: Mr. J. F. Opeka
Vice President - Nuclear
Engineering and Operations Group
P. O. Box 270
Hartford, Connecticut 06141-0270

Gentlemen:

Subject: Systematic Assessment of Licensee Performance (SALP)

For the eighteen month period ending February 28, 1985, performace at Haddam Neck, Millstone 1 and Millstone 2 have been assessed by NRC SALP Boards. The associated SALP Board Reports for each facility are enclosed. Comments relative to the performance of each facility have been included by the Board in each report; the overall performance of Northeast Utilities will be addressed after we have had the opportunity to discuss with you the Boards' assessments and pertinent comments identified by you and your managers.

To discuss these SALP Boards findings, a meeting has been scheduled at the Millstone site at 8:00 a.m. on Tuesday, June 4, 1984. At that meeting, please be prepared to discuss your program for self-identification of problems and self-appraisal of activities in addition to any other regulatory matters affecting your performance that you wish to address.

Within 30 days after the SALP meeting, please reply in writing to the SALP Board's findings. That reply should describe your plans to respond to the SALP Board's recommendations. It also may include any comments you have on the SALP Reports or the SALP program. After your reply is received and evaluated, we will supplement the SALP reports (if appropriate), transmit the SALP Reports to you, and place the SALP Reports and your reply letter in the NRC Public Document Rooms.

Your cooperation with us is appreciated.

Sincerely,

Thomas E. Murley
Regional Administrator

Enclosures:
1. Haddam Neck SALP Report 50-213/85-99
2. Millstone Unit 1 SALP Report 50-245/85-99
3. Millstone Unit 2 SALP Report 50-336/85-99
4. Northeast Utilities Letter B11411 dated 3/22/85

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cc w/encls:
E. J. Mroczka, Vice President
W. D. Romberg, Millstone Station Superintendent
R. Graves, Haddam Neck Plant Superintendent
D. O. Nordquist, Manager of Quality Assurance
R. T. Laudenat, Manager, Generation Facilities Licensing
Gerald Garfield, Esquire
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector, Millstone Units 1 and 2
NRC Resident Inspector, Haddam Neck
State of Connecticut

bcc w/encls:
Region I Docket Room (with concurrences)
Senior Operations Officer (w/o encls)
DRP Section Chief
D. Holody, RI
T. Murley, RI
J. Taylor, IE
SALP Board Members

ENCLOSURE 6

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 666-6911

March 22, 1985

Docket Nos. 50-213
50-245
50-336
B11411

Mr. R. W. Starostecki, Director
SALP Board Chairman
Division of Project and Resident Programs
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Mr. Lester Rubenstein, Assistant Director
Core and Plant Systems
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. Warren Minners, Chief
Safety Program Evaluation Branch
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

Haddam Neck Plant,
Millstone Nuclear Power Station Unit Nos. 1 and 2
Systematic Appraisal of Licensee Performance

As you are no doubt aware from previous meetings with us regarding the SALP program, Northeast Utilities (NU) places high priority on achieving excellence in our endeavors. Category I ratings in all areas of activity evaluated by that program would represent one signal that this goal is being realized. Our commitment to strive for Category I ratings originates from NU executive management and is one element of our primary corporate objective of striving for excellence in the maintenance of nuclear safety. Given the scope and depth of SALP reviews, achievement of superior ratings provides an indication that our management controls are functioning properly. Ratings lower than Category I identify potential areas for improvement.

In the past, SALP meetings have occurred subsequent to publication of the initial NRC SALP report. As a result, we believe that the initial reports have at times failed to take into account pertinent information and otherwise could have been strengthened by an exchange between ourselves and the NRC. To minimize the chances of this situation recurring, we are taking this opportunity prior to the

convening of your SALP Board for our three operating nuclear units to offer some of our perspectives on our level of performance during the past months. We believe that doing so may prove useful in your deliberations. We are addressing this document to you in your respective capacities as lead SALP participants (SALP Board Chairman, or NRR Senior Executives) for our facilities.

Generally, we believe that the nine functional areas in which the NRC has chosen to evaluate license performance will provide an overall perspective of our operations. However, an evaluation of these areas exclusively does not, in our opinion, comprise the universe of those factors which should be considered in assessing "licensee performance." Perhaps the most significant factor which we believe should be considered and which is not reflected in the nine functional areas is the extent to which a licensee attempts to further the depth and quality of the exchange with the regulators, both in terms of interacting with the NRC and participating actively in efforts to disseminate needed information to industry. NU has consistently adhered to the view that we are obliged to voice our disagreement with NRC on any issue involving public health and safety when we believe such disagreement is justified. We do so in the interest of further improving the regulatory process and assuring that through discussion and debate, all aspects of a proposed action are understood and considered by both NRC and NU. We sense that on occasion this corporate philosophy may have disturbed certain NRC reviewers. However, we do not believe that this philosophy should be counted against us in your SALP evaluation. On the contrary, we believe it necessary and appropriate for us to vigorously interact with the Staff as necessary to ensure that public health and safety is maintained, particularly given the finite resources at the disposal of both NU and the NRC.

Examples of some of our attempts to further improve the quality of the regulatory process are enumerated in Attachment (1) to this letter. Many of them have their focus on providing the regulators with an opportunity to become more familiar with our plants, procedures and personnel. They are far ranging in scope, involving executive management down through the working level. Our former Chief Executive Officer (CEO) is the current chairman of the board of the Institute of Nuclear Power Operations (INPO). Northeast Utilities executive management is extremely active in numerous industry initiatives, having made several presentations at public meetings before the Commission as well as meeting with individual Commissioners where appropriate. NU management personnel are extremely active in, and in many instances chair, various industry groups which are addressing a broad range of nuclear issues.

Regarding day-to-day activities, our licensing staff attempts to be very responsive to the NRC licensing project managers (LPMs). We attempt to respond to verbal inquiries quickly and accurately, arrange for all necessary meetings and/or conference calls, help the LPMs locate previously docketed material, and provide express mail service for both incoming and outgoing correspondence as circumstances require to ensure that priority issues are given priority treatment. We believe that the recent briefings conducted by the new NRR Division of Licensing Director support the above perspective.

Another element of our corporate efforts to achieve excellence which may not be reflected in the nine functional categories NRC evaluates as part of SALP is the extent to which actions are implemented following a SALP evaluation in order to improve a licensee's level of performance. Examples of these activities which have occurred since the most recent SALP report for our operating nuclear facilities are provided in Attachment (2) to this submittal. Again, it is not all inclusive, but is illustrative of our commitment to strive for excellence.

We note that this letter focuses exclusively on those activities which we believe are relevant to the SALP process and which, based upon our knowledge of the process, may not otherwise be fully considered. The fact that many other pertinent issues and documents are not discussed herein is not to suggest they are less important.

We are aware that the NRC has developed procedures for the conduct of the SALP process and has acquired considerable experience over the last several years in performing SALP evaluations. In the spirit of further improving the process, we urge you to consider the areas of activity discussed above, as supplemented by the Attachments to this document. Further, we invite you to ask any questions which may arise during the conduct of the SALP evaluation for our facilities in the interest of eliminating points of confusion and enhancing the overall quality and depth of the SALP evaluation process.

Feel free to contact us if any questions arise on this matter.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

W. G. Counsil
Senior Vice President

cc: T. E. Murley
W. J. Dircks
V. Stello, Jr.
H. R. Denton
D. G. Eisenhut
H. L. Thompson, Jr.
D. M. Crutchfield
G. C. Lainas
J. A. Zwolinski
J. R. Miller

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Attachment 1

Haddam Neck Plant

Millstone Nuclear Power Station, Unit Nos. 1 and 2

Inputs to SALP Evaluation Process

March, 1985

The following items provide a summary description of various meetings, letters, or other transactions which we believe are relevant to the conduct of the SALP process for our facilities. In the interest of brevity, only a summary of each of the pertinent elements is provided below. Further elaboration can be provided if desired by the NRC.

- Early in 1984, the NRC published its Policy and Planning Guidance as NUREG-0885. By letter dated February 2, 1984, we provided unsolicited comments on this document. This submittal subsequently lead to a number of meetings with the EDO's Staff regarding possible improvements in subsequent direction to the NRC Staff.

- On March 23, 1984, we provided a letter to V. Stello Jr. regarding the proposed Senior Manager Rule. We understand that senior staff management believed that this document presented a worthwhile perspective different from that proposed by the Senior Manager Rule and as such, was forwarded to the Commission for their consideration. In November of 1984, the Commission disapproved the proposed rule.

- In recognition of the importance to safety of reducing unscheduled plant trips, we have adopted corporate goals and initiatives to reduce unplanned trips and their subsequent challenges to safety systems. This program was discussed in summary fashion during a meeting with the CRGR in July of 1984.

- The issue of environmental qualification is one for which it has proven to be difficult to achieve closure. Given the long standing nature of the issue and the turnover of both NRC staff and contractor personnel, we have periodically provided to the staff a chronological listing of all documents exchanged between us and the NRC for each of our nuclear units. We have done so in the interest of facilitating the process by which the Staff can trace the basis for closure of any individual aspect of the environmental qualification issue.

- At the request of a senior staff manager, a letter was sent to H. R. Denton on July 15, 1984 regarding the involvement of the Nuclear Utility Task Action Committee (NUTAC) and its attempts to achieve resolution of the SPDS issue.

- At the request of H. R. Denton, we entertained a visit in June of 1984 by the Environmental Programs Branch of the NRC to allow them to obtain additional information regarding the quality of their work.

- During the 1984 refueling outage at Millstone Unit No. 1, we entertained a visit by NRC contractors from EG&G to allow them to collect information on the decontamination process utilized as part of remedial action associated with the IGSCC issue.

- In August of 1984, representatives from Brookhaven National Labs, under contract with NRC, visited us to obtain information on implementation of our ALARA programs.

- In October of 1983, we entertained personnel from the NRC and Battelle Pacific Northwest Laboratories regarding their interest in biofouling in raw water systems.

- The issue of the flooding at the Haddam Neck Plant as a result of a Quabbin Reservoir dam failure consumed considerable resources within NU. Numerous meetings were held involving the State of Connecticut, FEMA, National Weather Service, and other organizations. NU personnel coordinated several visits on the part of the Staff to ensure that all of their questions were answered satisfactorily.

- Several days before the completion of the 1984 refueling outage for Millstone Unit No. 1, the staff telephoned us to request that we immediately provide a report of our IGSCC program and results of all inspections. Their original intention was to write an SER prior to startup. While we did not accept the verbal staff position that an SER was necessary prior to startup, all requested information was gathered and submitted promptly by letter dated June 15, 1984.

- As part of the resolution of the hydrogen recombiner issue for inerted BWR's, the NRC issued Generic Letter 84-09. As a result of questions and inquiries from the BWR community regarding the applicability of previous Northeast Utilities work on this issue, we hosted a seminar in our corporate offices on June 15, 1984 to review our analyses and answer questions. This was done in the interest of furthering industry-wide resolution of this issue.

- On July 17 and 18 of 1984, we entertained a visit of the majority of the members of the Committee to Review Generic Requirements (CRGR). This visit involved discussions with numerous licensed personnel as well as discussions with numerous levels of NU management. Significant resources were expended in the interest of further improving communications and obtaining a better appreciation of our respective viewpoints.

- Generic Letter 84-15 requested a considerable amount of information regarding diesel generator performance in the interest of resolving generic issue B-56. In addition to this information, we included voluntarily information regarding the performance of the gas turbine at Millstone Unit No. 1.

- On July 31, 1984, W. G. Counsil was one of several industry spokesmen who provided information to the commission on the important-to-safety issue. At this meeting, Mr. Counsil represented the Utility Safety Classification Group. This presentation ultimately led to a visit by four members of the NRC the following week at our Millstone facility to gather information on the treatment of equipment and components not classified as safety related. It is our understanding that this information was utilized in the development of the subsequent draft generic letter regarding the ATWS rule.

- In August of 1984, we entertained a visit on the part of several members of the NRC on the maintenance issue. This visit also consumed significant NU resources and was done in the interest of improving the then draft Staff Maintenance Program Plan.

- In September of 1984, Harold Denton and several other staff members of NRR visited the Haddam Neck site as part of the resolution of a Differing Professional Opinion on the fire protection issue.

- In light of the safety significance of the reactor cavity pool seal issue at the Haddam Neck Plant, NU initiated, and remains in the process of implementing, broad corrective actions. While many of these actions are utility specific, we have attempted to share our view of the safety significance of this issue throughout the industry. In October of 1984 we hosted a seminar in our corporate offices in an attempt to explain the details of the event, its safety significance, and answer any questions. Because of short notice for this meeting, a subsequent seminar was cohosted by Northeast Utilities and INPO on December 13, 1984. We believe this meeting was helpful in heightening industry awareness of the significance of this issue.

  Regarding the Order Modifying License which was issued as a result of this issue in December of 1984, our response was submitted to the NRC some two months earlier than required. This action reflects our resolve to address any potential safety issues swiftly and effectively.

- One of the elements of our corporate strategy regarding steam generators at Millstone Unit No. 2 concerns a chemical cleaning process planned to occur during the 1985 refueling outage. While this process is governed by the provisions of 10 CFR 50.59 and as such no prior staff involvement is required, we voluntarily briefed the staff on December 5, 1984 in considerable detail regarding our planned process and its qualification. No unanswered questions remained at the conclusion of this meeting.

- At the request of the Staff in December of 1984, we agreed to have the Staff conduct a review of our plant specific emergency operating procedures as well as the procedures generation package from which the plant specific procedures are prepared. It is our understanding that this differs from the normal process when only the procedures generation package is reviewed by the Staff.

- As a representative from NUMARC, executive NU management worked with Senior Staff management and the Commission in the last quarter of 1984 and the first quarter of 1985 on the engineering expertise on shift issue. Extensive efforts were devoted towards development of a mutually agreeable and workable policy statement.

- As part of an AIF coordinated effort, NU executive management and other industry executives met with several Commissioners individually in January, 1985 to discuss approaches to resolve several issues of importance to both the Commission and the industry.

- In September of 1984, two NU representatives participated in a Commission briefing on the decommissioning issue. This briefing was intended to facilitate Commission deliberations on a proposed rule on the subject, and familiarize them with the status of utility programs and State PUC activities dealing with decommissioning.

- On January 3, 1985, we were notified of an NRC endorsed activity regarding the National Science Foundation PRA Peer Review Panel. Some two weeks later, NU hosted the first two day meeting of this Panel. The meeting included tours of the Millstone Station and familiarization with PRA applications at NU.

Docket Nos. 50-213
50-245
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Attachment 2

Haddam Neck Plant

Millstone Nuclear Power Station, Unit Nos. 1 and 2

Follow-up to Previous SALP Report Actions

March, 1985

Connecticut Yankee

The NRC Systematic Assessment of Licensee Performance (SALP) report issued in October of 1983 gave the Haddam Neck Plant Category 1 ratings in all areas but one. This one area was surveillance, in which the Staff assigned a Category 2 rating. The Haddam Neck Plant's surveillance plan was broken into component parts and each component individually analyzed. These components and the plant's corrective actions are enumerated below. These component parts cover all deficiencies identified in Part 4.4 of the SALP report for the Haddam Neck Plant.

COMPONENT	COMMENTS/ACTIONS
1) Data Base	All Connecticut Yankee (CY) department heads have updated their portion of the data base for compliance to Technical Specifications. Additionally, the Quality Assurance Department, as required by procedure, has performed a complete data base review. The data base will be maintained on the computer program.
2) Timing Systems	Computerized systems have been expanded to include refueling, cold shutdown and all surveillances with frequencies less than a week. However, timing systems will only schedule any surveillance with frequency greater than a week. The computerized system is the official CY Date Base.
3) Performance	Since most surveillance failings are improper performance, further procedural guidance and training were needed. CYSP-71 has been eliminated, and procedure QA 1.2-11.1 enhanced to pick up any items implemented by CYSP-71 but not covered in QA 1.2-11.1. Guidance on actions to take with incorrect procedures, procedure corrections and compliance with procedures has been added to ACPs. Using ACPs as source documents, CYAPCO has prepared departmental level instructions and provided training on the proper use of procedures.
4) Evaluations and Results	Format for surveillance procedure sign-offs is:

Performed by _____ (Level I)
Approved by _____ (Level II or greater)
Reviewed by _____ (Level II or greater)

The "Approved by" must be Level II qualified as this is the point at which the surveillance is considered complete. The "Reviewed by" requires a Level II or greater, but will normally be a Level III.

The method of recording acceptance criteria on procedures has been upgraded for consistency and clarity and added to ACPs.

QA 1.2-11.2 has been revised to include definitions of approved by and reviewed by. Definition of "performed by" was not required, being obvious.

5) Corrective Action

QA 1.2-11.2 has been revised to provide guidance on acceptance criteria and need for Plant Incident Report (PIR) initiation.

6) Compliance Verification

Each department head responsible for surveillances has provided their superintendent a program for continuing surveillance compliance verification. Quality Assurance audits, NRC audits, etc., are not used as the key evaluation factors for compliance verification, unless major problems are found. Additionally, the I&C Surveillance Feedback Sheet which requests feedback from personnel performing surveillances when a surveillance is improper, incorrect or is difficult to use has been reviewed by each department for implementation as part of their departmental programs.

7) Records

The computerized schedule has been evaluated as a "living schedule" to replace the forwarding schedule.

Review and approval of surveillance procedures prior to a start-up is a departmental responsibility and is monitored, but results indicate no action is needed at this time.

8) Miscellaneous

(1) A surveillance as defined in 10 CFR 50.36(c)(3) will mean only technical specification commitments. Other items

can be on the computerized schedule and proceduralized but will not be a surveillance test. Procedures will be reformatted to meet this definition during the normal biennial procedure review process. Scheduled completion of all procedures is July 31, 1986.

(2) A standard method for acceptance criteria format has been developed.

The NRC Systematic Evaluation of Licensee Performance (SALP) report issued in October of 1983 gave Millstone Unit No. 1 Category 1 ratings in all areas but three. The areas which received a Category 2 rating, the NRC concerns in these areas and NNECO corrective actions are listed below:

1) Plant Operations

Concern:

On July 20-21, 1983 a radioactive liquid discharge was unintentionally made for 24 hours due to failure to secure flush water through an effluent radiation monitor.

Corrective Action:

All operations personnel, in addition to those directly involved with the incident, have been reminded of their responsibilities and the importance of following station procedures. Procedure changes have been made to eliminate unnecessary flushes by specifying the condition for which flushing is required. Procedure changes have also been made to include dual valve verification for terminating the flush of the sample chamber.

Concern:

An incident in March 1983 involved incorrect valve line-ups for sensors in the Reactor Protection System. This problem was previously identified in 1981.

Corrective Action:

Methods were implemented to control safety-related instrument valves to prevent recurrence of incidents of this nature. Personnel involved with the calibration and adjustment of safety-related instruments have been reminded of the importance of proper restoration methods when performing surveillance and maintenance. Surveillance data sheets were revised to include all valve numbers and dual check-off/initial spaces for every valve manipulated during surveillance and calibration.

Concern:

The Emergency Gas Turbine Generator has been allowed to deteriorate to a point that, during the appraisal period, problems have occurred with the gas turbine and its controls and the generator voltage regulator.

Corrective Action:

Instrument folders have been established for the governor control units as well as the drytest/analog troubleshooting instrumentation. Key personnel monitor each gas turbine surveillance start and record selected gas turbine parameters. Maintenance was performed on the voltage

regulator during the recent refueling outage to replace defective parts and clean oxidation from contact surfaces. Installation of a dehumidifier for the voltage regulator cabinet precludes moisture intrusion.

2) Surveillance

Concern:

Surveillance procedures had not been revised to include an independent verification of system restoration.

Corrective Action:

Surveillance procedures were reviewed and modified as necessary to include an independent check for system restoration. Also, surveillance data sheets were revised to include all valve numbers and dual check-off/initial spaces for every valve manipulated during surveillances and calibration.

3) Emergency Preparedness

Concern:

Installation of the High-Range Monitoring and Sampling Systems for the Unit 1 stack and the Unit 2 vent was not completed.

Corrective Action:

Both monitors have been redesigned to allow proper calibration, and are operational and in service at this time.

Concern:

Lesson plans for training of each functional area of the emergency response organization were lacking.

Corrective Action:

The Training Department individual dedicated to emergency plan training has developed lesson plans and is currently conducting training sessions.

The NRC Systematic Evaluation of Licensee Performance (SALP) report issued in October of 1983 gave Millstone Unit No. 2 Category 1 ratings in all areas but three. These three areas received a Category 2 rating. NRC concerns in these areas and corrective actions taken by NNECO are listed below.

Plant Operations

1) Concern:

An aggressive program for improvement was not evident in the on-site safety committee's performance. The licensee, through the safety committee does not effectively task all personnel, organizations and contractors.

Corrective Action:

The PORC review process was studied and changes implemented. Major changes were an expansion of the PDCR review process, prior review of major procedure revisions and new procedures, better definition of the use of subcommittees, and responsibilities review during annual PORC training. Particulars of the expansion of the PDCR process are a more detailed line review of the PDCR before being submitted to PORC, prior to review by PORC members and more detailed presentations for the complex changes. In addition to the review of the PORC process, corporate-wide changes have been instituted to more clearly define safety evaluation requirements and these improvements are being monitored by PORC.

2) Concern:

In two instances important equipment was out of service for an extended period of time before operations personnel identified the condition. The two pieces of equipment involved were the process computer and the radiation monitor recorder.

Corrective Action:

Concerning the failure to identify the unoperability of the process computer, an alarm which would have indicated a computer failure was inoperative at the time of the computer failure. This alarm has been returned to service and will be maintained operable. The replacement computer, scheduled for 1986, has full alarm capabilities for partial or total failures. To prevent a recurrence of this type, control room operators and licensed supervisory personnel have been briefed on the need to frequently monitor computer displays for up-to-date information and how to determine operability status. A logging requirement has been incorporated to ensure verification of computer updating. The licensed operators were reminded of the importance of newly licensed personnel using a questioning approach to off-normal situations and getting more experienced personnel involved in the investigation as soon as the condition is noted.

With respect to the failure of the radiation monitor recorder, the Operations Department Staff have been instructed and reminded to monitor key Control Room instruments for abnormalities and indications of unusual conditions. In order to ensure that activity is properly monitored in accordance with Technical Specifications, the activity levels being discharged through aerated and clean waste systems is displayed on a second redundant recorder which is on panel C04. This is recorded in view of the reactor operator at his normal station and could be used as a back-up if the multi-point recorder were to fail in the future.

3) Concern:

On two occasions the unit was operated at a power level exceeding that permitted by Technical Specifications for the method of monitoring fuel rod linear heat rate then in use. One instance involved the loss of the computer discussed above and the second a failure to adequately review the results of an INCA print out.

Corrective Action:

Refer to item (2) for actions resultant from the March 26, 1983 incident. Concerning the November 4 event, unit engineering procedures were revised to require verification that the INCA values are consistent with the reactor power level and the reactor engineer provided training for his personnel in this process.

4) Concern:

A series of unplanned or unauthorized releases of radioactive materials on September 16, September 24 and December 28, 1982 and January 20, 1983, involved common management and personnel errors, particularly lapses in attention to detail and in first and second line management following evolutions. Included were the discharge of the wrong tank discharge on a continuous vice a batch basis, radiation monitor recorder failure during a discharge and improper valve line-ups. Subsequent performance suggests that corrective actions were applied piecemeal, conducted informally and without decisiveness and resulted in little effect.

Corrective Actions:

The referenced unplanned or unauthorized radioactive releases have resulted in numerous corrective actions; the most significant are listed below.

(a) Procedure changes to ensure the procedures are accurate and easy to understand and use for the plant equipment operators have been implemented.

(b) Instructions to operating personnel have been issued to ensure they understand the importance and significance of the events and necessary corrective actions.

(c) Requirements to have a second radwaste qualified operator verify procedure steps for all radioactive discharges in addition to dual verification of valve line-ups for discharges have been established.

(d) Operations personnel in Unit 2 have been cautioned to critically review all discharges with respect to possible contamination. The sensitivity of any unplanned radioactive discharge, no matter how slight, dictates that stringent controls be used.

(e) Availability of controlled procedures to radwaste operators has been improved.

(f) Hardware changes have been accomplished which more clearly identify valves and controls which must be manipulated for radwaste control.

(g) Lastly, an independent review of all Radioactive Waste Operating Procedures and interface procedures (chemistry) was conducted by a Unit 2 senior reactor operator who had not been responsible for procedural review for radwaste. This review was conducted to ensure usability and compatibility with all other procedures. Changes from this review were reviewed and implemented.

5) Concern:

The quality of services depends greatly on the abilities of the contractor as illustrated by the success of the steam generator sleeving task and the difficulties with the nozzle dam installation.

Corrective Action:

NNECO agrees that the quality of the service is dependent on the quality of the vendor. Therefore, Unit 2 continues to evaluate all projects performed by vendors. This evaluation is utilized during future vendor selections. Concerning the nozzle dam project, modifications performed on the dams and direct NNECO control of the evaluations resolved the problems with the installation. The 1985 effort was accomplished in a timely manner.

6) Concern:

The licensee has not been effective in dealing with the fuel vendor.

Corrective Action:

NUSCO Engineering is in discussion with the fuel vendor to resolve the manufacturing and design problems. Extensive examinations were completed by NNECO, NUSCO and the vendor to identify the failed rods and potential failure mechanisms. A likely mechanism is debris from the thermal shield removal and other primary work. A stringent material inventory control system has been initiated for this refuel to prevent further failures. In addition a full core off-load and fuel sipping is being

accomplished during the 1985 refueling outage to improve fuel performance for the next operating cycle. The above efforts complement the fuel reconstitution effort which was completed last fall and which was presented to the NRC in a meeting in NRC Bethesda offices on October 3, 1984.

8) Concern:

The Safety Committee, PORC, conducts most reviews through subcommittees rather than having all members perform the review. This has resulted in a decrease in committee effectiveness in some of its review work.

Corrective Action:

See Item 1, corrective action.

9) Concern:

A breach of a vital area security boundary was made in the course of a planned facility modification.

Corrective Action:

The breach of the security barrier was a failure of a portion of the PDCR process. A task force on PDCRs has presented recommendations and the recommendations nave been implemented. Among these improvements is a greater consistency during PDCR generation. This and the increased PORC review identified in item 1 will help prevent future deficiencies of all types from occurring during plant design changes.

Emergency Preparedness

See Item 3 for Millstone Unit No. 1.

Licensing Activities

We did not agree with the Category 2 rating in this functional area, for reasons stated in the December 19, 1983 letter to R. W. Starostecki. Accordingly, no significant corrective actions were implemented. It is re-emphasized that the principles and concepts behind our licensing activities for Millstone Unit No. 2 are identical to those applied to the Haddam Neck Plant and Millstone Unit No. 1, which were given a Category 1 rating for this assessment interval.

ENCLOSURE 7

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
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July 5, 1985

Docket No. 50-213
50-245
50-336
A04906

Dr. Thomas E. Murley, Regional Administrator
Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Gentlemen:

Millstone Nuclear Power Station, Unit Nos. 1 and 2
Haddam Neck Plant
Systematic Assessment of Licensee Performance

The Staff recently forwarded the SALP Board Reports(1) for the 18 month period ending February 28, 1985, for Haddam Neck, Millstone 1, and Millstone 2. Subsequent to receipt of SALP Board Reports, a meeting was held on June 4 between members of the Staff and members of Connecticut Yankee Atomic Power Company (CYAPCO), and Northeast Nuclear Energy Company (NNECO).

The purpose of this letter is to respond to and comment on the findings of the SALP Board with particular emphasis on the Board recommendations for the individual evaluation categories. Attachment A to this letter contains the response to each of the Board's recommendations for the Haddam Neck Plant. The responses to the Board's recommendations for Millstone Unit No. 1 and Millstone Unit No. 2 are contained in Attachments B and C, respectively.

Both NNECO and CYAPCO take very seriously the ratings and recommendations given by the Board as one input to evaluating and improving our overall performance. As reflected by our comments and observations during the June 4 meeting, we generally concur with the Board's observations and previously have taken or are taking steps to address the concerns identified. It remains our objective to achieve Category I ratings in all functional areas for subsequent SALP evaluations, and the attachments to this letter describe some of the steps we will be taking to fulfill that objective.

Notwithstanding our general agreement with the SALP evaluation, there is one NRC comment with which we disagree. Specifically, page 27 of the Connecticut Yankee evaluation discusses the Design Change Control/Quality Assurance area. After discussing various facets of the reactor cavity seal failure recovery effort, the NRC states that:

(1) T. E. Murley letter to J. F. Opeka, dated May 20, 1985.

8507160403 28pp.

"No strong licensee effort to prevent recurrence was observed".

We disagree with this statement and request that it be changed in the final SALP report.

Significant management initiatives were undertaken to re-emphasize the importance of quality in design change activities. As discussed in detail in previous correspondence, these intiatives included:

- o A memorandum to all Nuclear Engineering and Operations personnel which stressed the importance of doing it right the first time,
- o A safety ethic training program,
- o A series of management briefings stressing the importance of safety and quality in all nuclear activities,
- o Significant, intensive efforts to remedy the specific deficiencies revealed as a result of the cavity seal failure, and
- o Co-sponsorship of an industry-wide seminar in cooperation with the Institute of Nuclear Power Operations (INPO) to strengthen industry awareness of the issue.

In light of the above and other related efforts, we believe that the previously quoted excerpt from the SALP report should be amended.

We trust that the actions presented in the attachments for addressing the concerns of the Board and our general comments will be considered in subsequent SALP evaluations. We will be updating you regarding the status of implementing the corrective actions discussed herein prior to the next SALP evaluation.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

J. F. Opeka
Senior Vice President

cc: D. M. Crutchfield
G. C. Lainas

Docket No. 50-213

Attachment A

Connecticut Yankee Atomic Power Company

Haddam Neck Plant

Response to SALP Report

July, 1985

Functional Area: PLANT OPERATIONS
Board Recommendations:

(A) Improve the quality and aggressiveness of self appraisal

(B) Continue emphasis on operator requalification

(C) Continue initiatives to improve procedural review

(D) Assess the adequacy and timeliness of PIR/CR disposition

RESPONSE:

(A) The SALP report results have increased management concern for self appraisal and self-identification programs in that an upgrading of the following existing programs is under consideration:

Plant Information Reports
Nonconformance Control Report System
Quality Assurance Monitors
Employee Beneficial Suggestion Program
Radiological Incident Report
Station Housekeeping and Inspection Program

Additionally, the onsite Safety Review Group began conducting a review of "work in progress" starting June, 1985 and the Quality assurance audits will become more performance oriented.

(B) The licensed operator requalification program is being strengthened in 1985 by the addition of a theory upgrade program for operators who received license training prior to 1981. Additionally, a written examination will determine which other operators will be required to take the theory upgrade program. Strengthening of the requalification program is being achieved by the administration of more comprehensive annual examinations (including oral, walk-through, and written sections) and background training on ERG-based qualified third-party examination of the 1985 program and trainee knowledge.

Beginning operation in 1986, the Connecticut Yankee Plant Reference Simulator will become a part of operator requalification training. The 1986 requalification program will be executed on a one-in-six rotation with a combination of upgraded classroom materials and training. These actions, coupled with improvement and expansions of learning objectives, training materials, evaluation methods, and operator feedback is expected to provide the licensed operators with an effective requalification program.

(C) The following existing programs will continue to improve procedural review and adherence:

(1) Use of standard review checklist during procedural review to increase overall quality of procedures.

(2) Continuation of emphasis of strict procedural adherence. A method currently used at the Millstone site involving management review and reissue of appropriate standing memos to remind station personnel of the importance of following procedures and initiating changes to those procedures found to be weak, will be considered for use at Haddam Neck.

(3) Continued preparation of Emergency Procedure Guidelines (EPG's).

(4) Finalization of all applicable annunciator response procedures.

(D) The PIR/CR system has had internal reviews conducted by the on-site Safety Engineering Review Group. The results of the review indicated that further root cause analysis is required for PIR's. As a result of this review, a root cause analysis form is currently in trial use. The form requires a root cause analysis to be completed for each PIR assigned a controlled routing (CR).

It should be noted that during the first two quarters of 1985 the total number of outstanding controlled routings was reduced by approximately 25%. During the same period 748 controlled routings were assigned while 942 were completed. It is anticipated that this positive trend will continue in the coming months.

As additional root causes are identified and corrected the number of PIR/CR's is expected to drop even further which should aid in improving the timeliness of PIR/CR dispositioning. CYAPCO will continue to evaluate the adequacy and timeliness of PIR/CR dispositioning during the next six months.

Functional Area: RADIOLOGICAL CONTROLS
Board Recommendations:

(A) Efforts should be made to strengthen management oversight and intradepartmental communications. An effective system for evaluating and correcting self-identified deficiencies should be developed.

(B) The licensee should expedite efforts to seek a Technical Specification Amendment for PASS containment isolation valves to allow resumption of full system surveillance.

RESPONSE:

(A) Efforts to strengthen management oversight were described previously in Licensee Event Report 50-213/84-020-00. A task force of experienced plant personnel was assembled to evaluate the current method of coordinating work schedules among departments and to improve intradepartmental communications. The efforts are continuing.

As a result of the findings of NRC Inspection 84-30, we modified the Radiation Work Permit (RWP) Discrepancy Report and implemented a Radiological Incident Report for more serious events. The RWP Discrepancy Report, the Radiological Incident Report and the corrective actions associated with both have reduced and almost eliminated RWP discrepancies. No further action is required.

(B) The subject License Amendment request will be submitted to the Staff during July, 1985, and we will continue attempts to expedite amendment issuance.

Functional area: SURVEILLANCE

Board Recommendations:

(A) Continue initiatives to upgrade surveillance procedures.

(B) Improve management control over items like CLRT issues in order to assure that resolution is not unduly delayed.

RESPONSE:

(A) A previously existing initiative to upgrade the surveillance program is expected to be completed in June, 1986.

(B) We have reviewed the overall management control issue regarding Local Leak Rate Testing (LLRT) and Integrated Leak Rate Testing (ILRT) and agree with the findings of the board. It is our intention to strengthen our existing management controls by reshaping our ILRT/LLRT program to be consistent for all of our operating nuclear units. A Nuclear Engineering and Operations Procedure on ILRT, now undergoing internal review, will include specific assignment of responsibilities to ensure timely and accurate responses to NRC questions. This reshaping will be completed prior to the next scheduled ILRT (Connecticut Yankee-first quarter 1986).

Functional Area: FIRE PROTECTION/HOUSEKEEPING

Board Recommendations:

(A) Maintain attention to Fire barriers.

(B) Discuss with NRC the status of findings and corrective actions related to the Appendix R implementation program.

RESPONSE:

(A) CYAPCO will maintain its attention to Fire barriers with the following:

Training on fire barriers has been added to General Employee Training (GET) and maintenance staff training as appropriate. A memorandum concerning fire protection barriers has been sent to station personnel. Maintenance personnel conduct a bimonthly fire door inspection under our preventive maintenance program.

Procedures in place to address fire barriers include:

- o Control of Betterment Construction Work Activities -- requires a prejob walkdown to include locating and inspecting all fire barriers.
- o Control of Fire Doors -- establishes procedures for fire door requirements.
- o Performance of Fire Protection Reviews -- to conduct plant design change request reviews.
- o Installation, Repair and Inspection of Fire Barrier Penetration Seals -- to inspect all fire seals and ensure any barrier penetrated is resealed.

(B) The initial comprehensive submittal of our Appendix R approach was in March, 1982. Subsequent clarification letters and new interpretations issued by the Staff resulted in a complete third party review(2) to validate and update our original submittals and incorporate new NRC interpretations. It is noted that Generic Letter 85-01 strongly suggests that still further NRC guidance, or requirements, can be expected. In early 1985 this third party reanalysis was completed. Subsequent internal review of this re-evaluation has revealed the need for new exemptions and hardware modifications. The documentation associated with this effort is being prepared and is planned to be submitted within the next few months.

(2) See the W. G. Counsil letter to R. H. Vollmer, dated June 18, 1984.

The non-outage related hardware modifications are planned to be completed in accordance with 10CFR50.48 schedules. Some outage related work is expected to be completed by the second quarter of 1986, and schedular relief will be requested for the extensive switchgear room modifications.

Functional area: EMERGENCY PREPAREDNESS

Board Recommendations:

(A) Continue efforts to improve the coordination of emergency response activities.

RESPONSE:

(A) As noted in the SALP report, the March 30, 1985 annual exercise was arranged to re-demonstrate areas where corrective actions were necessary after the NRC findings in the 1984 exercise. These were successfully demonstrated.

In regard to the one violation for failure to train six (6) personnel assigned Emergency Planning duties in 1983, there have been changes made to formalize the commitments contained in the February 16, 1984 letter(3) to the NRC. The six items of concern (recommendations) related to the dose assessment program have been reported on in our letter dated August 8, 1984.(4) All items except one have been resolved. The remaining item, 50-213/84-06-03, systematic computational comparison between licensee dose models and those used by the State, is in progress and is scheduled to be completed by the end of the calendar year 1985.

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(3) W. G. Counsil letter to T. T. Martin, Response to I&E Inspection 50-213/83-28, dated February 16, 1984.

(4) W. G. Counsil letter to T. T. Martin, Response to I&E Inspection 50-213/84-06, dated August 8, 1984.

Functional Area: DESIGN CHANGE CONTROL/QUALITY ASSURANCE

Board Recommendations:

(A) Continue implementation of DCC/QA program improvements and review the effectiveness of the QA/QC surveillance effort.

RESPONSE:

(A) We have reviewed the Design Change Control (DCC) QA issue and agree with the findings. Connecticut Yankee will continue implementation with DCC/QA improvements as noted in the SALP report. Furthermore, NUSCO QA will conduct a review of the coverage and effectiveness of the quality control surveillance activities at Connecticut Yankee. This review will be completed by November, 1985.

Functional Area: LICENSING ACTIVITIES

Board Recommendations:

(A) As indicated in Sections B and D, the licensee should agressively pursue licensing resolution in the areas of 10CFR50 Appendix J compliance and,

(B) operation of the post-accident sample system at power.

RESPONSE:

(A) A comprehensive submittal addressing all unresolved items associated with Appendix J compliance is planned for the fourth quarter of 1985.

(B) As indicated in our response (B) in the Radiological Controls Functional Area, the subject License Amendment request will be submitted to the Staff during July, 1985, and we will continue attempts to expedite amendment issuance.

Docket No. 50-245

Attachment B

Northeast Nuclear Energy Company

Millstone Unit No. 1

Response to SALP Report

July, 1985

Functional Area: PLANT OPERATIONS

Board Recommendation:

(A) Provide a more vigorous self-appraisal function in order to achieve better internal identification of problem areas such as the high failure rate on initial operator qualification.

RESPONSE:

(A) Management evaluations are being conducted during the training process and following final examinations. Trainees not meeting performance criteria during training are evaluated for continued participation. Before candidates are recommended for licensing, management reviews progress examinations conducted during the training program, simulator evaluations, final and written examination results, and performance in training watches.

Functional Area: RADIOLOGICAL CONTROLS

Board Recommendation:

(A) Evaluate specific training for first-level supervisors as a measure for improving adherence to requirements.

(B) Upgrade adherence to routine radiation protection requirements by individual workers.

RESPONSE:

(A) Having evaluated the need for specific training for first level supervisors, NNECO has determined that all station personnel should be instructed/reinstructed in the importance of procedure establishment, implementation and maintenance. This subject material will be included in these training programs:

New Employee Indoctrination (NEI)
General Employee Training (GET)
Radworker Training (RT)

(B) The Station Superintendent has issued a memorandum to all station personnel which stresses the importance of following all radiation protection requirements. NNECO supervisory personnel have also been assigned to observe radiological protection practices within the units and report all observations and findings to the Health Physics Supervisor.

Additionally the Training Department has been requested to re-emphasize, in their NEI/GET/RT classes, the importance of following all radiation protection requirements.

Functional Area: MAINTENANCE

Board Recommendations:

(A) Improve shelf-life program and storage program for welding electrodes.

RESPONSE:

(A) ACP-QA-06 Revision 0, "Procurement and Evaluation of Shelf Life Material", was SORC approved on July 29, 1984. Its purpose is to identify a method of verifying the acceptability for use of applicable degradable items which may have deteriorated while in storage and defines the procedure for procuring shelf life material. As an upgrade to the original ACP, Revision 1 was approved on May 7, 1985. This revision 1) provides originators and reviewers with procedural guidance related to the shelf life of component parts, 2) specifies action to be taken when shelf life information is not received, and 3) adds responsibility of including documentation of the evaluation of degradable items prior to use to the job supervisor. The changes serve to improve the shelf-life monitoring program.

Regarding storage of welding electrodes, the Unit 2 Instrument and Control Department has the responsibility for calibration of the storage oven temperature monitors. The calibration program for these monitors is defined in procedure IC 2419D, Mandated Non-Safety Related Equipment Calibration.

Functional Area: SURVEILLANCE

Board Recommendation:

(A) Upgrade QA of critical surveillance testing such as containment integrated leak rate testing.

RESPONSE:

(A) Millstone Unit No. 1 personnel have recognized the previous shortcomings in performance of integrated leak rate testing. This is largely due to infrequent performance of the test. In order to correct this problem, Unit 1 Engineering Department Instruction 1-ENG-3.01, Primary Containment Integrated Leak Test, was prepared and issued June 3, 1985. This instruction provides detailed information for planning and execution of the ILRT, including training and inter-department involvement. The instruction will be reviewed and revised as necessary prior to the next ILRT.

The QA program/procedures as currently written provide for the NNECO QA/QC Department to perform monitors on surveillance testing. Consistent with this, the QA/QC Department has and will continue to monitor various surveillance testing activities. The QA/QC Department will monitor testing activities deemed critical at the request of the appropriate superintendent.

Functional Area: FIRE PROTECTION/HOUSEKEEPING

Board Recommendation:

(A) Address the cluttered yard condition.

(B) Resolve Appendix R implementation

RESPONSE:

(A) The station is aware of and sensitive to the cluttered yard conditions. This situation was aggravated by our being restricted from one of our radwaste burial sites and our self imposed ban on making radioactive waste shipments. We have resumed shipment of radioactive waste and are making a concerted effort to clean up the backyard. A Radwaste Reduction Facility is currently under construction and should be completed by September of this year. This will provide us with additional indoor storage capabilities.

Additionally, as the Millstone Unit No. 3 construction approaches completion, the congestion in the yard will be greatly relieved as the common site service groups will be able to expand into the Millstone Unit No. 3 yard.

(B) The initial comprehensive submittal of our Appendix R approach was in March, 1982. Subsequent clarification letters and new interpretations issued by the Staff resulted in a completed third party review(5) to validate and update our original submittals and incorporate new NRC interpretations. It is noted that Generic Letter 85-01 strongly suggests that still further NRC guidance or requirements can be expected. Subsequent internal review of this re-evaluation(5) has revealed the need for new exemptions and hardware modifications. The documentation associated with this effort is being prepared and is planned to be submitted within the next few months.

Hardware modifications which are non-outage related are planned to be completed in accordance with 10CFR50.48 schedules. Implementation of the outage related work will be scheduled following receipt of the NRC SER.

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(5) See W. G. Counsil letter to R. H. Vollmer, dated June 18, 1984.

Functional Area: EMERGENCY PREPAREDNESS

Board Recommendation:

(A) Evaluate measures for assuring timely completion of action items.

RESPONSE:

(A) We have more formalized our training program. The NRC's concerns in this area are recognized and are being addressed.

Function Area: REFUELING AND OUTAGE MANAGEMENT

Board Recommendation:

(A) Improve self-assessment to identify items such as failure to follow through on commitments and design modifications.

RESPONSE:

(A) Tracking of commitment items will be improved. This will be accomplished through issuance of a Millstone Unit 1 Superintendent's assignment number for each commitment item. Additionally, commitment items will be noted as such on the assignment log. Tracking of design changes has greatly improved as a result of recent major revision of ACP-QA-3.04, Design Change Control. No further action in tracking of design modifications is considered to be required at this time.

Functional Area: LICENSING

Board Recommendation:

(A) Improve management of licensing activities to avoid late responses.

(B) Improve coordination of activities with NRR in regard to schedule, prioritization, and project status.

RESPONSE:

(A) & (B)

A combination of manpower shortages due to unfilled vacancies in the operating plant licensing group and the work loads on the engineering staff resulted in resource limitations regarding schedular requirements in the area of licensing activities. As of the end of the first quarter of 1985, the operating plant licensing staff was at full strength. Increased telephone contact and meetings with NRC Project Managers, coupled with more global resource management via the ISAP, are expected to improve coordination of activities and timeliness of results.

Docket No. 50-336

Attachment C

Northeast Nuclear Energy Company

Millstone Unit No. 2

Response to SALP Report

July, 1985

Functional Area: PLANT OPERATIONS

Board Recommendations:

(A) Upgrade controls over computer codes, particularly of associated qualification certifications.

RESPONSE:

(A) A significant effort has been underway for over a year to upgrade computer software in use within NUSCO for Category 1 engineering analyses. An overall action plan was prepared and approved in June, 1984 by both the Senior Vice President, Nuclear Engineering and Operations (NEO), and the Vice President, Information Resources Group (IRG). Since that time, three NEO level procedures governing this activity have been prepared and issued. Efforts are continuing in this area.

We disagree with the NRC's characterization that "the deficient certification of individuals to conduct PWR safety analyses using sophisticated computer code (RETRAN) is a significant flaw in management involvement in the assurance of quality at a fundamental level." One of the seven individuals listed as Qualified RETRAN Users had not run the RETRAN code prior to being placed on this list. It was management's judgement that this person's extensive qualifications warranted an exception to our normal requirements for becoming a Qualified RETRAN User and that this action would not compromise the assurance of quality. The individual in question earned a Ph.D. in Nuclear Engineering in 1980 and has significant computer oriented analytical engineering expertise including that with thermal/hydraulic programs comparable to RETRAN. Nevertheless, his name was subsequently removed from the Qualified RETRAN User list.

Function Area: RADIOLOGICAL CONTROLS

Board Recommendations:

(A) Continue recent emphasis on improving radioactive material transportation controls.

(B) Assure better adherence to radiation protection procedures by workers.

RESPONSE:

(A) As a result of the violation that was identified at the Barnwell, South Carolina burial site we have implemented the following actions to correct this problem:

1. Reorganize the Radioactive Materials Handling Department. The Radioactive Materials Handling Supervisor will now report to the Health Physics Supervisor. The Health Physics Supervisor will spend increased time in the Radioactive Materials Handling Area. He will approve all shipments prior to their departure from the site. The Radioactive Materials Handling Group will be divided into three groups: a) Tool Decon Facility, b) Packaging and c) Shipping. It is our opinion that with this organization we will be able to better supervise and control the activities within the Radioactive Materials Handling Group.

2. A specific packaging procedure will be developed for LSA boxes. This procedure will contain the following provisions; a) Health Physics Technicians will monitor the packaging of LSA boxes, b) only material that is less than 160 mr/hr will be placed into these boxes, c) the boxes will be packaged in such a manner as to minimize any movement of the material within the box during shipment and d) fifty-five gallon drums will not be placed into these boxes.

3. Any material that is greater than 160 mr/hr, that is compactible will be placed into a fifty-five gallon drum and compacted. If it is non-compactible, it will be placed into an approved shipping liner and will be sent to the burial site in a shipping cask.

(B) The Station Superintendent has issued a memorandum to all station personnel which stresses the importance of following all radiation protection requirements. NNECO supervisory personnel have also been assigned to observe radiological protection practices within the units and report all observations and findings to the Health Physics Supervisor.

Additionally the Training Department has been requested to re-emphasize, in their New Employee Indoctrination, General Employee Training, and Radiation Training classes, the importance of following all radiation protection requirements.

Functional Area: MAINTENANCE

Board Recommendation:

(A) Improve shelf-life program and storage program for welding electrodes.

RESPONSE:

(A) ACP-QA-06 Revision 0, "Procurement and Evaluation of Shelf Life Material", was SORC approved on July 29, 1984. Its purpose is to identify a method of verifying the acceptability for use of applicable degradable items which may have deteriorated while in storage and defines the procedure for procuring shelf life material. As an upgrade to the original ACP, Revision 1 was approved on May 7, 1985. This revision 1) provide originators and reviewers with procedural guidance related to the shelf life of component parts, 2) specifies action to be taken when shelf life information is not received, and 3) adds responsibility of job supervisor to include documentation of the evaluation of degradable items prior to use. The changes serve to improve the shelf-life monitoring program.

Regarding storage of welding electrodes, the Millstone Unit 2 Instrument and Control Department has the responsibility for calibration of the storage oven temperature monitors. The calibration program for these monitors is defined in procedure IC 2419D, Mandated Non-Safety Related Equipment Calibration.

Functional Area: FIRE PROTECTION/HOUSEKEEPING

Board Recommendations:

A) Address the cluttered yard condition. Upgrade housekeeping in areas noted as candidates for improvement.

B) Resolve Appendix R implementation.

RESPONSE:

A) Improvement in yard housekeeping is addressed in the Millstone Unit 1 response to Fire Protection/Housekeeping recommendations. Additionally, other Millstone Unit 2 areas identified as needing housekeeping improvement are the Enclosure Building, Equipment Access Hatch Area, the Auxiliary Building Refueling Water Storage Tank Pipe Chase Area and the Safeguards Pump rooms. Housekeeping improvement of these areas will be made.

(B) The initial comprehensive submittal of our Appendix R approach was in March, 1982. Subsequent clarification letters and new interpretations issued by the Staff resulted in a completed third party review(6) to validate and update our original submittals and incorporate new NRC interpretations. It is noted that Generic Letter 85-01 strongly suggests that still further NRC guidance or requirements can be expected. Subsequent internal review of this re-evaluation(6) has revealed the need for new exemptions and hardware modifications. The documentation associated with this effort is being prepared and is planned to be submitted within the next few months.

Hardware modifications which are non-outage related are planned to be completed in accordance with 10CFR50.48 schedules. Implementation of the outage related work will be scheduled following receipt of the NRC SER.

(6) See W. G. Counsil letter to R. H. Vollmer, dated June 18, 1984.

Functional Area: EMERGENCY PREPAREDNESS

Board Recommendation:

(A) Evaluate measures for assuring timely completion of action items.

RESPONSE:

(A) We have more formalized our training program. The NRC's concerns in this area are recognized and are being addressed.

Functional Area: LICENSING

Board Recommendation:

(A) Improve management of licensing activities to avoid late responses.

(B) Improve coordination of activities with NRR in regard to schedule, prioritization, and project status.

RESPONSE:

(A&B)

A combination of manpower shortages due to unfilled vacancies in the operating plant licensing group and the work loads on the engineering staff resulted in resource limitations regarding schedular requirements in the area of licensing activities. As of the end of the first quarter of 1985, the operating plant licensing staff was at full strength. Increased telephone contact and meetings with NRC Project Managers, coupled with more global resource management via the ISAP, are expected to improve coordination of activities and timeliness of results.