ENCLOSURE

SALP BOARD REPORT

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT 50-293/87-99

BOSTON EDISON COMPANY

PILGRIM NUCLEAR POWER STATION

ASSESSMENT PERIOD: FEBRUARY 1, 1987 - MAY 15, 1988

BOARD MEETING DATE: JULY 5 and 6, 1988

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1.0 INTRODUCTION

1.1 Purpose and Overview

The Systematic Assessment of Licensee Performance (SALP) is an integrated NRC staff effort to collect observations and data on a periodic basis and to evaluate licensee performance. The SALP process is supplemental to the normal regulatory processes used to ensure compliance to NRC rules and regulations. It is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful guidance to licensee management in order to improve the quality and safety of plant operations.

An NRC SALP Board, composed of the Staff members listed in Section 1.2 below, met on July 5 and 6, 1988 to review the collection of performance observations and data in order to assess the Boston Edison Company's (BECo) performance at the Pilgrim Nuclear Power Station. This assessment was conducted in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance". A summary of the guidance and evaluation criteria is provided in Section 2.0 of this report.

This report is the SALP Board's assessment of the licensee's safety performance at the Pilgrim Nuclear Power Station for the period February 1, 1987 - May 15, 1988 . The summary findings and totals reflect a 15 month assessment period.

1.2 SALP Board Members

Chairman

S. J. Collins, Deputy Director, Division of Reactor Projects (DRP)

Members

W. F. Kane, Director, DRP
J. T. Wiggins, Chief, Reactor Projects Branch 3, DRP
A. R. Blough, Chief, Reactor Projects Section 3B, DRP
J. P. Durr, Chief, Engineering Branch, Division of Reactor Safety (DRS)
G. L. Sjoblom, Acting Director, Division of Radiation Safety and Safeguards (DRSS)
R. R. Bellamy, Chief, Facilities Radiological Safety and Safeguards Branch, DRSS
D. H. Wessman, Director, Project Directorate I-3, Office of Nuclear Reactor Regulation (NRR)
D. G. McDonald, Licensing Project Manager, NRR
C. C. Warren, Senior Resident Inspector, Pilgrim Nuclear Power Station (PNPS), DRP

Other Attendees

J. J. Lyash, Resident Inspector, Pilgrim NPS, DRP
T. K. Kim, Resident Inspector, Pilgrim NPS, DRP
T. F. Dragoun, Senior Radiation Specialist, DRSS
G. C. Smith, Safeguards Specialist, DRSS
R. M. Gallo, Chief, Operations Branch, DRS
A. G. Krasopoulis, Reactor Engineer, DRS
T. Koshy, Reactor Engineer, DRS

1.3 Background

A. Licensee Activities

The plant has been shut down since April 12, 1986 for maintenance and to make program improvements and remained shut down throughout this assessment period. The reactor was defueled on February 13, 1987, to facilitate extensive maintenance and modification of plant equipment. The licensee completed fuel reload on October 14, 1987. The reactor vessel hydrostatic test and the containment integrated leak rate test were also completed successfully.

Since the end of the last SALP period there have continued to be extensive management changes at Boston Edison that affect Pilgrim. The licensee has aggressively recruited experienced personnel from outside sources. A new Senior Vice President assumed responsibility for the nuclear organization at the beginning of the period. The licensee's organizational structure was also significantly altered several times. Recent changes have more clearly defined the permanent onsite organizational structure. Essentially all key management positions had been filled with permanent employees by the close of the period.

The licensee developed several integrated action and testing plans to evaluate the readiness of plant management, staff and hardware to support restart. These include the Restart Plan, Material Condition Improvement Action Plan, Radiological Action Plan and Power Ascension Test Program. In addition, the licensee performed a self assessment near the end of the SALP period to identify plant issues and evaluate the effectiveness of implemented improvement actions.

During the assessment period the licensee completed extensive plant hardware and procedure modifications. The licensee's Safety Enhancement Program included addition of a third emergency diesel generator, containment spray header nozzle changes, installation of a backup nitrogen supply system, and additional protection features for anticipated transient without scram. Steps were also taken toward installation of a direct torus vent system and installation of a diesel driven fire pump tied to the residual heat removal system. License exemptions and modifications to the fire protection program and equipment to bring the plant into full compliance with 10 CFR 50 Appendix R, and to improve reactor level instrumentation were completed. The facility Emergency Operating Procedures were also upgraded to incorporate Revision 4 of the Boiling Water Reactor Owners Group Emergency Procedures Guidelines.

On March 31, 1987, the station experienced a loss of offsite power during a storm when a static line broke and fell onto the conductors at a location several miles from the site. Offsite power was restored within 45 minutes. A second loss of offsite power event occurred on November 12, 1987 due to excessive ice and snow accumulation on the transmission system during a severe winter storm. This event was complicated by a lockout of the plant startup transformer, the removal of one of the emergency diesel generators from service due to maintenance concerns and the limited availability of instrument air. A source of offsite power was reestablished about 21 hours after the initial loss. An NRC Augmented Inspection Team was dispatched to the site in response to this event.

On November 9, 1987, the licensee as a conservative measure halted ongoing maintenance and modification work at the station after determining that several incidents which occurred during the weekend of November 7 and 8, 1987, raised concerns regarding the control of ongoing work activities. The licensee's Senior Vice President-Nuclear directed that ongoing maintenance and modification work onsite be suspended, and contractor craft personnel were instructed to leave the site and were directed not to report for work until November 12, 1987. The licensee subsequently formed eight teams of engineering and management personnel to perform detailed evaluations of each incident prior to resuming station work activities.

On February 11, 1988, the control room received a report of a fire in a contaminated area of the machine shop. The licensee conservatively declared an Unusual Event. The fire was confined to a small area and was identified as burning insulation from a heat-treating machine which was being used in the machine shop. The fire was extinguished by the plant fire brigade with no plant damage noted, and the Unusual Event was secured.

Operator licensing examinations were conducted on two occasions during the period. A total of two senior reactor operators and 14 reactor operator candidates were examined with all candidates successfully completing the examinations.

In December 1986, the Secretary of Public Safety for the Commonwealth of Massachusetts (Charles V. Barry) submitted a report to Governor Dukakis assessing the status of offsite emergency preparedness for the Pilgrim station. The report identified several problems with the existing response program. FEMA performed a self-initiated review of the Pilgrim emergency response plan and on August 5, 1987, provided its report to the Commonwealth. FEMA identified six deficient areas and withdrew its interim finding that Massachusetts offsite emergency planning and preparedness were adequate to protect the public health and safety in the event of an accident at Pilgrim. The NRC requested the licensee to provide its plans and schedule for working with state and local organizations to resolve the deficiencies. The licensee submitted an action plan to address the deficiencies on September 17, 1987. A progress report issued October 15, 1987 by Charles V. Barry notes that, while substantial progress had been made in some areas, adequate plans for response to an accident at Pilgrim did not exist and substantial work remained to be done. At the close of the assessment period, the licensee was actively working with the Commonwealth and local agencies to address the deficiencies and upgrade the emergency plans.

B. Inspection Activities

Confirmatory Action Letter (CAL) 86-10 was issued in April, 1986 in response to a series of operational events. The CAL initially required that the licensee address these events, and was subsequently extended in August, 1986 to include resolution of programmatic and management concerns. In addition the CAL stated that the NRC Regional Administrator's approval would be required prior to restart. The CAL remained in effect throughout this assessment period.

Considerable inspection resources were expended at Pilgrim during this assessment period. The resident staff has been maintained at three inspectors. During the fifteen month assessment period, over 9698 hours of direct NRC inspection were performed (7758 hours on an annual basis). This represents a 43 percent increase above the previous assessment period, and is significantly in excess of that normally allocated to a single unit site. A detailed breakdown of the total inspection hours into SALP functional areas is included in Table 2.

Senior NRC management involvement was substantial during the period. Early in the assessment period, a Pilgrim Restart Assessment Panel was formed which consists of senior management from the NRC Office of Nuclear Reactor Regulation (NRR) and Region I. The panel generally meets biweekly to coordinate the planning and execution of NRC activities, and to assess the results of these activities to provide an independent judgement of the plants readiness for operation. A series of management meetings to discuss the licensee's progress and proposed programs were also held. Frequent site tours by NRC Commissioners, the Director of Nuclear Reactor Regulation and the Regional Administrator were conducted. NRC senior management participated in numerous public meetings and interacted extensively with local, state and federal officials. The NRC conducted public meetings in Plymouth to receive public comments on the plan. The staff's assessment of the comments and concerns received on the Restart Plan was presented to the public during a followup public meeting. A chronological listing of management meetings and tours is included as Table 5.

On July 15, 1986, Massachusetts State Senator William B. Golden and others filed a 10 CFR 2.206 petition regarding Pilgrim. After review by the NRC, the contentions raised in the petition regarding containment deficiencies and inadequacies in the radiological emergency response plan were denied. A decision regarding the management deficiencies was deferred to a subsequent response. This information was transmitted to the petitioners by letter dated August 21, 1987. Three of the petitioners filed an appeal in federal court on October 1, 1987.

On October 15, 1987, Massachusetts Attorney General James M. Shannon filed a 10 CFR 2.206 petition, on behalf of his office and Governor Michael S. Dukakis, requesting an order to show cause why Pilgrim should not remain shutdown until a full adjudicatory hearing resolves the issues raised in the petition. The petition cites evidence of continuing managerial, Mark I containment, and emergency planning deficiencies and requests that the licensee also be required to perform a probabilistic risk assessment (PRA). In a response dated May 27, 1988, the NRC denied the petitioners request that a PRA regarding the Mark I containment be required and deferred decisions regarding emergency planning and management issues.

During the assessment period nine NRC team inspections were conducted:

1. Appendix R Fire Protection Program Review
2. Plant Modification Program Review
3. Plant Effluent and Environmental Monitoring Program Review
4. Augmented Inspection Team (AIT) Review of the loss of off-site power event on November 12, 1987
5. Annual Emergency Plan Exercise Observation
6. Onsite Electrical Distribution Adequacy Review
7. Emergency Operating Procedures Review
8. Maintenance Program Review
9. In-plant Radiological Controls Review

An NRC Order issued in 1984 requiring the licensee to implement a Radiation Improvement Program was closed during the period based on the results of a special inspection and other program inspections which indicated that all terms of the Order had been satisfactorily completed. Two operator licensing examinations were also conducted. An enforcement conference was held on September 9, 1987 to discuss security related matters. Enforcement action on these issues is still pending.

Tabulations of inspection activities and associated enforcement actions are contained in Tables 2 and 3.

2.0 CRITERIA

Licensee performance is assessed in selected functional areas, depending upon whether the facility is in a construction, preoperational, or operating phase. Functional areas normally represent areas significant to nuclear safety and the environment. Some functional areas may not be assessed because of little or no licensee activities, or lack of meaningful observations. Special areas may be added to highlight significant observations.

This report also discusses "Training and Qualification Effectiveness", "Assurance of Quality" and "Engineering and Technical Support" as separate functional areas. Although these topics, in themselves, are assessed in the other functional areas through their use as criteria, the three areas provide a synopsis. For example, assurance of quality effectiveness has been assessed on a day-to-day basis by resident inspectors and is an integral aspect of specialist inspections. Major factors that influence quality, such as involvement of first line supervision, safety committees, quality assurance, and worker attitudes, are discussed in each area.

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

1. Management involvement and control in assuring quality

2. Approach to the resolution of technical issues from a safety standpoint

3. Responsiveness to NRC initiatives

4. Enforcement history

5. Operational events (including response to, analyses of, and corrective actions for)

6. Staffing (including management)

7. Training and Qualification Effectiveness

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

Category 1. Licensee management attention and involvement are readily evident and place emphasis on superior performance of nuclear safety or safeguards activities, with the resulting performance substantially exceeding regulatory requirements. Licensee resources are ample and effectively used so that a high level of plant and personnel performance is being achieved. Reduced NRC attention may be appropriate.

Category 2. Licensee management attention to and involvement in the performance of nuclear safety or safeguards activities are good. The licensee has attained a level of performance above that needed to meet regulatory requirements. Licensee resources are adequate and reasonably allocated so that good plant and personnel performance is being achieved. NRC attention may be maintained at normal levels.

Category 3. Licensee management attention to and involvement in the performance of nuclear safety or safeguards activities are not sufficient. The licensee's performance does not significantly exceed that needed to meet minimal regulatory requirements. Licensee resources appear to be strained or not effectively used. NRC attention should be increased above normal levels.

The SALP Board also assesses a functional area to compare the licensee's performance during the last quarter of the assessment period to that during the entire period in order to determine the recent trend for each functional area. The SALP trend categories are as follows:

Improving: Licensee performance was determined to be improving near the close of the assessment period.

Declining: Licensee performance was determined to be declining near the close of the assessment period and the licensee had not taken meaningful steps to address this pattern.

A trend is assigned only when, in the opinion of the SALP Board, the trend is significant enough to be considered indicative of a likely change in the performance category in the near future. For example, a classification of "Category 2, Improving" indicates the clear potential for "Category 1" performance in the next SALP period.

It should be noted that Category 3 performance, the lowest Category, represents acceptable, although minimally adequate, safety performance. If at any time, the NRC concluded that a licensee was not achieving an adequate level of safety performance, it would then be incumbent upon NRC to promptly take appropriate action in the interest of public health and safety. Such matters would be dealt with independently from, and on a more urgent schedule than, the SALP process.

It should also be noted that the industry continues to be subject to rising performance expectations. For example, NRC expects licensees to actively use industry-wide and plant-specific operating experience to effect performance improvement. Th ., a licensee's safety performance would be expected to show improvement over the years in order to maintain consistent SALP ratings.

3.0 SUMMARY

3.1 Overall Facility Evaluation

The 1985 SALP determined that programmatic and performance weaknesses existed in several functional areas and that improvements were inhibited by the lack of resolution of factors which in turn depended heavily on management attitudes and aggressiveness of followup.

The 1986 SALP acknowledged that, although some improvements were made, the lack of a clear organizational structure, recurring management changes, and chronic staffing vacancies delayed the establishment of a stable licensee management team at the plant and inhibited progress during the period. These problems manifested themselves as Category 3 performance ratings in the Radiological Controls, Surveillance, Fire Protection, Security and Assurance of Quality functional areas.

Throughout this 1987-1988 SALP period the facility was maintained by BECO in an outage condition to make major plant facility modifications and complete a major equipment refurbishment program.

At the beginning of the assessment period the licensee made the most significant of numerous personnel changes when a new Senior Vice President-Nuclear was hired and his presence established on site. Additional personnel and organizational changes continued throughout the assessment period with the most substantial reorganization being completed in February, 1988. Although the organization in its present form did not formally emerge until late in the assessment period, many of the functional reporting chains have been in place for some time and appear to be functioning well. Allocated staffing levels in the new organization are significantly higher than in the past and the licensee has been generally successful in recruiting efforts. As a result of these transitions some individuals are relatively new to their positions and in some cases do not have extensive operating Boiling Water Reactor expertise.

The licensee has been aggressive in addressing most areas of known program weakness. However, implementation of certain program and organizational improvements was delayed due to the high priority placed on proceeding with outage work. Surveillance program responsibilities have been consolidated in the Systems Engineering Group and program weaknesses have been addressed. Hardware issues in both the fire protection and security areas have been corrected and performance in these areas has improved. Health Physics program problems identified in the previous SALP report continued to exist during the first half of this assessment period, however recent significant management attention and resource commitment to this area led to improved performance over the last part of the assessment period. Maintenance program improvements were implemented only

recently and their effectiveness remains under review. Licensee development of the Material Condition Improvement Action Plan, Restart Plan and performance of an extensive self assessment in response to the NRC August 1986 Confirmatory Action letter are evidence of the licensee's ability to self-identify and understand facility performance and material condition. The action plans to implement these necessary improvements and management's ability to effect lasting performance change remained under review at the close of the assessment period.

In summary, licensee efforts have been extensive including corporate and site reorganizations and a new management team which has undertaken numerous projects and programs to improve plant material condition and enhance programmatic performance. Management initiatives have been generally successful in correcting staffing, organization and material deficiencies. Programmatic performance improvements have been evident in areas of previously identified significant weakness and the licensee's self assessment process has identified areas where further management attention is warranted. In light of the past inability to implement lasting programs which result in long term improvements, a continued licensee management commitment is needed to confirm that past weakness have been identified and sustain the overall improving trend in performance.

3.2 Facility Performance

Functional Area	Category Last Period*	Category This Period**	Recent Trend
1. Plant Operations	2	2	
2. Radiological Controls	3	3	Improving
3. Maintenance and Modifications	2	2	
4. Surveillance	3	2	
5. Fire Protection	3	2	
6. Emergency Preparedness	2	2	Improving
7. Security and Safeguards	3	2	
8. Engineering and Technical Support	1	1	
9. Licensing Activities	2	2	
10. Training and Qualification Effectiveness	2	2	
11. Assurance of Quality	3	2	
Outage Management and Modifications Activities	1	***	

* November 1, 1985 to January 31, 1987
** February 1, 1987 to May 15, 1988
*** Not evaluated as a separate functional area; findings relative to outage activities are integrated into "Engineering and Technical Support", "Maintenance and Modifications", and other functional areas as appropriate

4.0 PERFORMANCE ANALYSIS

4.1 Plant Operations (2178 hours/22 percent)

(1) Analysis

This functional area is intended to assess the licensee's performance of plant operations. Throughout this assessment period the plant was in an extended maintenance and refueling outage. NRC observations of licensee performance during major plant activities included reactor core defuel and reload, the reactor vessel hydrostatic test, and the primary containment integrated leak rate test.

During the previous SALP period plant operations was assessed as a Category 2. Weaknesses identified included a shortage of licensed reactor operators and lack of professional support for the Operations Department. Although the licensee had taken actions to recruit new operators and improve the licensed operator training program, the shortage of licensed reactor operators (ROs) remained a significant problem. The effectiveness in professional staff support for the Operations Department was also not demonstrated due to delays in transferring personnel into the department, and their continuing collateral duties outside the department.

During the current assessment period, the licensee's planning and evaluation of their readiness for refueling, the reactor vessel hydrostatic test, and the primary containment integrated leak rate test were well managed. Strong Operations Department involvement was evident. Plant management and the Operations Review Committee (ORC) exhibited a conservative, safety conscious approach to these milestones. ORC review of refueling readiness was conducted in a thorough and deliberate manner including line item verification of the reload checklist. One exception was the licensee's use of Appendix G to the Final Safety Analysis Report to justify conditional operability of equipment needed for refueling. In this case plant management proposed to begin fuel movement with a Standby Gas Treatment System design deficiency uncorrected, by preparing an analysis supporting operability of the system under restricted conditions. Licensee management however, reconsidered this practice when concerns were raised by the NRC. Licensee senior management support for ORC decisions was visible throughout these major activities. Senior management's presence and direct involvement in activities also demonstrated their commitment to safety and expectations of high standards to the plant staff.

The licensee has taken aggressive actions to resolve the shortage of licensed operators. Improvements in recruiting and operator training programs have resulted in a significant increase in the size of the operations staff. The number of licensed reactor operators (ROs) increased by 14 during the period to the present total of 23. This contributed to a reduction in routine operator overtime, which had been a chronic past problem. The addition of new licenses to the operations staff is positive. However, additional operating experience will be required before these newly licensed personnel are fully qualified. The high RO attrition rate was a major factor in the RO shortage during the last assessment period. Increased management attention, reduced overtime, and higher morale have contributed to maintaining a stable operations organization during this period. The licensee currently maintains a staff of 20 equipment operators and eight of the 20 are scheduled to enter a reactor operator license training class later this year. Continued management support in maintaining a sound and aggressive recruiting and training program is required to prevent the recurrence of the operator shortage.

Despite the improvements in the staffing level, weaknesses continued to exist in attention to detail and in communications. Several procedural and personnel errors occurred during the refueling, the reactor vessel hydrostatic test, and the containment integrated leak rate test. Immediate actions taken by the operations staff in response to incidents were not always conservative. For example, operators continued refueling without stopping to assess a pendant light which was inadvertently dropped onto the reactor core. Problems in the operations area that contributed to the licensee's work stoppage on November 9, 1987 included inadequate system turnover, valve lineup problems, and poor radwaste system operation practices. Some weakness in coordination and communications between the operations staff and other groups was noted during the loss of offsite power (LOOP) event on November 11, 1987. The lack of clear management directions both in and out of the control room, a somewhat fragmented recovery effort, and poor communications may have delayed the full recovery from the LOOP and resulted in inadvertent manual shutdown of one of the emergency diesel generators. As a further example, operator communication during a dry run of the remote shutdown test was also informal and not completely effective.

During previous assessments, informality and poor attitude had been identified as a weakness among the control room staff. The discovery by the licensee of non-job related reading material and a card playing machine in the control room in October, 1987 was a further example of the lack of professionalism and implied inattentiveness to duty. As a result of management attention to this issue, positive trends in the control room atmosphere and conduct were noted during the last quarter of the assessment period. The significant increase in the size of the operations staff, strict control of operator overtime, and intensive communication training also aided licensee management's successful effort to improve operator professionalism. As an example, effective use of the simulator for training and implementation of control room hardware improvements have enhanced the control room atmosphere.

Significant effort has been made by the licensee to provide adequate support staff in the Operations Department. The department was reorganized and the Operations Support Group was created to strengthen effectiveness in identifying and resolving technical issues affecting Operations. The Operations Support Group consists of three staff engineers and six shift technical advisor (STA) positions. The licensee has filled the group manager and senior staff engineer positions and is actively recruiting to fill the other staff engineer positions. Three additional STAs were hired and trained during this period which increased the total number of qualified STAs to six. This represents an increase of six in the allocated operations support staff with four of the positions filled. The reorganization allowed the Chief Operating Engineer added opportunity to directly oversee operator performance. Operations staff involvement in developing and implementing the Emergency Operating Procedures was strong. The licensee's ongoing effort to develop a jumper and lifted lead log and a limiting condition of operation log are additional indications of improving staff support in the Operations Department.

The licensee's approach to problem investigation and root cause analysis improved significantly during the latter portion of the period. Event critiques led by the Operations Section Manager and root cause analyses performed by the onsite Systems Engineering Group were thorough and aggressive. The critique process also instilled a leadership role for the Operations Department and promoted better communication among interdepartmental groups.

The operator training program continued to improve during this assessment period. NRC operator license examinations on May 25, 1987 and December 7, 1987 had a 100 percent pass rate. Utilization of the plant specific simulator in requalification training and the new Emergency Operating Procedure training significantly enhanced the effectiveness of the training program. The licensee's effort to develop and implement the new Emergency Operating Procedures demonstrated high levels of senior management attention.

Reportable events were generally handled acceptably by the control room staff. The levels of detail, technical accuracy, and the overall quality of licensee event reports have improved during the period.

Monitoring and maintenance of plant chemistry is the responsibility of the Operations Department. The licensee's chemistry department is responsible for plant chemistry, radiochemistry, and the facility radiological effluents control program. The chemistry organization was clearly defined, adequately staffed, and appeared to interface well with other plant groups including the radwaste organization. Chemistry representatives are included in shiftly turnovers with the control room staff. Importent plant chemistry parameters are discussed with station management daily at a morning planning meeting. Surveillance requirements were clearly established and performed on schedule. The licensee is meeting Technical Specification requirements for radiological effleunt sampling and analysis. Effluent control instrumentation was maintained and calibrations performed in accordance with regulatory requirements. All release records were complete and well maintained. QA audits of this area were comprehensive and technically thorough.

The results comparison of NRC radioactivity standards submitted to the licensee for analyses indicated excellent performance by the licensee with all results in agreement. During the analysis of the NRC radioactivity standards, the licensee's chemistry staff demonstrated a clear understanding of the technical issues. In addition, the licensee was responsive to NRC suggested practices for program improvements. The licensee's chemical measurement capability was also evaluated twice during the assessment period. The results of the NRC chemical standards indicated good performance with only four of 54 measurements in disagreement. The licensee was responsive to NRC suggestions for program improvements in this area and also in the area of post accident sample analyses. Licensee management appears committed to providing adequate capital resources to the

Chemistry Department. The licensee possesses state of the art chemical and radiochemical laboratory instrumentation, and also maintains a state of the art chemistry computer data base for maintaining and trending laboratory data. The licensee's chemistry training program was also reviewed this assessment period. Both the training and retraining programs appear to be adequate as indicated by the results of the NRC standards analyses.

In summary, the licensee's aggressive recruiting and training program has resulted in a significant increase in the size and effectiveness of the Operations Department staff, the staffing improvement, strict control of operator overtime, appropriate management attention, and intensive communications training all have contributed to a recent trend in positive attitude and professional atmosphere in the control room. However, some weakness in attention to detail and procedural compliance were noted and require continued attention. The licensee's approach to problem investigation and root cause analyses has improved, and is generally prompt and positive. Overall performance in this functional area has improved, particularly during the last quarter of the assessment period.

(2) Conclusion

Rating: 2

Trend: None Assigned

4.2 Radiological Controls (1064 hours/12 percent)

(1) Analysis

The radiological controls functional area is an assessment of licensee performance in implementing the occupational radiation safety, chemistry, radiological environmental monitoring and transportation programs. In November 1984, the NRC issued a confirmatory order requiring broad scope improvements in the licensee's Radiological Controls Program. During the previous assessment period this area was rated Category 3. The NRC review found that some improvement had been made in the radiation safety program. However, significant weaknesses were identified which inhibited further performance improvement. These weaknesses included poor communications, antagonistic working relationships, lack of personnel accountability, poor ALARA performance, ineffective corrective actions, and vacancies in key radiological safety supervisory and management positions. As a result of these weaknesses the NRC confirmatory order was not closed out. Weaknesses were also identified in implementation of Radiological Effluent Technical Specification surveillance requirements and the licensee's environmental TLD program. During the previous assessment period, the licensee's transportation program exhibited a decline in performance with three violations being identified.

During the current assessment period there were nine inspections in this area of the occupational radiation safety program. The inspections focused on oversight of outage work, establishment of effective management controls for this area and efforts to close out the NRC Confirmatory Order and associated Radiological Improvement Plan (RIP). In addition, three inspections were performed in the chemistry, transportation, and radwaste systems areas.

Radiation Protection

The weaknesses noted during the previous assessment period persisted through the first half of this assessment period. However, in November, 1987 an inspection found that performance had improved to the point that the November 1984 NRC Confirmatory Order was closed out but, at the same time, acknowledged that additional improvements and continued management attention to these areas were needed. Actions that are planned by the licensee to continue to improve performance such as improved radiological awareness and increased staffing are documented in the licensee's Radiological Action Plan (RAP).

Toward the end of this period, the Radiation Protection program organization and staffing levels, a weakness during most of the assessment, improved. The organization, staffing levels, re-

sponsibilities, accountabilities, and interfaces are now well defined. Station management attention to the areas of communications, accountability, morale and the corrective action process over the last half of the period has improved working relationships and communications between other departments and radiation protection.

The recently revised Radiation Protection organization is approximately 90% filled by permanent personnel. Although the organization and staffing are adequate to support the program, the position of Chief Radiological Engineer (Radiation Protection Manager) was recently restaffed with a contractor, several managers have limited commercial nuclear power experience, and many personnel are new to their positions. Performance of this new organization will continue to be assessed in the future.

A well defined training and qualification program has been established. The program contributes to an adequate understanding of program requirements with few personnel errors. Training resources are adequate. The radiation protection training program is INPO certified. New training initiatives are in progress to sensitize management, workers and radiation protection personnel to assure they are aware of the need to minimize all occupational radiation exposure. Examples include training of management or ALARA for plant design changes and providing radiation awareness training to maintenance and operations personnel.

Licensee audits and assessments of program implementation and adequacy have improved. The audits and assessments, augmented by supervisory and management tours, have been generally adequate in following program implementation and identifying weaknesses, particularly toward the end of the period. Technical specialists are used to augment the QA audit teams. Additional QC surveillance of problem areas (e.g., High Radiation Area key control) has been implemented. However the scope of licensee audits have been principally compliance oriented. There is little external review of program adequacy and performance relative to the industry.

In the area of Internal Exposure Controls, no significant individual exposure of personnel during the period was identified. Also, during the major plant decontamination operation, exposure of workers to airborne radioactive material was well controlled. Approximately 90% of the station is now accessible in street clothes. Licensee quantification of radionuclides contained in the NRC whole body counting phantom was good. The use of sensitive whole body counting equipment combined with a capability to analyze the data reflects an adequate bioassay capability. Although performance in the area of Internal

Exposure Controls has improved, NRC review identified instances where about 1000 individuals had terminated from the site during the period without receiving confirmatory whole body counts. These termination body counts are not required by the NRC but are a normal good practice at most reactor sites and are recommended by Pilgrim site procedures. When brought to the licensee's attention they were unaware of the magnitude of these exceptions to the recommended practice, reflecting some weaknesses in oversight of this area.

During the assessment period three violations occurred which involved improper control of High Radiation Areas. Although no unplanned exposures resulted, when examined individually, these violations clearly reflect one or more of the previous assessment period concerns. In response, the licensee made certain short term corrective actions and established a task force to review the concerns and develop long term corrective actions. The licensee corrective actions for the most recent High Radiation Area access control concerns were appropriate, however, these corrective actions were prescribed by memorandum. The NRC has previously expressed concern regarding implementation of regulatory requirements by memoranda rather than by the use of formal, approved plant procedures. At the end of the assessment period, procedures were not yet revised to include these corrective actions. An additional weakness involved licensee attempts to resolve a concern with exposure reports in that, early in the period, NRC identified that the licensee had not sent a number of termination reports to individuals. The licensee instituted a corrective action program, but this matter is still under NRC review.

During the latter part of the assessment period, control, oversight and coordination of in-plant activities by the radiation protection department had significantly improved. The number of licensee technicians and first line supervisors was increased. Coincident with this staffing increase, licensee management selectively reduced contractor work force, keeping the most competent performers. The augmentation of first line supervisors combined with the elimination of a large number of contract technicians resulted in improved management control and accountability within the department.

In the area of radiation exposure, Pilgrim Station collective worker doses, calculated as 5 year rolling averages, have historically been among the highest in the nation. Some improvement was noted in the previous assessment period after a well documented ALARA program was instituted accompanied by a high visibility exposure goals program. Licensee activities during this period resulted in a collective worker dose (1580 person-rem) which was the highest of all domestic power reactors in

1987. Analysis by station management attributes the exposures to an expanded work scope during the prolonged outage with about 20% due to unplanned rework, poor contamination controls, and poor planning. Also, the large number of workers (about 2000) on site during the outage coupled with the high radiation source terms and poor work habits in the plant contributed to the high annual dose. During the initial part of this assessment period, NRC concerns included lack of understanding of day-to-day work activities due to poor maintenance planning and inaccurate description of work provided to radiation protection personnel which is incorporated into RWPs. Also, RWPs continued to be requested for work that was not performed. Improvements in this area were noted during the latter half of this assessment period.

Management efforts instituted to control exposure included hiring a large contractor staff to implement ALARA on the job, assigning six HP/ALARA coordinators to work groups, and implementation of dose saving techniques recommended by the ALARA Committee. The effectiveness of the six coordinators was particularly evident in the areas of maintenance and operations. For example, the use of glove bags to contain contamination during maintenance has been expanded. Contamination "spill drills" are routinely conducted to prepare operations personnel for dealing with future incidents so that the spread of contamination can be minimized.

NRC review of the selected ALARA goals indicated that they appeared to not be challenging and there was no formal mechanism to incorporate ALARA principles during the design of plant modifications. For example, during the outage the licensee was noted to have rebuilt a number of large valves (e.g., RHR System) without considering the need to reduce stellite, a major source of cobalt. During the latter part of the assessment period, the licensee was attempting to formalize a program to conduct ALARA reviews of plant design modifications during the conceptual design phase. A goal of 600 person-rem was initially planned for 1988 even though most of the outage work ended in February and a lower goal appeared achievable based upon anticipated radiological work. In addition, there was no long range planning evident to reduce the high general area dose rates at the station.

Radiological Environmental Monitoring Program

Midway through this assessment period an inspection of the licensee's radiological environmental monitoring program (REMP) was conducted. The REMP is administered by the corporate Radiological Engineering Group. The licensee's REMP conforms to Technical Specification requirements. The licensee has made plans for improvement of the annual REMP reports, and improve-

ments to the meteorological monitoring program even though the licensee's Technical Specifications contain no requirements in this area. In response to a program weaknesses identified by the NRC during the last assessment period, the licensee has eliminated the environmental thermoluminescent dosimeters TLD system which was in use during the previous assessment period and is now using TLDs supplied by the Yankee Atomic Environmental Laboratory. Planned personnel expansion in this area is indicative of the licensee's commitment to continued improvement of the REMP.

Transportation

One inspection of the licensee's transportation program was conducted midway through this assessment period. Two Severity Level IV violations were identified. Both violations related to shipments made during the previous assessment period. These violations suggested inattention to technical detail and quality control in the preparation of radioactive shipment records. However, during this assessment period the licensee increased quality control involvement in processing, preparation, packaging and shipping of solid radioactive waste. This indicated the licensee's clear understanding of issues relating to causes of the problems and, in addition, the implementation of corrective action. The licensee is meeting all commitments to the NRC with regard to training in this area. The licensee has implemented procedures which clearly define the roles of the departments involved in solid radwaste and transportation. Procedures for processing, preparation, packaging, and shipping solid radwaste were adequate.

Summary

In summary, there was an overall improvement in licensee Radiation Protection Program adequacy and performance, particularly during the last quarter of the assessment period. However management attention is still required to exceed minimum regulatory requirements in the in-plant radiation protection program. Communications and working relationships have improved. Facilities and equipment have been upgraded. Limited success in 1) upgrading the ALARA Program performance, 2) staff qualifications and stability, and 3) aggressive long term corrective actions for High Radiation Area access control were noted.

In contrast, licensee performance in the areas of REMP and transportation reflects substantial improvement. These areas, if rated separately, would receive the highest performance rating category. Previous weaknesses regarding radiological effluent technical specification surveillance and the environmental TLD program have been corrected and plans made for additional program improvements. The station has substantially upgraded quality control activities in the transportation area.

(2) Conclusion

Rating: 3.

Trend: Improving.

(3) Recommendations

Licensee: 1. Continue strong senior management involvement in the in-plant radiation protection program.

2. Strengthen the ALARA program and complete training on program implementation.

NRC: 1. Conduct a management meeting with the licensee to review radiological program status and ALARA program progress.

4.3 Maintenance and Modifications (2347 Hours/24 percent)

(1) Analysis

This functional area is intended to assess the licensee's performance in planning and implementing the station maintenance program, and in implementing and testing plant modifications. The adequacy of modification design is evaluated under the Engineering and Technical Support functional area. This SALP period includes the results of the April 25 - May 5, 1988 NRC Maintenance Team Inspection. It does not include evaluation of the licensee's Restart Readiness Self Assessment, nor does it evaluate the licensee's response to the Maintenance Team Inspection findings.

During the previous SALP period, plant maintenance performance was assessed as a Category 2 . Maintenance staffing was weak due to first line supervisory vacancies and lack of direct professional support, hampering programmatic improvements. The scheduling of "A" priority maintenance was good, however lower priority maintenance scheduling was weak as demonstrated by the large maintenance backlog. This was particularly evident in the areas of fire protection and security, resulting in equipment unavailability. The maintenance planning group was effective in validating maintenance requests (MR), but was only marginally effective in planning daily maintenance activities. Maintenance program procedures were considered weak and contained only minimal information. No administrative guidance for the newly formed planning and procurement groups was in place, hampering their integration into the process.

During the current SALP period maintenance and modification activities were routinely monitored. Also seven special inspections were conducted to evaluate the licensee's maintenance and modification control programs. An Augmented Inspection Team and a special electrical system team inspection also evaluated aspects of maintenance program effectiveness. Near the close of the SALP period a special maintenance team inspection evaluated the licensee's effectiveness in implementing the program.

Licensee efforts to improve facility material condition during this assessment period have been highly evident. Overhauls of major plant equipment such as the Residual Heat Removal pumps, High Pressure Coolant Injection pump, and feedwater pumps were successfully completed. Commitment by senior licensee management to perform these and numerous other equipment overhauls is a positive indication that material improvement has been a licensee priority.

The maintenance section also provided strong support during the November, 1987, extended loss of offsite power recovery effort. The Maintenance Section Manager held meetings to ensure directed and coordinated efforts of the work force and developed plans for an organized approach. Inspector observation of maintenance task performance in the field indicates that workers are adequately trained in that they are generally knowledgeable of assigned activities and their impact on the plant.

Senior licensee management has acted to increase allocated maintenance staffing, however staffing levels remained a weakness during much of the period. The significant burden of outage activity combined with this weakness continued to delay the progress of program enhancements. Early in the period, first line supervisory vacancies resulted in a reduction in oversight of field activities. Qualified licensee personnel did not apply for the positions. The licensee aggressively recruited individuals from outside the organization and filled the vacancies. Three maintenance staff engineer positions were created and filled in an effort to provide maintenance department technical support.

These individuals concentrated largely on completion of outage tasks and therefore were not available to develop longer range maintenance program improvements. Late in the period the Maintenance Section Manager and both the Electrical and Mechanical Division Manager positions became vacant. The licensee filled these three vacancies immediately after the close of the SALP period. Turnover and difficulty in recruitment of in-house personnel continues to be a significant problem at the maintenance supervisor level. The licensee compensated for two of these vacancies by using contractors. These continuing supervisory staffing vacancies combined with maintenance management turnover resulted in a lack of stability and consistent direction in the maintenance organization.

Communications between the maintenance department and other organizational entities has improved significantly. Early in the SALP period poor communication between the maintenance, radiation protection and operations departments resulted in a large number of radiation work permits requested but not utilized, and processing of equipment isolations for maintenance activities which were subsequently delayed. Maintenance priorities were not always consistent with operational needs. To address these issues, licensee management assigned two experienced radiation protection technicians to maintenance to assist in job planning and to improve maintenance personnel appreciation of radiological considerations. Two senior reactor operators were assigned to provide direct input to the planning process, and to act as liason between operations and maintenance.

These actions resulted in substantial communications improvement, and more efficient processing of maintenance and modifications tasks during the latter part of the assessment period.

During the period the licensee continued to devote resources to the improvement of the planning and scheduling function. Staffing of the maintenance planning group was augmented by the addition of significant contractor support. At the close of the SALP period all maintenance planning staff positions had been filled, with five positions filled by contractor personnel. This group actively collected existing MRs and verified spare parts availability but was not effective in developing integrated maintenance schedules or ensuring consistent high technical quality in maintenance packages. Licensee management also created the temporary Planning and Restart Group to assist in establishing outage scope and schedules. The functions of this group were later incorporated into the permanent line organization under the Planning and Outage Manager. The Planning and Outage Group appeared to be increasingly involved in developing and tracking longer term work schedules by the close of the SALP period. Continued attention to developing and implementing effective maintenance schedules, and to improving the detail and quality of maintenance work packages is needed.

In the previous SALP period, a large backlog of low priority maintenance had resulted in inoperable fire protection and security equipment, and reductions in operational flexibility due to equipment unavailability. During this assessment period, the licensee has effectively focused attention on defining and processing this large backlog of work. Recent completion of the major outage activities allowed further reductions. Late in the period the licensee directed increased effort at improving general equipment condition. Management frequently toured the station, evaluating the effectiveness of these efforts. However, because of a lack of sensitivity caused in part by concentration on backlog reduction, less significant maintenance deficiencies and poor maintenance practices were not always promptly addressed. An example of this is the poor condition of station batteries identified during a NRC team inspection.

Several routine inspections and a maintenance team inspection near the end of the SALP period found that maintenance program procedures and work instructions continued to be a significant weakness. Work control and implementation practices were not clearly delineated in approved procedures or other directives as evidenced by the excessive delay in issuing the Maintenance Manual. Maintenance requests contained little detail of the as-found condition, repairs effected and post-maintenance testing performed. This hindered subsequent root cause evaluations and reviews. Instructions provided to maintenance technicians

often were not sufficiently detailed to ensure proper performance of the task, and to document activities such as placement of jumpers or lifted leads. For example, a series of engineered safety feature (ESF) actuations were caused by lack of adequate instructions and planning of electrical relay replacements. There was also no effective process for management review of completed maintenance packages. A number of improvements had been implemented such as maintenance package checklists, worker prejob briefings and use of a temporary procedure to document lifted leads, but appropriate maintenance process procedures were not revised to reflect the changes. For much of the SALP period, actions taken in response to NRC concerns were directed at correcting problem symptoms and were not sufficiently comprehensive in nature. The licensee deferred the formal addressing of program weaknesses in this area and the application of interim improvements has been inconsistent and not wholly effective. Shortly after the assessment period, licensee attention to this areas intensified and major program improvements were initiated.

The licensee's post-maintenance test program was not clearly defined. No clear guidance for establishment of post-maintenance testing requirements existed. In one case MRs for extensive repair and retermination of electrical cables were designated as not requiring retest, even though the repairs disturbed numerous circuits upon which logic testing had previously been completed. Late in the period the licensee took action to strengthen the post-maintenance testing process and to create a matrix of testing requirements.

The licensee implemented several aggressive maintenance initiatives directed at improvement of component performance. Preventive maintenance on all safety-related motor operated valves (MOV) and AC circuit breakers was completed. However MOV procedures were found to be weak in some areas. Circuit breaker maintenance was not extended to include any safety-related DC circuit breakers until prompted by the NRC, even though none had been performed during the life of the plant. While management commitment is evident, follow through on initiatives was occasionally incomplete. The increasing involvement of the Systems Engineer Group has had a positive impact on maintenance performance, particularly the quality and promptness of maintenance problem root cause analysis. The licensee also significantly increased staffing, training and management direction of the Station Services Group resulting in improvements in the station decontamination and housekeeping programs.

The licensee has implemented a Material Condition Improvement Action Plan (MCIAP) which identifies many of the weaknesses described above. An independent monitoring group was estab-

lished by the licensee to monitor its effectiveness. This plan is intended to result in significant maintenance program improvements over the long term. The hardware aspects of the MCIAP were effectively addressed, however, program and procedural enhancements were deferred. The licensee also implemented a maintenance performance indicators program. This program has assisted licensee maintenance management in better focusing on adverse trends and department performance.

As a result of good working relationships between the Site Engineer Group and the Modification Management Group, licensee control of modification implementation and turnover was strong. A large number of complex modifications were completed during the period without significant problems. The program for controlling post-modification testing was generally effective. However, technical review of post-modification test procedures was occasionally inadequate. Examples of this included the failure of testing to identify the incorrect installation of reactor water level instruments, and the approval of several tests which either caused or would have caused unanticipated ESF actuations.

In summary, the licensee continues to give high priority to improvement of plant material condition, although program weaknesses in several areas were evident. The licensee implemented informal process enhancements which resulted in more rapid improvement during the last months of the SALP period. A long range plan, the MCIAP, has been established to promote program improvements in the areas of identified weakness. Licensee senior management attention to full and timely implementation of this plan is necessary to assure that permanent improvements are achieved. Staffing problems and management turnover however, need to be resolved so that these problems do not continue to hamper licensee efforts.

(2) Conclusion

Rating: 2

Trend: None Assigned

(3) Recommendations

Licensee:

- Complete implementation of program improvements and continue staffing efforts.

- Provide for staff continuity and development.

NRC: None.

4.4 Surveillance (1386 hours/14 percent)

(1) Analysis

The surveillance functional area is intended to assess the effectiveness of licensee management in assuring the development and implementation of a comprehensive surveillance testing program.

During the previous SALP period, surveillance was assessed as a Category 3. Testing was generally conducted in a careful, safety conscious manner, however no centralized management of the surveillance test program existed. Responsibility for program management was not clearly established. The system for control of surveillance scheduling was weak, principally because the key individual involved with this activity was not a technical staff member. The technical adequacy of surveillance procedures and the control of measuring and test equipment (M&TE) were also found to be inadequate. The licensee's surveillance test program had not received adequate management attention.

During this SALP period surveillance testing was routinely observed and procedure technical adequacy was evaluated. One management meeting and several inspections were conducted to assess licensee efforts to correct the previously identified problems. An Augmented Inspection Team dispatched in response to a loss of offsite power also evaluated aspects of surveillance program effectiveness.

During the previous assessment period, the absence of strong centralized control and responsibility for surveillance program oversight contributed to continuing weaknesses. Early in this SALP period the licensee assigned responsibility for program maintenance and upgrade to the Technical Section Manager. The Systems Engineering Group within the Technical Section has become increasingly involved with development of program improvements. A Surveillance Coordinator position was established and staffed by a senior systems engineer to help provide needed focus. In addition, a coordinator was assigned in each department responsible for surveillance test performance. Allocation of these resources has resulted in acceleration of program improvements and is an indication of management commitment.

The licensee has taken action to improve the technical adequacy of surveillance test procedures. Technically inadequate test procedures were a recurring problem identified during previous SALP periods, requiring repeated NRC initiatives to obtain licensee corrective action. During the current assessment period however, the licensee implemented an extensive effort to evaluate and upgrade surveillance procedures. A team composed of licensee Nuclear Engineering Department, Technical Section and Maintenance Section representatives was formed to address the problem. Initially the effort was intended to assure compliance with technical specifications. Licensee management expanded the upgrades however, to include testing of additional system design features beyond technical specification requirements. This is an indication of the licensee's desire to establish a more comprehensive program that goes beyond regulatory requirements. Implementation of the improved testing allowed the licensee to identify and correct several system performance problems. Another example of the licensee's intent to thoroughly test major systems was the use of a temporary boiler to perform extensive testing of the High Pressure Coolant Injection and Reactor Core Isolation Cooling systems with non-nuclear steam. While substantial progress has been made, and existing procedures have been upgraded sufficiently to assure compliance with the Technical Specifications, some procedural weaknesses continue to be noted. For example, the inoperability of an emergency diesel generator during a loss of offsite power could have been prevented if surveillance procedures had recorded and evaluated more than the required minimum instrument readings. Additionally, inadequate test procedures have caused unnecessary engineered safety features actuations.

The licensee began development of a new computer-based Master Surveillance Tracking Program (MSTP) in an attempt to resolve previously identified scheduling problems. Considerable licensee effort was expended on development of the new program. However, late in the SALP period the licensee concluded that it was not viable due to problems with vendor-supplied computer software. The licensee's Systems Engineering Group has initiated an interim manual tracking system, and is revising the previously used MSTP to compensate for the identified weaknesses. Substantial time was expended in the unsuccessful attempt to implement the new MSTP, and therefore final resolution of the scheduling problems has not been reached. However, it is evident that licensee management is committed to improving the system, responsibility for implementation has been established and progress is being made.

The licensee's program for control of Measuring and Test Equipment (M&TE) has improved significantly. The licensee dedicated four full-time individuals to the upgrade of the M&TE control program. Instruments were collected, assigned unique identification numbers and data was input to a computer-based tracking system. Control and implementation of the local leak rate test program have also improved since the last assessment period. The significant improvement in these areas is a clear result of management involvement.

Licensee personnel generally conducted testing in a careful, safety conscious manner. Major testing evolutions such as the reactor vessel hydrostatic test and the containment integrated leak rate test were well coordinated and executed. Occasional personel performance lapses in the quality of testing were noted, however. For example, instrument and controls technicians failed to enable equipment sump level switches after calibration, causing sump overflow in the high pressure coolant injection pump room. During a similar drain system overflow inciden operators did not perform required shiftly plant tours. As a re contaminated water was allowed to accumulate. These instance ay indicate some weakness in personnel training.

The inservice inspection (ISI) program was effectively implemented. The licensee's ISI staff demonstrated a good understanding of technical issues. Management support of the ISI program is evident. For example, prompt action was taken to evaluate piping errosion and drywell liner corrosion in response to industry events.

In summary, the licensee has established appropriate responsibilities for management of the surveillance program. Sufficient senior management and technical resources have been allocated to affect the needed program improvements. Program responsibilities have been defined and assigned to the System Engineering Group. Test procedure technical adequacy and control of M&TE were substantially improved in response to recurring NRC concerns. While strengthening of surveillance scheduling has been slowed due to computer program problems, progress is currently being made. Continued licensee management attention is necessary to assure implementation of ongoing improvements, aggressive evaluation and correction of remaining weaknesses and reinforcement of newly established work standards.

(2) Conclusion

Rating: 2

Trend: None Assigned

(3) Recommendations

Licensee: Continue positive initiatives to upgrade surveillance procedures and impliment improved surveillance tracking programs.

4.5 Fire Protection (493 hours/5 percent)

(1) Analysis

This functional area is intended to assess the effectiveness of the licensee's station fire protection program, and the adequacy of modifications and procedures established to ensure compliance with 10 CFR 50 Appendix R. During the last period this area was rated as a Category 3. The fire protection program suffered from a chronic lack of management attention. The licensee was not aggressive in maintaining the operability of station fire protection equipment, resulting in heavy reliance on compensatory measures. Fire barrier surveillance procedures were unclear and incomplete. Personnel performing fire watches and serving on the fire brigade were poorly trained. Licensee senior management had taken steps at the end of the period to strengthen the program.

During this assessment period routine inspections monitored the progress of licensee improvement efforts, additionally two inspections were conducted to assess the status of the station fire protection program. In addition, a team inspection was performed to evaluate licensee compliance with 10 CFR 50, Appendix R. A management meeting was also held to discuss fire protection and Appendix R concerns.

The licensee demonstrated a high level of management involvement in ensuring fire protection and Appendix R program improvements. A fire protection group was established near the end of the last SALP period. During this period, staffing for the group was increased from one fire protection engineer to six permanent fire protection specialists. Frequent meetings with the fire protection group leader, and periodic status reports assisted senior licensee management in monitoring the group's progress. In the area of Appendix R the licensee established a temporary project management organization. A senior pro[illegible] engineer was dedicated to provide focused oversight and support. The Appendix R project organization and the fire protection group worked closely together to coordinate activities.

The licensee has been successful in reducing the backlog of fire protection equipment maintenance, which had contributed to a heavy reliance on compensatory measures. Fire protection group and maintenance managers worked effectively together to reduce the outstanding maintenance backlog, and to maintain it at a manageable level. Total outstanding fire protection maintenance was reduced from over 300 items to less than 50 items, and is currently tracked by licensee management as a performance indicator.

The control and quality of fire brigade training have improved. The fire protection group, with the assistance of the training department, developed and implemented a more comprehensive training program. A state certified instructor was hired to conduct the brigade training. The number of fire brigade drills conducted has substantially increased, and it appears that their effectiveness has improved. Through these actions the licensee has succeeded in developing a large core of trained personnel to serve as fire brigade members. Effective interaction and coordination between the fire brigade, the operations staff and local fire fighting companies was evident during several minor fire incidents occuring during the period, including a fire in the machine shop which prompted declaration of an Unusual Event.

The licensee initiated, and the NRC has approved several fire protection licensing actions during the assessment period. In response to past instances of problems with fire barrier adequacy, the licensee's Appendix R project organization implemented a well conceived program to identify, inspect and repair plant fire barriers. These inspections resulted in the identification of a significant number of deficient barrier seals. Licensee management exhibited a conservative philosophy, establishing compensatory fire watches for all plant barriers pending completion of inspections.

The licensee's approach to maintaining safe shutdown capability was found to assure redundant safe shutdown system train separation, and to provide sufficient operational flexibility. To assure adequate separation the licensee performed a well documented and thorough analysis, although procedures for use of the safe shutdown equipment, and operator training in this area were found to be weak. The licensee has taken action to resolve these weaknesses and has committed to demonstrate safe shutdown capability by performing a test during the power ascension program.

In summary, licensee management has taken strong action to establish and staff an effective station fire protection organization. Significant improvement in fire protection equipment material condition and fire brigade training has resulted. Licensee response during this SALP period to Appendix R issues, particularly fire barrier seal problems, was prompt and effective. Continued management attention is needed to assure prompt completion of fire barrier seal repairs, to achieve further reduction of outstanding compensatory fire watches and to provide a stable effective fire protection program.

(2) Conclusion

Rating: 2

Trend: None Assigned

4.6 Emergency Preparedness (176 hours/2 percent)

(1) Analysis

During the previous assessment period, licensee performance in this area was rated Category 2. This was based upon a renewed commitment by management for emergency preparedness and a significant improvement in performance.

During the current assessment period, one partial participation exercise was observed, two routine safety inspections were conducted, one special safety inspection specifically related to emergency classification was conducted, and changes to emergency plans and implementing procedures were reviewed.

Two routine safety inspections were conducted in November, 1987 and January, 1988. These inspections examined all major areas within the licensee's emergency preparedness program. During the November, 1987 inspection, significant changes were examined regarding the normal emergency preparedness organization. These changes resulted in essentially a completely new organization with the Emergency Preparedness Manager reporting to the Senior Vice President. Functional responsibilities are divided into on-site and off-site areas with coordinators for each. The licensee has filled the managerial positions, as well as other working positions, with personnel experienced in emergency preparedness. In addition, the licensee has contracted with several consultants to help the permanent staff.

During the January, 1988 inspection significant changes were examined regarding the Emergency Response Organization (ERO) and Emergency Action Levels (EAL's). The licensee has committed to a complete restructuring of the ERO with a three-team duty rotation. Additionally, the licensee is revising the EAL's to be symptomatic, address human factors, and has integrated them with the Emergency Operating Procedures. Significant facility changes made include the addition of a Computerized Automated Notification System to notify the ERO.

A partial participation exercise was conducted on December 9, 1987. The licensee demonstrated a satisfactory emergency response capability. Actions by plant operators were prompt and effective. Event classification, and subsequent Protective Action Recommendations, were accurate and timely. Personnel were generally well trained and qualified for their positions. No significant deficiencies were identified. Several minor weaknesses were noted including insufficient depth in some positions to support prolonged operations, dose projection discrepancies, delays in fielding onsite repair teams, and weak initial notification forms.

During the response to a loss of offsite power event in November, 1987, some weakness in coordination and communication between licensee groups was noted. While not required by the site emergency plan, the licensee eventually chose to partially activate the Technical Support Center (TSC) to aid in recovery efforts. The difficulties experienced by the licensee during the initial response and subsequent efforts to utilize the TSC indicate that licensee attention to preplanning response options to non-emergency events, such as discretionary activation of the TSC, may be appropriate.

During the February, 1988 inspection the licensee's actions in response to a declaration of an Unusual Event were examined. The licensee's classification was conservative and prompt. Mitigation activities were effective. The licensee identified several problems associated with their actions including: failure to completely follow procedures; untimely notification of event termination; and control room distractions due to the large volume of outside communications. The licensee promptly identified these issues and instituted appropriate short-term and long-term actions to prevent their recurrence.

The licensee is continuing to work closely with local and Commonwealth of Massachusetts officials to upgrade off-site emergency preparedness. The licensee has a large organization working on plan and procedure development, in conjunction with the appropriate local and Commonwealth agencies.

During this period, the licensee was granted exemptions for the 1987 full participation exercise and a deferral of the submittal of public information. These were based on the Commonwealth of Massachusetts requests to complete the local and Commonwealth emergency plans, implementing procedures and associated training prior to issuance of public information or demonstration of capabilities.

In summary, the licensee has demonstrated a commitment to emergency preparedness. Management involvement is evidenced by the major on- site program changes being supported, commitment to the offsite level of emergency preparedness, and by timely recognition of problems and subsequent corrective actions. The licensee has been responsive to NRC concerns and is continuing to make progress in these areas.

(2) Conclusion

Rating: 2

Trend: Improving

4.7 Security and Safeguards (641 hours/7 percent)

(1) Analysis

This functional area was rated as a Category 3 during the previous assessment period. NRC identified serious concerns regarding the implementation and management support of the security program. The licensee's proprietary security staff consisted of one full time and one part time member, resulting in weak oversight of the contractor. In addition, inoperable equipment contributed to a heavy reliance on long term compensatory measures. Contractor security force overtime was also poorly controlled. Toward the end of the assessment period, the licensee initiated actions to correct the problems. However, at the conclusion of the rating period the hardware upgrades were not complete and the expanded proprietary security staff organization had not been in place for an adequate time for NRC to evaluate its effectiveness.

Four routine, unannounced security inspections, one special security inspection, and one routine unannounced material control and accounting inspection were performed during this assessment period by region-based inspectors. Routine observations were also conducted throughout the assessment period.

During this assessment period, the licensee aggressively pursued a planned and comprehensive course of action to identify and correct the root causes of the previously identified programmatic weaknesses in the area of physical security. To improve the overall performance of the security organization and the security program the licensee implemented several significant actions, including a commitment by senior management to support and implement an effective security program; establishment of a licensee security management organization on-site to direct and oversee program implementation; upgrading unreliable systems and equipment to eliminate the previous heavy reliance on compensatory measures that were manpower intensive; and revising the Security, Contingency and Training and Qualifications plans, and their respective implementing procedures, to make them current and clearer.

The licensee's security management organization is now headed by a section manager who reports to the Plant Support Manager, under the Station Director. Assisting the Security Section Manager are five supervisors with specific functional areas of responsibility (operations, administration, technical, compliance and access authorization) and a staff assistant. Additionally, there are seven licensee shift supervisors who are

responsible to monitor the performance of the contract security force around-the-clock. This represents an overall increase of seven supervisors over those which were in place at the end of the last assessment period, and thirteen over that which was in place when the plant was shut down in April, 1986. (At that time there was one supervisor who reported to a group leader with other, concurrent duties.) The licensee also established a full-time corporate security position onsite. The incumbent is responsible to audit the security program on a continual basis and to provide another perspective on its implementation. In addition, the licensee established, as supervisory personnel, the alarm station operators employed by the security force contractor, and significantly improved the supervisor-to-guard ratio. This expansion of the licensee's security organization represents a significant allocation in terms of resources and provides evidence of senior management's commitment to the program.

In addition to the organizational expansion, considerable capital resources were expended throughout the assessment period to upgrade, by modification or replacement, security systems and equipment. The entire protected area barrier, assessment system, intrusion detection system and protected area lighting were significantly improved. These improvements began early in the assessment period and were, for the most part, complete at the end of the period with only minor fine tuning of the new systems and equipment still required. Additional upgrades in access control equipment and the security computer are scheduled. The improvements have already resulted in a sizable reduction in the number of compensatory posts and, therefore, a reduction in the contract guard force. The above mentioned upgrades permitted the guard force to go on a 40 hour work week rather than the 60 hour work week required during the major portion of the assessment period. In addition to the improved systems and equipment, the licensee has taken action to strengthen the security equipment corrective maintenance program and has initiated action to establish a preventive maintenance program to further ensure the continued reliability of security systems and equipment. Open maintenance requests for security equipment are also now tracked as a performance indicator by plant management. These actions and initiatives are further evidence of senior management's commitment to the program.

During the assessment period, the licensee submitted six changes to the Security Plan under the provisions of 10 CFR 50.54(p). One of these changes was a complete revision to upgrade the Security Plan and to revise the format to be consistent with NUREG 0908. In conjunction with the Security Plan upgrade, the licensee also submitted revisions to the Safeguards Contingency Plan and the Security Force Training and Qualification Plan (complete revisions of these plans were submitted during March, 1988). The complete plan revisions were comprehensive, more consistent with current NRC regulations, and provided clearer documents from which to develop and modify implementing procedures. The plan changes were adequately summarized and appropriately marked to facilitate review. Further, the licensee, prior to submitting the changes, communicated with the NRC by telephone and requested meetings in Region I and onsite to ensure that the changes were appropriate, clearly understood, and in compliance with NRC regulations.

Audits of the Security program conducted by Corporate Security personnel and the onsite QA group during the assessment period were found to be very comprehensive and corrective actions were found to be prompt and generally effective, indicating a much improved understanding of program objectives. Because of the security program weaknesses identified toward the end of the previous SALP period, the licensee assigned to the site, on a full-time basis, a member of the corporate security staff with responsibility for conducting continued surveillance and audit of the program. That initiative was reviewed and found to be a very effective management tool to provide an independent assessment of the day-to-day implementation of the security program and another input to the overall security program upgrade project.

The security force training program appears to be adequate to address the activities of the security organization. The licensee has taken actions to assure the training program remains current and reflects the changes and upgrades to the security program. For example, to ensure more comprehensive management oversight by licensee security shift supervisors, each received plant operational technical training in addition to security program and other training. This training enables these supervisors to be more effective in interfacing with other plant technical functions.

There were three apparent violations identified by the NRC during this assessment period. All of the violations were the result of degraded vital area barriers. The licensee was notified of the apparent violations and an enforcement conference and a subsequent management meeting were held. These apparent violations resulted from weak communications between the security and maintenance organizations, and a poor appreciation by maintenance personnel of security requirements. Corrective actions were implemented by the licensee and they appear to be effective.

A total of six security event reports required by 10 CFR 73.71(c) were submitted to the NRC during this assessment period. Three event reports were necessitated by the licensee's findings of degraded vital area barriers. Similar degradations were also reported in the previous assessment period. Two of the degradations reported during this period were the result of maintenance work being performed on plant systems that penetrated the barriers. The other resulted from a degraded vital area door. Another event report was necessitated by the reclassification of an area of the plant as vital. The need for reclassification was identified as a result of the licensee's Vital Area Analysis and Barrier study. Another event report involved a guard leaving his weapon unattended The sixth event report involved the loss of a set of security keys by a member of the guard force. With the exception of the vital barrier degradations earlier in the assessment period, no adverse trend was indicated by the events which occurred during this assessment period. The licensee eventually implemented appropriate measures to prevent recurrence of the vital area barrier degradation problems. The quality of the event reports was significantly improved over the previous assessment period indicating a better understanding of program objectives and more care in their preparation. They were clear, concise and contained sufficient information to permit NRC evaluations without the need for additional information.

The licensee's program and procedures for the control and accounting of special nuclear material were also reviewed during this assessment period and were found to be adequate and generally well implemented.

In summary, the licensee has demonstrated a commitment to implement an effective security program that goes beyond minimum compliance with NRC requirements. As a result of this commitment, the licensee security organization has been expanded, significant capital resources have been expended to upgrade security hardware, and equipment and program plans have been improved. Continued senior management support and involvement in the security program is necessary to ensure that the momentum demonstrated during this assessment period is continued.

(2) Conclusion

Rating: 2

Trend: None Assigned

4.8 Engineering and Technical Support (1215 Hours/13 percent)

(1) Analysis

This functional area is intended to assess the adequacy of the licensee's technical and engineering support in the areas of plant design changes, routine operations and maintenance activities. Engineering and Technical Support was assessed as a Category 1 during the previous SALP period. Good engineering support to the site was noted in the Environmental Qualification program and the design of several significant plant hardware modifications. Technical evaluations were typically thorough and demonstrated an adequate regard for safety. The engineering approach to the Safety Enhancement Program (SEP) demonstrated an excellent appreciation for underlying safety issues. A weakness in the lack of detailed design basis documents for plant equipment was also noted during the last period.

During this assessment period, five special inspections including an Augmented Inspection Team focusing on a loss of offsite power event, an electrical system team inspection, and a maintenance team inspection were conducted and, in part, evaluated the licensee's performance in this area. The effectiveness of the onsite Systems Engineering Group, and the Nuclear Engineering Department's (NED) interactions with the site organization were routinely monitored.

Significant plant modifications were installed during this assessment period, including the reactor water level instrumentation modification, a hydrogen water chemistry system, an analog trip system, and a new plant process computer. Few problems were identified with these projects, demonstrating the strength of the engineering work. Safety evaluations required by 10 CFR 50.59 for design changes and modifications were generally thorough and conservative. Safety evaluations for SEP modifications demonstrated sufficient analysis and supporting facts to conclude that there were no unreviewed safety questions. Highly qualified engineering staff and NED management focus on safety have contributed to the licensee's performance in this area.

Offsite technical and engineering support was generally good as indicated by the successful design and implementation of significant plant hardware modifications. Continued effective use of the Design Review Board was evident during this SALP period.

This was demonstrated by high quality initial design reviews, and routine evaluations of completed modifications for synergystic effects. The expanded Field Engineering Section, the design implementation oversight arm of NED, played a vital role in coordinating activities between the site organization and the NED. Engineering management was actively involved in implementation of modifications and addressing problems. The Safety Enhancement Program, including extensive Mark I containment and station blackout modifications, were planned and implemented during this period. The engineering approach to the Mark I issues went considerably beyond NRC requirements and demonstrated a good appreciation of containment reliability issues. The NED's involvement in the development of the new Emergency Operating Procedures (EOP) demonstrated significant management attention in this area. The licensee's communications with the NRC regarding the planning and implementation of the SEP and EOP projects were generally good. In addition to these modifications, the licensee is preparing an extensive Individual Plant Evaluation (IPE) as part of the (SEP) using probabilistic and deterministic analyses. In support of these efforts, the licensee effectively managed contract engineering expertise to produce quality design changes and analyses. Throughout the development and implementation of the SEP senior management's involvement and commitment to safety was apparent.

A team inspection was conducted during this assessment period to review the licensee's implementation of a fire protection program to meet the requirements of 10 CFR 50 Appendix R. The licensee's approach to maintaining safe shutdown capability was found to assure adequate redundant safe shutdown system train separation, and to provide sufficient operational flexibility. The licensee's analyses were found to be well documented and thorough. NED's Appendix R project organization and the onsite fire protection group worked closely together to coordinate activities.

Some weaknesses in the engineering design change process were noted. In one instance inadequate technical review of a design change by NED resulted in incorrect installation of reactor water level gauges. Additionally, the plant design change document for the Standby Gas Treatment System did not specify adequate post-work testing requirements. Further, as indicated in the previous SALP, the lack of detailed design basis documents was a continuing problem this assessment period. Examples included lack of seismic qualification documents for the reactor

building auxiliary bay and for the hydraulic control units. Also, engineering failed to correctly translate containment accident temperature profiles into environmental qualification documents. However, the licensee has taken initiatives to further understand the design bases of the plant electrical distribution system as evidenced by the use of a new computer code to analyse electrical distribution equipment performance.

At times, corporate engineering support for plant maintenance activities was limited. The NRC special electrical system inspection identified that the DC battery and electrical breaker maintenance activities were not supported by NED. The licensee's initial response to the NRC's concern regarding the surveillance testing of the DC breakers was limited in scope and lacked engineering justifications on the sample size and the acceptance criteria.

The increasing involvement of the onsite Systems Engineering Group (SEG) has had a positive impact on the quality of operations event analysis, the surveillance test program, and on maintenance performance, particularly the quality of maintenance problem root cause analysis. At the beginning of the assessment period the licensee established the SEG under the Technical Section within the Nuclear Operations Department. The SEG was staffed largely with experienced contractors, but the licensee gradually expanded the group and replaced the contractors with permanent Boston Edison employees. At the end of this period, the SEG had a total technical staff of 26 including 15 senior systems engineers. The increasing involvement by the SEG has promoted better intergroup interactions as the operations and maintenance departments have begun to value and rely on the SEG's contributions.

In summary, overall strong engineering support continued throughout this period. Major plant modifications were completed with only a few minor problems, demonstrating the quality of engineering work. The increasing involvement of the SEG has contributed significantly to the quality of root cause analyses and in maintenance performance. However, overall performance in the areas of corporate engineering responsiveness and support to site maintenance initiatives appears to need further licensee evaluation and improvement. Additional management attention is needed in developing long-term programs to provide better operational and maintenance support to the site.

(2) Conclusion

Rating: 1

Trend: None Assigned

4.9 Licensing Activities

(1) Analysis

The licensing functional area is intended to assess the licensee's effectiveness in assuring a technically accurate and up-to-date licensing basis, and the licensee's responsiveness to NRC and industry concerns. During the previous assessment period licensing was evaluated as a Category 2.

During this period, 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. These actions consisted of amendment requests, exemption requests, responses to generic letters, TMI items, and other actions.

The licensee has exhibited a high level of management involvement in major licensing initiatives; however more routine licensing actions did not always receive substantive management action. An example of a high level of management involvement and initiative is the licensee's actions to improve the Mark I containment and implement other plant safety improvements intended to cope with severe accidents as part of its Safety Enhancement Program (SEP). This program includes improvements to emergency operating procedures, modifications to containment spray nozzles, enhancements to water supplies that would be available in the event of a severe accident, the installation of a direct torus vent and the installation of a third emergency diesel generator. A number of the SEP modifications, such as the Station Blackout Diesel Generator are also useful in dealing with less significant transients and events as opposed to severe accidents.

The licensee is in the forefront of the industry in the effort to deal with severe accidents and has expended substantial resources on the SEP. The licensee has been very active in industry owner's groups involved in severe accident initiatives. Although much of the SEP effort did not involve direct licensing actions, the staff did assess the safety significance of the licensee's modifications and inspected portions of the modifications. The licensee is commended for its leadership on the SEP program. It should be noted that the staff is still continuing its assessment of some of the details of the SEP modifications.

The technical quality of more routine licensing actions (such as some Technical Specification amendments and exemption requests) has been sporadic. Several fire protection licensing actions have required numerous submittals and frequent interchanges with the staff. For example, the licensee revised its technical position twice in the determination of the appropriate basis for an exemption request involving the lack of 3-hour fire proofing for structural steel in the Reactor Building Torus Compartment. Several submittals were required, and the staff had to request detailed calculations to support the licensee's basis. In a technical specification change involving 10 CFR 50 Appendix J requirements (Amendment 113), the licensee had to make numerous submittals in response to staff concerns and was required to correct errors in previous submittals identified by both the staff and BECo. The staff identified inconsistencies in proposed changes to the technical specifications for the Standby Gas Treatment System and Control Room High Efficiency Air Filtration System (Amendment 112) and revised submittals by the licensee were required. The extensive activities and resources required to correct problems identified in Confirmatory Action Letter 86-10 and subsequent management meetings has apparently impacted the licensee's overall performance in the licensing area. These problems suggest a weakness in corporate management at the level that establishes priorities and coordinates engineering and licensing activities for the utility.

The licensee has, however, submitted, and the staff has approved, a number of technical specification changes or exemption requests that demonstrated a high level of technical quality and management involvement. Examples include the schedular exemption for conduct of the emergency preparedness exercise, Core Reload (Amendment 105), Control Rod Block Actuation (Amendment 110), and LPCI Subsystem Surveillance (Amendment 111). Where NRC staff requests for additional information were made, the licensee responses have been prompt and comprehensive.

The licensee has usually been responsive to NRC initiatives. The licensee has been responsive to staff requests to track and control actions of mutual interest between NRR and the utility. For example, the licensee has developed a tracking system to assist in the management of licensing actions and has provided extensive resources to support NRC effort in updating the Safety Information Management System (SIMS) data base. Particularly noteworthy was the high quality of technical support provided for the staff's review of Emergency Operating Procedures.

There was evidence of improvement during the latter portion of the SALP period in the approach to the resolution of technical issues and responsiveness to NRC initiatives in the licensing area. This is in part due to recent organizational changes which have resulted in a closer relationship of the licensing and engineering groups. The overall staffing to support licensing activities is adequate and its effectiveness should be improved by the recent organizational changes. Recently a reduction has been evident in the number of cases of technical errors, lack of clarity, and incomplete information.

In summary, the licensee has exhibited strong management involvement in several major licensing actions, but attention to more routine licensing actions has been inconsistent. The licensee has shown some improvement in the licensing area during the latter portion of the SALP period. The involvement of management in routine, as well as major licensing activities, is necessary. The continued strengthening of mid-level management and increased technical capability of licensing staff are necessary.

(2) Conclusion

Rating: 2

Trend: None Assigned

4.10 Training and Qualification Effectiveness

(1) Analysis

Technical training and qualification effectiveness is being considered as a separate functional area. The various aspects of this functional area were discussed and used as one evaluation criterion within the other functional areas. The respective inspection hours have been included in each one. Consequently, this discussion is a synopsis of those assessments. Training effectiveness has been measured primarily by the observed performance of licensee personnel and, to a lesser degree, as a review of program adequacy.

This area was rated as a Category 2 during the previous assessment period. The licensed operator training and requalification programs were found to be significantly improved. Assignment of knowledgeable staff had resulted in higher quality training materials, and more plant-oriented operator training. Maintenance, contractor and radiation protection personnel training were also adequate. Fire brigade and fire watch training had been significantly weak and contributed to poor personnel performance in the plant. Four of ten licensee training programs had received accreditation from the Institute of Nuclear Power Operations (INPO).

During this assessment period, inspectors routinely reviewed ongoing training activities and their effectiveness in assuring quality personnel performance. Two sets of reactor operator and senior reactor operator license examinations were administered. An inspection to evaluate the adequacy of the nonlicensed personnel training program was also completed. Various other inspections reviewed training provided in the areas of emergency preparedness, radiation protection, security, maintenance, fire protection and modifications.

Licensed operator training effectiveness continued to improve throughout the period. Two sets of licensed operator examinations were administered to a total of two senior reactor operators and fourteen reactor operators, with all candidates successfully completing the licensing process. Newly licensed operator familiarity with plant equipment and procedures was considered a strength. Challenges facing licensee management include completion of training for the large number of new, relatively inexperienced operators. Site management is intent on assuring that time spent by newly licensed operators in the control room during startup and initial operations, is used as effectively as possible to provide the maximum training benefit.

The material developed for operator training and submitted for NRC review was generally good. However, for the first examination early in the assessment period, it was noted that some materials provided to the NRC did not reflect recent station modifications. This was because the modifications had recently been completed and previous training had focused on the original systems. It was also noted during exams and by direct discussions with licensed operators, that training conducted on recently implemented modifications, such as on the reactor water level and automatic depressurization systems, had not been fully effective. Operators were unfamiliar with the modifications, primarily because only on-watch training had been performed and because the training had been conducted prior to completion of the modifications. Licensee management took prompt action to restructure the modifications training and committed to repeat the training prior to plant restart.

The licensee completed installation of a plant specific simulator during this assessment period, and used it extensively to enhance operator training, particularly in the area of emergency operating procedures (EOP). The licensee implemented a comprehensive EOP training program including a combination of simulator and classroom instruction. Licensee management assured the effectiveness of this training by performing post-training evaluation of the operating crews on the simulator. The development of special criteria by which acceptable performance is judged was a strong point of the EOP training program. Operator performance weaknesses were identified by the licensee, and supplemental training was performed to resolve the problems. Licensee management also initiated a communications training program for operations personnel. This communications training was implemented along with the EOP training and appeared to substantially improve operator performance.

Licensed operator performance during plant events such as a loss of offsite power, and an Unusual Event due to a fire in the machine shop generally demonstrated a good command of plant equipment and procedures. However, some apparent weaknesses in operator training were evident. For example, several operational errors were made during reactor refueling despite independent verification requirements. On several occasions operators failed to properly perform routine surveillances.

The nonlicensed and contractor personnel training program appeared effective. The training staff dedicated to this function has been supplemented by the addition of contractors. The licensee initiated maintenance and radiological technician apprentice programs to assist in development of qualified lower level personnel. New training initiatives are in progress to sensitize management, workers and radiation protection personnel to the need to minimize all occupational exposure. For example, management training in ALARA for plant design changes and radiation awareness training for operations and maintenance personnel have been initiated. In addition, a Training Program Evaluation Committee was established to assure plant management involvement in ongoing development of nonlicensed training.

The licensee's program for fire brigade and fire watch training has been significantly improved. The station fire protection group and the licensee's training department have coordinated to expand the scope and enhance the quality of brigade training. A large core of qualified fire brigade members has been established.

Security force, emergency response and maintenance training appeared to be effective. No performance deficiencies directly attributable to training were identified in these areas during the period. INPO accredidation of all remaining training programs was received during the current assessment period.

In summary, licensee management has been active in improving the overall quality of the training program and has been responsive to NRC concerns. Licensed and nonlicensed training programs are effectively implemented. Of particular value is the use of the simulator, and other initiatives such as formal communications training and establishment of an apprentice program. Efforts should be continued to strengthen operator training in the area of modifications and to ensure effective completion of training for newly licensed personnel.

(2) Conclusion

Rating: 2

Trend: None Assigned

4.11 Assurance of Quality

(1) Analysis

During this assessment period, Assurance of Quality is being considered as a separate functional area. Management involvement in assuring quality continues to be discussed and assessed as an evaluation criterion in each of the other SALP functional areas. The respective inspection hours are included in each one. Consequently, this discussion is a synopsis of the assessments relating to assurance of quality in other areas. Since this is an evaluation of management's overall performance it conveys a broader scope than simply Quality Assurance (QA) department performance.

During the previous assessment period this functional area was evaluated as a category 3. Licensee management had not been effective in addressing recurring SALP concerns. Organization and staffing were considered weak. Licensee management corrective actions in response to Quality Assurance (QA) findings and NRC issues had not been timely or comprehensive. QA department performance and engineering initiatives were considered a strength.

Quality Assurance effectiveness has been assessed on a day-to-day basis. Three inspections focusing on the Quality Assurance and Quality Control (QC) programs were conducted during this period. In addition, the large number of management meetings held during the period provided an opportunity for NRC management to assess licensee management's approach to resolution of issues.

During much of the period licensee senior management continued to assess and correct organizational weaknesses through restructuring and recruitment of experienced personnel, many from outside sources. A new Senior Vice President assumed responsibility for the nuclear organization at the beginning of the period. In June, 1987 the Vice President-Nuclear Operations resigned. That position remained vacant until January, 1988 when the Site Director position was created and filled. Station management was reorganized several times, and significant personnel changes were made. Four individuals served as plant manager during the fifteen month assessment period. In addition to modifying the line organization a temporary Planning and Restart Group was created, working in parallel with the permanent plant staff to provide outage planning oversight. This group was subsequently disbanded, incorporating its functions into the permanent organization. The licensee also replaced several mid-level managers during this assessment period including the Operations Section Manager, Maintenance Section

Manager, Radiological Section Manager and the Security Group Leader. In addition to changes in the line organization several staff assistant positions reporting to the Senior Vice President were established to enhance senior management oversight of organization progress. Although actions in this area were implemented slowly, it was evident that senior licensee management took a careful and deliberate approach to establishing the permanent organization and staff. Licensee management displayed the intent to fill open positions in the organization with the most highly qualified individuals available. This approach may have delayed staffing efforts and initially slowed licensee progress in areas such as maintenance and radiological controls.

Management policies and performance standards were strengthened and are clearly understood through mid-level management. However, the new standards were not concurrently communicated or adopted at the working level in some cases. As a result extensive management involvement in routine activities is still required to assure acceptable performance.

A high level of management involvement and commitment was effective in promoting improvement in several SALP functional areas which had previously been identified as significantly weak. This is particularly evident in the areas of fire protection and security where management acted to establish, staff and support expanded oversight groups. This strong commitment is also evidenced by the organization-wide increases in permanent staff, and the general reduction in reliance on contractors for augmentation of line functions. One exception to this is in the area of maintenance where vacancies and reliance on contractors continues.

Licensee response to new NRC concerns raised during the period was sometimes narrowly focused, and did not target resolution of root causes. For example, a high level of NRC management involvement was required to assure development of a comprehensive Power Ascension Test Program, and to resolve overtime control deficiencies. Needed programmatic improvements in the area of maintenance were only implemented after prompting by the NRC. This may reflect that available licensee resources were focused on areas of previously identified weak performance and on outage completion schedules. In some instances the licensee's written replies to NRC concerns have been vague, incomplete, and did not reflect the full extent of actions which had been taken at the acility.

The licensee initiated several programs designed to upgrade personnel and plant performance. The plant Emergency Operating Procedures (EOP) were upgraded, and extensive EOP and communication training was conducted to enhance operator response capabilities during abnormal and emergency conditions. A fitness-for-duty program was also instituted and applied to all licensee and contractor personnel. In addition, implementation of the Safety Enhancement Program and the station decontamination program improved the plant physical design and condition. The decontamination effort was particularly successful, resulting in increased accessability to plant areas and a general positive impact on personnel morale.

Licensee management took an active role in establishing long term plans to address identified weaknesses. The Restart Plan, the Material Condition Improvement Action Plan (MCIAP), and the Radiological Action Plan (RAP) are examples. In the case of the MCIAP a team of contractors was created to provide ongoing independent assessment of the plan's effectiveness in improving plant material condition and maintenance practices. In the area of radiological improvements the licensee reinstituted the Independent Radiological Oversight Committee to provide senior management with feedback on RAP effectiveness. The licensee also implemented a self assessment process near the close of the period. This self assessment was intended to provide a structured method by which licensee management could evaluate the progress made, and identify remaining weaknesses.

The licensee's Quality Assurance (QA) and Quality Control (QC) department continued to become more involved in station activities. The onsite QA surveillance group was increased in size, and appeared to be actively involved in evaluating field activities. QA audit methodology was revised to enhance its effectiveness, and an aggressive audit schedule was established. The licensee made good use of technical experts during audits to supplement available departmental resources. QA department management took prompt action to focus attention on significant concerns. For example, a stop work order was issued in response to adverse trends and findings in the area of maintenance on environmentally qualified equipment. Corporate and site management response to QA findings has also improved. Both the program controls and their application were strengthened to ensure timely response to QA identified deficiencies. Overdue response to these QA deficiencies are currently tracked as a performance indicator.

Throughout most of the assessment period, the licensee's corrective action process was not always effective. A large number of problem reporting devices exist, each with a unique origination, review and disposition process. This makes use of the corrective action system cumbersome, and weakens accountability for followup and closeout. Lack of clear problem descriptions, and delays between origination and followup, hampers establishment of root cause and implementation of corrective actions. The licensee has reviewed the process and recommendations to facilitate improvements have been made. However, the recommendations were not implemented during this period.

In summary, licensee senior management has taken strong action to develop and staff a viable station organization. High quality personnel have been recruited to fill key management positions. The reorganization and staffing process was not completed until late in the SALP period. As a result, progress in some functional areas, and in forcing management philosopy changes down to the worker and first line supervisor level has been hampered. The continuing need for a high level of management participation in routine activities occasionally prevents managers from focusing on other needed program improvements. Overall, the licensee has been successfull in effecting significant performance improvements in many areas. A high level of management involvement is required to ensure that the initiated improvements continue and are sustained.

(2) Conclusion

Rating: 2

Trend: None Assigned

5.0 SUPPORTING DATA AND SUMMARIES

5.1 Investigation and Allegations Review

Twenty allegations were received during this SALP period. Eleven of the allegations were investigated and found either to be unsubstantiated or to be substantiated but of no safety significance. Five allegations were investigated and substantiated, however the licensee had either already instituted appropriate corrective actions or such actions were promptly initiated in each case. Four allegations are currently under review. One of these four concerns the licensee's program for control of overtime which is the subject of ongoing reviews.

One investigation was initiated during the assessment period as a result of an allegation regarding a plant security vital area barrier. This investigation is continuing.

5.2 Escalated Enforcement Action

Confirmatory Action Letter (CAL 86-10) was issued in response to a series of operational events in April, 1986. CAL 86-10 requested submittal of technical evaluations of these events and stated that NRC Regional Administrator approval would be required prior to restart. The technical issues identified in CAL 86-10 have been resolved. The CAL however was extended in August, 1986 and remains open pending resolution of broader management concerns identified in the previous SALPs and subsequent inspection reports.

Three violations were identified during the period for failure of the licensee to ensure the integrity of security vital area barriers. These three violations have yet to be characterized by severity level, and are currently being considered for escalated enforcement action. This action is pending conclusion of the OI investigation described in Section 5.1 above.

An NRC Order issued in 1984 requiring the licensee to implement a Radiation Improvement Program was closed during the period based on the results of a special inspection and other program inspections which indicated that all terms of the Order had been satisfactorily completed.

Request for Action Under 10 CFR 2.206

On August 21, 1987, the Director of the NRC Office of Nuclear Reactor Regulation signed an Interim Director's Decision in response to the July 15, 1986, 2.206 petition filed by Massachusetts State Senator William B. Golden and others. The contentions raised in the petition

regarding containment deficiencies and inadequacies in the radiological emergency response plan were denied. A decision regarding the management deficiencies was deferred to a subsequent response. Three of the petitioners filed an appeal in federal court on October 1, 1987.

On October 15, 1987, Massachusetts Attorney General James M. Shannon filed a 2.206 petition, on behalf of his office and Governor Michael S. Dukakis, requested an order to show cause why Pilgrim should not remain shutdown until a full adjudicatory hearing resolves the issues raised in the petition. The petition cites evidence of continuing managerial, Mark I containment, and emergency planning deficiencies. An interim NRC response was issued on May 27, 1988, just after the end of the SALP period.

5.3 Management Conferences

Periodic management conferences and plant tours were conducted throughout the SALP period. NRC Commissioners toured the plant and met with licensee management on six occasions during the period. A total of nine senior management conferences were held onsite or at Region I. In addition to plant tours held in conjunction with onsite management conferences, senior NRC managers performed two plant inspections during the assessment period. NRC management participated in four public meetings in the vicinity of the plant. Two of these public meetings were sponsored by the NRC and two by local communities. Five meetings with state officials and legislative committees were attended by NRC managers. The NRC also testified before the United States Senate Labor and Human Resources Committee regarding Pilgrim at a public hearing held in Plymouth, MA in January, 1988. A chronological list of NRC management meetings and plant tours conducted during the assessment period is contained in Table 5. In addition, a summary of licensing meetings has been included in section 5.4(1).

To coordinate the planning and execution of NRC activities and to assess the results of these activities a special Pilgrim Restart Assessment Panel was formed. The panel is composed of senior members of the Region I and Headquarters staffs. This panel met bimonthly, with alternate meetings on site.

5.4 Licensing Actions

(1) NRR/Licensing Meetings and Site Visits

Date	Subject
May 21, 1987	Licensing Issues, Bethesda, MD
August 4, 1987	Emergency Operating Procedure and Direct Torus Vent
September 24, 1987	Status of Pilgrim Restart/Schedule
August 19-20, 1987	Multi-Plant Action Items
August 24, 1987	Ongoing Fire Protection Reviews
December 10, 1987	Emergency Operating Procedures Upgrade
January 14, 1988	Discussion in Bethesda, MD of the in-service test program development

(2) Commission Briefings

Date	Subject
February 12, 1987	Regional Administrators' Meeting (Pilgrim Included)
December 17, 1987	Briefing on Status of Operating Reactors and fuel facilities (Pilgrim Included)

(3) Schedular Extensions Granted

Subject	Date
Emergency Preparedness (EP) Exercise	12/09/87
Emergency Preparedness (EP) Exercise	05/11/88

(4) Reliefs Granted

Subject	Date
Inservice Inspection Relief	03/26/87

(5) Exemptions Granted

Subject	Date
Duplicate Yard Lighting	10/06/87
10 CFR 50 Appendix R-Operator Action	04/14/88

(6) License Amendments Issued

Amendment No.	Subject	Date
98	New Design-Reactor Control Rod Blades	02/27/87
99	Analog Trip System Surveillance Requirements	03/03/87
100	Maximum Average Planar Linear Heat Generation Rate	04/09/87
101	Control Room Ventilation System	06/23/87
102	Standby Liquid Control System 10 CFR 50.62 Rule	08/05/87
103	Administrative Changes per 10 CFR 50.4	08/05/87
104	Nuclear Safety Review and Audit Committee changes	08/25/87
105	Cycle 8, Core Reload	08/31/87

(6) License Amendments Issued

Amendment No.	Subject	Date
106	Automatic Depressurization System Timer	09/04/87
107	Analog Trip System - Calibration Frequency	10/28/87
108	Undervoltage Relay Requirements	10/29/87
109	High Pressure Coolant Injection and Reactor Core Isolation Cooling Requirements	10/29/87
110	Rod Block and Average Power Range Monitors Trip Functions	11/30/87
111	Low Pressure Coolant Injection Requirements	11/30/87
112	Standby Gas Treatment & Control Room Air Filter Systems	01/20/88
113	Primary Containment Isolation Values 10 CFR 50 Appendix J Requirements	01/21/88
114	Fire Protection - Appendix R to 10 CFR 50 Requirements	03/08/88
115	Security Requirements - 10 CFR 73.55	03/28/88
116	Modification of Reporting Schedule Supplemental Dose Assessment & Meterological Summary	05/10/88

(7) Other Licensing Actions

Action	Date
Containment Leak Rate Monitor	02/19/87
10 CFR 50 Appendix J Review (Penetration X-21)	02/19/87
Generic Letter 83-08, Mark I Drywell Vacuum Breakers	02/27/87
Recirculation Flow Anomaly	02/28/87
Process Control Program (PCP) Review	03/03/88
Inservice Inspection Plan - 1986 Refueling Outage	03/16/87
Control Room Floor-Fire Seals	03/24/88
Smoke Seals - Conduit	03/24/88
Defects Westinghouse DC Circuit Breakers	04/13/88
Steam Binding - Pumps	04/15/88
Pilgrim SALP Activity	05/15/87
10 CFR 50 Appendix R Review	05/15/87
NUREG-0737 Item II.K.3.18 ADS Actuation Study	09/04/87
Offsite Dose Calculation Manual	10/28/87
Correct Performance of Operating Activities	11/16/87
Intergranular Stress Corrosion Cracking Augmented Inspection Program	11/25/87
Refueling Interlocks	12/17/87

5.5 Licensee Event Reports

(1) Overall Evaluation

Licensee Event Reports (LER) submitted during the period adequately described all the major aspects of the event, including all component or system failures that contributed to the event and the significant corrective actions taken or planned to prevent recurrence. The reports were thorough, detailed, generally well written and easy to understand. The narrative sections typically included specific details of the event such as valve identification numbers, model numbers, number of operable redundant systems, the date of completion of repairs, etc., to provide a good understanding of the event. The root cause of the event was clearly identified in most cases. Event information was presented in an organized pattern with separate headings and specific information in each section that led to a clear understanding of the event information. Previous similar occurrences were properly referenced in LERs as applicable.

The licensee updated two LERs during the reporting period. The updated LERs provided new information and the portion of the report that was revised was clearly denoted by a vertical line in the right hand margin, so the new information could be easily determined by the reactor.

However, in the past the licensee's threshold for reporting required monitoring. 4 LERs (87-021, 87-022, 87-023, and 87-024) were submitted only after an audit by Region I. One of these LERs, 87-021, was submitted 10 months after the event.

(2) Causal Analysis

A review of the LERs indicates a number of problems, some recurring. In particular, loss of offsite power has been a continuing problem at Pilgrim. In addition, Pilgrim has experienced repetitive events associated with inadequate procedures; administrative control problems associated with failure to conduct adequate reviews prior to maintenance and required surveillances and inadequate guidance and cautions for technicians.

Examples of unclear procedures included LER-87-015 which describes two events where RHR shutdown cooling was terminated by spurious isolation. One isolation was attributed to a procedure with inadequate instructions and cautions on installing jumpers; the other isolation was due to inadequate procedures which failed to describe the right number of jumpers. LER 87-016 describes an unplanned actuation of primary and secondary containment due to inadequate administrative controls for the planned replacement of a relay coil, specifically lack of appropriate precautions and guidance. Furthermore the event was compounded by supervisory error in researching drawings, wiring arrangements and assigning maintenance priorities.

Similarly, repeat problems can be illustrated by the following two LERs. LER-87-018 described a failed coil in a logic relay which caused a Reactor Water Cleanup System isolation. The licensee conducted a technical evaluation of similar coils, identifying those requiring replacement. LER-88-005 describes an actuation of the Primary Containment Isolation Control System and Reactor Building Isolation Control System due to a failure of a similar coil in another relay.

Our assessment of the 39 events in this reporting period indicates:

- 16 involved either administrative control deficiencies, inadequate instructions, or inadequate procedures.
- 7 involved errors by non-licensed personnel.
- As many as 8 may have involved design defects.
- As many as 19 may have been repeats of earlier or similar events at Pilgrim.

(Note: events may be assigned multiple causes)

In conclusion, the large number of events involving deficiencies in administrative controls, inadequate procedures and repeats of earlier, similar events points to the need for close monitoring of the effectiveness of licensee management in these areas.

TABLE 1

TABULAR LISTING OF LERs BY FUNCTIONAL AREA

PILGRIM NUCLEAR POWER STATION

AREA	CAUSE CODE						
	A	B	C	D	E	X	TOTAL
1. Plant Operations	1	-	1	-	-	2	4
2. Radiological Controls	-	-	-	-	-	-	0
3. Maintenance and Modifications	4	-	1	7	6	1	19
4. Surveillance	4	-	-	4	1	1	10
5. Fire Protection	-	-	-	-	-	-	0
6. Emergency Preparedness	-	-	-	-	-	-	0
7. Security and Safeguards	1	-	-	-	-	1	2
8. Engineering and Technical Support	-	4	-	-	-	-	4
9. Licensing Activities	-	-		-	-	-	0
10. Training and Qualification Effectiveness	-	-	-	-	-	-	0
11. Assurance of Quality	-	-	-	-	-	-	0
TOTALS	10	4	2	11	7	5	39

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

LERs Reviewed: 87-001-00 to 88-015-00 including 88-008-01 and 87-014-01

TABLE 2

INSPECTION HOURS SUMMARY (02/01/87 - 05/15/88)

PILGRIM NUCLEAR POWER STATION

		Hours	% of Time
1.	Plant Operations	2178	22
2.	Radiological Controls	1262	13
3.	Maintenance and Modifications	2347	24
4.	Surveillance	1386	14
5.	Fire Protection	493	5
6.	Emergency Preparedness	176	2
7.	Security and Safeguards	641	7
8.	Engineering and Technical Support	1215	12
9.	Licensing Activities	*	-
10.	Training and Qualification Effectiveness	**	-
11.	Assurance of Quality	**	-
	Totals	9698	

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

** Hours expended in the areas of Training and Assurance of Quality are included in the other functional areas.

Inspection Reports included: 50-293/87-06 to 50-293/88-22

TABLE 3

ENFORCEMENT SUMMARY (02/01/87 - 05/15/88)

PILGRIM NUCLEAR POWER STATION

A. Number and Severity Level of Violations

Severity Level I	0
Severity Level II	0
Severity Level III	0
Severity Level IV	21
Severity Level V	2
Deviation	0
Total	26*

B. Violations Vs. Function Area

		Severity Levels						
	Functional Areas	I	II	III	IV	V	Dev	Total
1.	Plant Operations	-	-	-	2	-	-	2
2.	Radiological Controls	-	-	-	8	-	-	8
3.	Maintenance and Modification	-	-	-	6	-	-	6
4.	Surveillance	-	-	-	1	-	-	1
5.	Fire Protection	-	-	-	1	-	-	1
6.	Emergency Preparedness	-	-	-	1	-	-	1
7.	Security Safeguards	-	-	-	-	-	-	3*
8.	Engineering and Technical Support	-	-	-	1	-	-	1
9.	Licensing Activities	-	-	-	-	-	-	0
10.	Training and Qualification Effectiveness	-	-	-	-	-	-	0
11.	Assurance of Quality	-	-	-	1	2	-	3
	Totals							26*

*Three security violations are being considered for escalated enforcement action and have not yet been categorized for severity.

TABLE 4

Pilgrim SALP History

Functional Area	Assessment Period							
	1/80-12/80	9/80-8/81	9/81-6/82	7/82-6/83	7/83-9/84	10/84-10/85	11/85-1/87	2/87 5/88
Operations	2	3	3	2	2	3	2	2
Radiological Controls	3	2	2	2	3	3	3	3
Surveillance	2	2	2	1	1	2	3	2
Maintenance	2	3	2	2	1	2	2	2
Emergency Planning	3	1	1	1	3	3	2	2
Fire Protection	2	2	3	1	2	-	3	2
Security	2	2	2	2	2	2	3	2
Engineering and Technical Support	-	-	-	-	-	-	1	1
Licensing	-	-	2	1	1	1	2	2
Training Effectiveness	-	-	-	-	-	-	2	2
Assurance of Quality/QA	3	3	-	-	-	-	3	2
Outage Management	3	2	2	-	1	1	1	-

TABLE 5

MANAGEMENT MEETING AND PLANT TOUR SUMMARY

DATE	SPONSOR	TOPIC
02/02/87	NRC	Management meeting at Plymouth, MA to discuss the status of licensee improvement programs (IR 87-08)
02/03/87	Massachusetts Secretary of Energy	NRC Region I Administrator and other Region I managers met in Boston, MA with several Commonwealth administrators to discuss NRC activities regarding Pilgrim
03/09/87	Massachusetts Legislature	NRC Region I Administrator and other members of the staff appeared in Boston, MA before the Massachusetts Joint Committee on the Investigation and Study of the Pilgrim Station at Plymouth (IR 87-16)
03/10/87	NRC	NRC Chairman Zech toured Pilgrim accompanied by the Regional Administrator and attended a licensee presentation (IR 87-16)
04/27/87	Massachusetts Legislature	NRC Region I Administrator and other members of the staff appeared in Boston before the Massachusetts Joint Committee on the Investigation and Study of the Pilgrim Station in Plymouth (IR 87-18)
05/01/87	NRC	Management meeting at NRC Region I to discuss a surveillance program violation and program weaknesses (IR 87-23)
05/07/87	NRC	1987 SALP management meeting at Plymouth, MA
05/22/87	NRC	NRC Commissioner Carr toured the plant and attended a licensee presentation
05/27/87	Plymouth Board of Selectmen	Four NRC Region I management representatives participated in a public meeting in Plymouth, MA
06/24/87	NRC	NRC Commissioner Asselstine toured the plant and attended a licensee presentation

Table 5

DATE	SPONSOR	TOPIC
06/29/87	NRC	Management meeting at NRC Region I to discuss the outage status, program improvements and licensee preparations for restart (IR 87-28)
07/23/87	Commonwealth of Mass.	The NRC Section Chief, Licensing Project Manager and Resident Inspectors for Pilgrim met onsite with representatives of the Commonwealth to discuss the NRC inspection process (IR 87-27)
09/09/87	NRC	Enforcement conference at NRC Region I to discuss several security violations (IR 87-30)
09/24/87	NRC	NRC Director of the Office of Nuclear Reactor Regulation, the Region I Administrator and other senior NRC managers met with the licensee in Bethesda, MD to discuss licensee activities and restart readiness (NRR meeting transcript)
09/30/87	NRC	Enforcement conference at NRC Region I to discuss several security violations (IR 87-30)
10/05/87	NRC	NRC Commissioner Bernthal toured the plant and attended a licensee presentation
10/08/87	Commonwealth of Mass.	NRC Region I Administrator and other senior NRC managers met at Region I with representatives of the Commonwealth of Mass. and two private citizens to answer questions regarding the NRC inspection process (IR 87-45)
10/29/87	Duxbury Board of Selectmen	Four NRC Region I and NRR management representatives participated in a public meeting sponsored by the Duxbury Board of Selectmen, Duxbury Emergency Response Plan Committee and the Duxbury Citizens' Committee on Nuclear Matters in Duxbury, MA
12/08/87	NRC	NRC Region I Administrator toured the plant and met briefly with licensee management to discuss tour observations (IR 87-57)

Table 5

DATE	SPONSOR	TOPIC
01/07/88	United States Senator Kennedy	NRC Director of the Office of Nuclear Reactor Regulation and the Region I Administrator appeared before the Senate Labor and Human Resources Committee regarding Pilgrim. The public hearing was held in Plymouth, Ma.
02/18/88	NRC	NRC Region I and NRR managers conducted a public meeting in Plymouth, MA to solicit public comments on the licensee's Restart Plan
02/24/88	NRC	Management meeting at NRC Region I to discuss the licensee's self assessment process to be used for determining restart readiness (IR 88-10)
03/10/88	NRC	The NRC Director of the Office of NRR and the Region I Administrator toured the plant and interviewed licensee staff regarding the design basis for the direct torus vent modification (IR 88-07)
04/08/88	NRC	Management meeting at NRC Region I to discuss the licensee's proposed power ascension test program (Meeting Minutes 88-43)
04/22/88	NRC	NRC Commissioner Carr toured the plant and attended a licensee presentation (IR 88-12)
05/06/88	NRC	NRC Commissioner Rogers toured the plant and attended a licensee presentation (IR 88-19)
05/11/88	NRC	NRC Region I and NRR managers conducted a public meeting in Plymouth, MA to provide responses to comments and concerns on the licensee's Restart Plan raised during the 2/18/88 public meeting (Meeting transcript)