SALP BOARD REPORT

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

50-263/89001
Inspection Report No.

Northern States Power
Name of Licensee

Monticello Nuclear Generating Plant
Name of Facility

December 1, 1987 through February 28, 1989
Assessment Period

TABLE OF CONTENTS

I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate licensee performance on the basis of this information. The program is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. SALP is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful feedback to the licensee's management regarding the NRC's assessment of their facility's performance in each functional area.

An NRC SALP Board, composed of the staff members listed below, met on April 20, 1989, to review the observations and data on performance, and to assess licensee performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." The guidance and evaluation criteria are summarized in Section III of this report. The Board's findings and recommendations were forwarded to the NRC Regional Administrator for approval and issuance.

This report is the NRC's assessment of the licensee's safety performance at Monticello Nuclear Generating Plant for the period December 1, 1987, through February 28, 1989.

The SALP Board for Monticello Nuclear Generating Plant was composed of:

Name	Title
*E. G. Greenman	SALP Board Chairman, Director, Division of Reactor Projects
*W. D. Shafer	Acting, Deputy Director, Division of Reactor Safety
*J. W. Hickey	Acting, Director, Division of Radiation Safety and Safeguards
*W. L. Axelson	Chief, Reactor Projects Branch 2
**R. W. Cooper, II	Chief, Engineering Branch
***J. R. Creed	Chief, Safeguards Section
I. N. Jackiw	Chief, Reactor Projects Section 2B
****W. G. Snell	Chief, Emergency Preparedness and Effluents Section
#M. P. Phillips	Chief, Operation Programs Section

+M. C. Schumacher	Chief, Radiological Controls and Chemistry Section
*J. J. Stefano	Project Manager, NRR
*P. L. Hartmann	Senior Resident Inspector, Monticello
C. D. Pederson	Reactor Engineer, Division of Reactor Projects
T. E. Vandel	Reactor Inspector, Division of Reactor Safety
J. E. House	Radiation Specialist, Division of Radiation Safety and Safeguards
T. J. Madeda	Security Specialist, Division of Radiation Safety and Safeguards
R. N. Sutphin	Project Engineer, Division of Reactor Projects
M. A. Kunowski	Radiation Specialist, Division of Radiation Safety and Safeguards
W. B. Grant	Radiation Specialist, Division of Radiation Safety and Safeguards
C. F. Gill	Radiation Specialist, Division of Radiation Safety and Safeguards
D. L. Schrum	Project Engineer, Division of Reactor Projects

*Denotes voting members.
**Denotes voting member for the Maintentnace/Surveillance area.
***Denotes voting member for the Security area.
****Denotes voting member for the Emergency Preparedness area.
#Denotes voting member for the Engineering/Technical Support area.
+Denotes voting member for the Radiological Controls area.

II. SUMMARY OF RESULTS

A. Overview

The licensee has made a substantial improvement in the performance of routine plant operations. Management has demonstrated a high degree of involvement in assuring the quality and safety of activities at Monticello. Significant reductions in the number of reactor trips, Engineered Safety Feature (ESF) actuations, Licensee Event Reports (LERs), significant events, safety system failures, missed surveillances, and personnel errors during this assessment period. The excellent performance in the operation of the plant resulted in an improvement to a Category 1 SALP rating in Plant Operations. Management strongly supported an open communication environment, staff training, and a strong Quality Assurance program. Staffing is viewed as a utility strength; licensee personnel are responsible and forthright in identifying and resolving most problems, and displaying a positive safety attitude. However, examples were noted where the licensee had not identified problems and only took corrective actions after the NRC identified the problems. The licensee continued to show overall improved performance and is a strong performer in Operations, Maintenance/Surveillance, Radiological Controls, and Emergency Preparedness Areas. Performance in security declined substantially during the assessment period. Enforcement history, management involvement, and response to NRC initiatives were viewed as weak and in need of Senior Management attention. Positive improvements were noted late in the assessment period due to a security reorganization, assignment of a new full-time Security Manager and the upgrade of security equipment.

The performance ratings during the previous assessment period and this assessment period according to functional areas are given below:

Functional Area	Rating Last Period	Rating This Period	Trend
Plant Operations	2	1	
Radiological Controls	1	1	
Maintenance/Surveillance	1/1	1	
Emergency Preparedness	1	1	
Security	2	3	
Engineering/Technical Support	2	2	
Safety Assessment/Quality Verification	NR	2	

NR - Not Rated

B. Other Areas of Interest

None.

III. CRITERIA

Licensee performance is assessed in selected functional areas. 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.

The following evaluation criteria were used to assess each functional area:

1. Assurance of quality, including management involvement and control;

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, reporting of, and corrective actions for);

6. Staffing (including management); and

7. Effectiveness of training and qualification program.

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

On the basis of the NRC assessment, each functional area evaluated is rated according to three performance categories. The definitions of these performance categories are as follows:

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 report may include an appraisal of the performance trend in a functional area for use as a predictive indicator if near-term performance is of interest. Licensee performance during the last quarter of the assessment period should be examined to determine whether a trend exists. Normally, this performance trend should only be used if both a definite trend is discernable and continuation of the trend may result in a change in performance rating.

The trend, if used, is defined as:

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.

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

Evaluation of this functional area was based on the results of ten routine inspections conducted by the resident inspectors and one special inspection of the Emergency Operating Procedures (EOPs) conducted by NRC headquarters inspectors.

The enforcement history in this area has improved. The Operations and Fire Protection functional areas were separate in the previous assessment but have been combined in this period. Three Level IV violations were identified in the Operations area during the current 15-month assessment period compared to five (four operations and one fire protection) during the previous 18-month assessment period. These violations were not of major safety significance. Two violations involved Appendix R fire barriers; the first was two examples of fire door latch mechanisms being taped in the open position during a refueling outage and the second was an open and unattended fire door. The third violation involved several logging deficiencies. The licensee's corrective action was to improve the reactor operators' log for major plant equipment accountability.

The operational performance of the plant has improved since the last assessment period. The plant commenced startup on December 16, 1987, and operated for 363 continuous days, exceeding their previous continuous operation record of 198 days achieved during SALP 6. The current plant cycle of operation has been interrupted only by a reactor scram which resulted from a component failure. Unit availability was 99.8 percent during the assessment period compared to 96.7 percent during the previous fuel cycle.

During this assessment period, five LERs were attributed to Operations. Four involved fire protection, two of which are discussed above as Level IV violations. The remaining two LERs related to fire protection involved inadequate fire patrols and an open penetration in a fire barrier which were identified by the licensee. The fifth LER was a no rod motion scram which occurred during startup preparations when an operator incorrectly moved the reactor mode switch to the run position while intending to select the startup position. A contributing cause of the event was the design of the mode switch. The licensee is working with the vendor on a new design for this switch. The reduction from six licensed operator personnel errors in the previous SALP period to one during the current

period is a substantial reduction and indicates improved licensee performance. The licensee has developed a dedicated system engineer to improve performance in the fire protection area. This was accomplished late in the SALP period.

Staffing in the operations area is a licensee strength. Operators are experienced and turnover is low. The attitude and morale of the operators has improved during this assessment period. The control room personnel are businesslike and professional. The licensee implemented a college degree program for operators during the previous assessment period and has continued to support this program for supervisory personnel. Four of the participants received their degrees at the end of the assessment period. These were Bachelor of Science degrees in physics, with an emphasis on applied nuclear science.

Several indications in the control room support a conclusion that the licensee continued its good performance in this functional area. While operating, the plant typically achieved a "blackboard" and when an annunciator came in, the licensee took prompt corrective action to solve the problem. The number of systems tagged out of service was typically zero. The number of LCOs entered were few and its duration was short as a result of the timeliness of repairing equipment. Plant housekeeping has improved since the previous assessment period with the licensee instituting an aggressive painting/preservation and labeling program. Work spaces are kept very clean and free of loose gear.

The plant response to operational events was very good during the assessment period. There was a low number of events attributed to operations and response to events was typically timely and appropriate. For example, prompt operator action prevented a low condenser vacuum scram after the loss of the offgas hydrogen recombiner train. Licensee management was effective in response to operational events and their causes. For example, when a site superintendent determined that a licensed operator had improperly tested the control rod drive mechanisms, the General Superintendent of Operation took prompt action and removed two licensed operators from shift duties and required a training program on procedure compliance.

Management involvement and control is apparent on a daily basis as evidenced by frequent plant and control room tours by management personnel. The licensee also creates a strong link between the supervisory staff and operations with the shift technical advisors (STA) program. The around-the-clock coverage by well-trained and experienced STAs provides continuity and expertise across shifts for operations. The importance of the STA position was evident during implementation of the EOPs when the shift supervisor

was very involved with using the procedures and flowcharts, and the site supervisor was performing the function of the emergency director. The STA had the time to have an objective overview of the EOP process and kept the other involved personnel on track.

An NRC EOP inspection performed during the assessment period, concluded that operators appeared to be well-trained and adequately follow the EOPs during simulator and walkthrough observations. However, the inspection team identified a weakness in training for EOP support procedures, which were taught in the classroom but not walked down in the plant. The inspection team identified a significant disparity in the level of performance of one crew compared to the excellent performance of the other two crews in observed simulator accident scenarios. The inspection team concluded that this was attributable to the inadequate training of the one shift supervisor who was recently promoted to that position. After this was identified the licensee promptly implemented actions to address this problem which included training all the crews.

A specific problem dealing with the performance of licensed senior reactor operators (SROs) who normally served as lead reactor operators (ROs) in the control room was identified during requalification examinations. These individuals were not able to effectively perform duties normally assigned to an SRO. This weakness also was identified during the EOP inspection. Both instances involved the facility's policy of not requiring those individuals licensed as SROs, but who normally serve in RO positions, to maintain the requisite SRO knowledge levels. In both evaluations, the SRO was unable to effectively implement the facility's EOPs. The licensee is currently reviewing this policy.

The licensee has been very responsive to NRC initiatives as evidenced by the their corrective actions to reduce the number of personnel errors. These corrective actions appear to have been effective, indicated by the low number of licensed operator personnel errors. Another example was the installation of test switches in the reactor building wide range gas monitor logic to prevent ESF actuations during surveillances. This action has contributed to a significant decrease in ESF actuations. The total number of ESF actuations in the previous assessment period was 22 compared to 7 during this period. The number of scrams also decreased, from 10 (6 scrams at greater than 15% power and 4 at less than 15%) in the previous period to 2 during this period (1 from 100% power due to equipment failure and 1 with all rods inserted due to personnel error). Plant operators' overtime averaged less than ten percent throughout this assessment period for nonoutage work.

During this SALP period, 75 percent of the operator candidates (9 of 12) passed their initial licensing examinations given in

March and June 1988. This pass rate was comparable to the previous SALP period replacement pass rate of 83 percent (20 of 24 candidates). The NRC requalification examinations were administered in February 1989. The percentage of persons passed by the facility and NRC were both 75 percent (12 of 15 examinees).

2. Conclusion

The licensee's performance is rated Category 1 in this area. The licensee was rated a Category 2 during the previous assessment period. The improvement in performance was due to significant reductions in the number of reactor trips, ESF actuations, LERs, significant events, safety system failures, and personnel errors.

3. Board Recommendations

None.

B. Radiological Controls

1. Analysis

Evaluation of this functional area was based on the results of five inspections performed during the assessment period by region-based inspectors and observations by the resident inspectors.

Enforcement history in this area was adequate but declined with three Severity Level IV violations in the current 15-month assessment period as compared to none during the previous 18-month assessment period. The three violations were not indicative of a significant programmatic weakness.

Staffing was good during this period. Several experienced radiation protection specialists and one health physicist from the corporate staff were added to the training department. A second health physicist from corporate staff, professionally certified in health physics, was added to the radiation protection department.

Management involvement to ensure quality was evident and generally good during this period. Station management was involved in station radiation protection committees and in setting goals for as-low-as-reasonably-achievable (ALARA) and personnel contaminations. However, a 20% bias in iodine cartridge analyses evident in the licensee's quarterly crosscheck data was not pursued; a timely correction was effected in followup initiated as a result of NRC questions.

Licensee response to NRC concerns has generally been good. The licensee has provided training to the radiation

protection manager whose training and qualifications were identified as a concern in the previous assessment. A concern on the timeliness of closing out Radiological Practice Deficiency Reports was adequately addressed by the licensee. Good performance also included revision of the dry active waste (DAW) tritium and C-14 concentration methodology, and the installation of a mixing device and a revised sampling configuration on a liquid discharge monitoring tank.

The licensee's approach to resolving radiological technical issues was good during the assessment period. Efforts were made to reduce the number of personnel contaminations. Additional automatic whole-body contamination monitors have been installed, improvements have been made in laundering and monitoring protective clothing and in extensive plant decontamination and painting. Personnel contaminations in 1988, a non-outage year, were reasonably low. Certain aspects of the gaseous waste monitoring system, the solid radwaste process control program, and the computerized radwaste classification and shipping manifest preparation program have been improved. However, more attention is needed to correct weaknesses in radioactive effluent monitoring and the batch/special gaseous effluent release programs.

The licensee has also evaluated and plans to implement several costly and potentially very effective methods for reducing plant radiation fields from cobalt-60 which represents a substantial ALARA commitment. In 1987, Monticello had a dose total of 530 person-rem. In 1988, with the unit on-line 363 days out of the year, the dose total was 110 person-rem. The licensee has continued its conservative policy of prohibiting routine liquid radioactive waste releases. The decision to replace defective fuel assemblies during the late 1987 outage and an improved steam leak repair program greatly reduced the calculated offgas critical organ dose rate offsite. The licensee continues to make progress in reducing the volume of solid radwaste generated, although further DAW reduction is desirable. No transportation incidents occurred during the assessment period. The quality of radiological confirmatory measurements continues to be good with 41 agreements in 44 comparisons. Corrective actions for the three disagreements were taken immediately.

The licensee's training and qualifications program has been effective; significant effort was expended to augment the training of the radiation protection manager and to provide training to station design and system engineers on ALARA applications and dose reduction techniques. The station's radiation protection technician training program was accredited by the Institute of Nuclear Power Operations (INPO) during the assessment period.

2. Conclusion

The licensee performance is rated Category 1 in this area. The licensee was rated Category 1 during the previous assessment period.

3. Board Recommendations

None.

C. Maintenance/Surveillance

1. Analysis

Evaluation of this functional area was based on the results of eleven inspections conducted by resident inspectors and four by regional inspectors. Maintenance and surveillance were separate functional areas in the previous assessment period, but have been combined as one functional area for this assessment period.

The enforcement history during this assessment period indicated an improvement from the previous period. Two Severity Level IV violations were identified as compared to eight Severity Level IV violations (five in Maintenance and three in Surveillance) in the previous assessment period. Both violations involved several examples of procedure non-compliance which were not safety significant. One violation was identified early in the assessment during the refueling outage. The other violation occurred after startup from the outage and was due to a torque multiplier not being calibrated by the due date. Overall, the licensee's enforcement performance has been good.

Operational events in this area did not indicate any pervasive problems in the licensee's control of maintenance or surveillance activities affecting plant operations. Of the 16 LERs issued during this period, 7 were assigned to this functional area. Of these seven LERs, four were issued early during the period while the plant was shutdown for refueling. Three of these LERs identified ESF actuations caused by personnel error. The plant has operated throughout the assessment period with no major equipment problems. During the assessment period, there was one automatic reactor scram which was caused by a malfunction of an instrument isolation valve.

Licensee management's involvement to assure quality of surveillance activities was usually evident. Several indicators made this apparent; surveillance and inservice testing activities were performed in a professional manner, personnel involved in the supervision and performance of assigned surveillance tasks were adequately trained and knowledgeable of task objectives and equipment operation, procedures were adequate and contained appropriate precautions and notes, and records were complete and well-maintained. No surveillances were missed during this surveillance period.

The staffing in this functional area was a licensee strength. The staff was stable, trained, and experienced. The maintenance and surveillance staff size appeared adequate; however, because there was little outage work, staff size was not challenged. System expertise was usually available within the station staff. Observations of inservice inspection (ISI) activities indicated that personnel performing nondestructive examinations (NDE) had adequate expertise to perform their functions. Consultants were used when needed to supplement the station's staff. Chemistry staffing remained satisfactory. Qualification records for NDE and welder personnel, as well as observation of work activities, indicated that an effective program was in place.

Management involvement was a strength in this functional area. For example, the licensee decided to extend the Fall 1987 outage to complete emergent work that was identified during the outage. This decision to complete the emergent work appeared to contribute to the successful plant operation since startup from the outage. The station was very responsive when minor repairs were required on equipment. ISI procedures and program reviews indicated that effective controls of work activities were present. Prior planning and assignment of priorities were evident and records were well maintained and complete.

The station has been very responsive to NRC initiatives in this functional area. For example, the licensee voluntarily committed to improve the startup check lists for instrument isolation valves. Also, the licensee responded in a broad and comprehensive manner when the NRC identified a concern with the material condition of small piping valves. The licensee's immediate corrective action consisted of repairs to known material deficiencies; long-term corrective action consisted of detailed system walkdowns of all safety systems.

The preventive maintenance program has improved with the addition of computer based predictive measurements taken during surveillances of equipment. The corrective maintenance required during the SALP period was minimal, indicating an effective preventive maintenance program. Preventive maintenance was performed on a consistently timely basis. The backlog of work requests was maintained at a manageable level, and reviewed weekly by management.

The licensee's approach to the identification and resolution of technical problems was mixed. The station staff demonstrated a good understanding of systems and problems encountered. In the chemistry area, problems with the atomic absorption spectrophotometer were identified early in the assessment period, and they had not been completely corrected by the end of the assessment period. These problems were major contributors to the disagreements noted in the nonradiological confirmatory

measurements program. Early in the assessment period the licensee's performance in these measurements was weak with 12 agreements out of 24 analyses. The licensee's performance late in the assessment period improved to 28 agreements out of 30 analyses after some recalibration of instruments had been completed. However, of the six samples sent to Brookhaven National Laboratory, two were disagreements that involved the atomic absorption spectrophotometer. This was indicative of continuing problems with this instrument and additional licensee attention is needed to solve this problem.

2. Performance Ratings

The licensee's performance is rated Category 1 in this area. The licensee was rated a Category 1 in both Maintenance and Surveillance the previous assessment period.

3. Board Recommendations

None.

D. Emergency Preparedness

1. Analysis

Evaluation of this functional area was based on one emergency preparedness (EP) exercise, one routine, and one followup inspection conducted by region-based inspectors during this assessment period.

Enforcement history indicates no violations during this assessment period. Five NRC concerns relating to Production Training Center program commitments and one concern regarding shift augmentation staffing were identified and listed as open items during the routine inspection. All of the concerns were adequately addressed and the commitment to complete upgrading of the training program was completed during this assessment period.

Management involvement to ensure quality in this functional area has remained high. The 1988 annual exercise was successful in implementing the emergency plan and clearly demonstrated the licensee's ability to assist offsite agencies to protect the health and safety of the public. The exercise scenario data and controller and participant performance during this exercise was an improvement over the previous exercise which contained errors. This improved performance reflects the licensee's increased management support and attention to the Emergency Response program at Monticello. However, the exercise scenarios lacked technical difficulty.

Management and staffing of the emergency response organization has been very good throughout the assessment period. One additional full-time staff member has been added onsite. The licensee has maintained a prioritized roster with an adequate number of qualified personnel to fill key positions in the emergency organization. The quarterly off-hour drills successfully demonstrated the licensee's capability to augment on-shift staff within the required time frames.

Improvement in the licensee's EP program was demonstrated by the purchase of two dedicated four-wheel-drive vehicles for use by the offsite survey teams. Dedicated vans and equipment are maintained in a state of operational readiness. The licensee also has purchased 65 additional pagers for staff members of various expertise to help ensure that the plant can respond in a timely manner to events. The emergency response facilities were well maintained and ready for operation, but a NRC concern remains relevant to the physical size of the EOF to adequately accommodate a large response of licensee, state, county, and federal personnel during an actual emergency.

The licensee's resolution of technical issues from a safety standpoint was good as evidenced by the timeliness and thoroughness of corrective actions for all NRC- and self-identified concerns. Tracking systems were effectively used to track corrective actions taken on items identified during previous inspections and items identified by a strong plant audit program. The licensee is a leader in the industry in the ability to run EOPs on the plant simulator.

Licensee management maintained a strong offsite liaison program that supports the States of Minnesota and Wisconsin and their respective counties. The licensee had several programs to assist offsite support groups in their efforts to improve their performance in 1989. In part of the overall program improvement effort, the offsite support groups were questioned as to the adequacy of Northern States Power Company's support of the offsite support response program. The results of this effort were evaluated and improvements are being made to the program. Joint workshops are held every 18 months with both states and the counties to address areas of concern and how the groups interface. Cross training with each State is conducted quarterly to improve communications between the utility personnel and offsite support groups.

2. Conclusion

The licensee's performance is rated Category 1 in this area. The licensee was rated a Category 1 in the previous SALP assessment period.

3. Recommendations

None.

E. Security

1. Analysis

This functional area was evaluated on the basis of three routine security inspections by regional physical security inspectors and the routine observations of security force activities by the resident inspectors.

The enforcement history in this area was poor and represents a continuing decline in licensee performance. Seventeen Severity Level IV violations were issued; five of these violations were discussed during the previous assessment period. The decline during this assessment period resulted in four separate meetings with licensee representatives and the NRC. One meeting was an enforcement conference involving potential escalated enforcement action relating to two violations, both involving degraded vital area barriers. The second, a management meeting, involved inspection findings that included four violations that were repetitive in nature. In addition, two working meetings were held with licensee management to discuss the apparent decline of management effectiveness in the security program and the licensee's actions to reverse the trend. Eleven of the twelve violations covered in this assessment period were caused by security management's lack of attention to detail in implementing the security program. To address these findings, the licensee developed and implemented a security improvement program intended to reverse the negative performance.

Security management's involvement to ensure quality in this functional area has been weak in their attention to technical security issues and judgment in making the appropriate security-related decisions. This was evidenced by four repeat violations that resulted from poor corrective actions. Senior licensee management has taken action, which included the restructuring of the site security management organization. This reorganization became effective during the last third of this assessment period and included the assignment of a full-time security manager to the site. Although these actions have resulted in some positive improvement in the security management effort during this assessment period, these improvements have not been in effect long enough to evaluate their full potential.

The licensee's resolution of technical security issues and responsiveness to NRC initiatives was weak as evidenced by the poor corrective actions that resulted in several repeat violations, which in part were due to the lack of a full-time technical security manager at the site. Audits were being

performed as required and were adequate to meet security plan requirements. They did not, however, identify the items found by the NRC. Audits lacked scope, frequency, and depth in order to identify problems. The licensee's efforts in completing necessary upgrades for outdated equipment has been good. These upgrades included replacing the security computer, installing solid state closed-circuit television cameras, replacing the perimeter detection system, and performing modifications to protect vital area barriers. These changes and improvements to date have increased the quality and effectiveness of the security hardware program. The need for the improved equipment and reliability was initially identified by the NRC during the previous assessment period and continued during this period. The licensee's current improvement program is scheduled to be completed in late 1989.

The licensee's security event reporting program is good and reports were timely and accurate. The licensee generally ensures that the NRC is informed of security-related matters. One exception was found where the licensee had logged an event that required reporting to the NRC. This failure to report resulted in a violation and a procedural modification to the licensee's security reporting program. In general, security-related records were complete, adequately maintained, and available for NRC review.

Security staffing levels were adequate although licensee site security management resources have appeared to be somewhat strained recently. The organization that was put in place, during the last third of the assessment period, was expanded to include the addition of another dedicated individual in security. The individual did not, however, have technical experience in the security field. This lack of technical expertise, combined with the responsibility to implement a comprehensive performance improvement program and the continuing need to maintain daily routine security activities, has caused a strain on the effectiveness of the program. Although technical expertise existed at the corporate level, it remained only in a routine, indirect oversight mode rather than in direct day-to-day monitoring. The licensee's security training and qualification program for security officers was strong and appeared to exceed regulatory requirements.

2. Conclusion

The licensee's performance is rated a Category 3 in this area. The licensee's performance was rated Category 2 in the previous assessment period. This decline in rating is based primarily on a decline in enforcement history, management involvement, and responsiveness to NRC.

3. Recommendations

The board recommends that the licensee should continue to implement the security improvement program and that the senior licensee management should continue their increased direct attention at the site to ensure that security rules are fully implemented.

F. Engineering and Technical Support

1. Analysis

Evaluation of this functional area was based on the results of four routine inspections by regional inspectors, several inspections by the resident inspectors, a special inspection of the EOPs, and Office of Nuclear Reactor Regulation (NRR) evaluations.

Enforcement history improved from the previous period with only two Severity Level IV violations issued during this assessment period as compared to two Severity Level III violations and three Severity Level IV violations during the previous assessment period.

Four LERs related to this functional area were issued during this assessment period. Two of these involved procedure inadequacies (inadequate diesel generator test and fire barrier not in place), one involved a design deficiency (high fatigue cracking in a decontamination connection), and the remaining one was caused by improper installation of heat shrink insulation (standby gas treatment system initiation). Corrective actions were promptly implemented for all of these LERs.

Management's level of involvement to ensure quality was adequate. Senior operating and construction engineering management and staff are located at the facility. Management's philosophy, policy, and personnel responsibility are directed at superior performance and have been clearly communicated. There was evidence of significant management involvement in the activities involving microfilming of radiographs, preparation of proposed Technical Specification changes to comply with 10 CFR 50, Appendix R, and submittals to NRR regarding the increased enrichment of sodium pentaborate for the standby liquid control system. The licensee utilizes the system engineer concept that places a high degree of ownership and expectation on the associated engineer. Management was involved in the corrective actions implemented to resolve concerns of a Severity Level III violation issued during the previous period. However, an environmental qualification (EQ) follow-up inspection conducted shortly after the end of this assessment period indicated a lack of management attention in assuring that EQ requirements had been met prior to the November 30, 1985 deadline.

The approach to resolution of technical issues from a safety standpoint has been good. Although problems have been identified in the past, the quality of 10 CFR 50.59 evaluations has steadily improved during the assessment period. The engineering staff developed a special program to track and resolve the concerns identified during the corporate QA audit of the modification process. This program contained provisions for characterizing the concern, evaluating potential operability effects, evaluating root cause and generic impact, specifying corrective actions, and documenting supervisory review and approval. Potential operability concerns and generic impacts were conservatively assessed throughout this program, and root cause evaluations and corrective actions were accurate, with few exceptions. Technical resolution of the fuse/breaker coordination problem was excellent. Plant management developed a program for review and evaluation of malfunctioning equipment that encompasses malfunctions occurring within the plant as well as those reported by outside sources. The licensee has implemented the requirement for the periodic assessment of vendors, the updating of vendor technical information, and a comprehensive program for controlling vendor supplied services.

During an NRC inspection of the licensee's modification process, a number of concerns were raised relating to control of the design change/modification process and the accuracy of documentation as a result of the modifications. Specifically, the concerns related to operability of equipment following modifications that altered the original design; adequacy of system interface testing following completion of modifications; adequacy of documentation to support the as-built condition of the plant; and control of equipment/system specifications during implementation of design changes. As a result of these concerns, the licensee promptly implemented actions to conduct an independent audit of a combination of old and new modifications. The results of the licensee's audit were discussed with the NRC during two management meetings. While the licensee's actions were prompt and generally good, the identified problems indicated a weakness in their modification program. Additional information concerning the licensee's followup audit are contained in Section G of this report.

The licensee's responsiveness to NRC initiatives was adequate. Examples were the prompt response to questions regarding river water temperature design assumptions, seismic qualification of steam line loading, and the adequacy of 10 CFR 50.59 considerations involving emergency diesel generator (EDG) room ventilation dampers. The licensee's responses to queries related to the structural integrity of the reactor and turbine buildings were thoroughly addressed, technically sound, and submitted in a timely manner. However, the licensee's staff appeared to put too much reliance on its consultant in responding to technical questions regarding its own transient code for reload evaluations. With respect to the LPCI swingbus design deficiency, licensee management was not

initially involved to the degree necessary to ensure that a problem did not exist at Monticello. The licensee initially concluded that a problem did not exist at Monticello. However, after re-evaluating the matter, the licensee acknowledged the single-failure vulnerability of the LPCI swingbus transfer design and provided a justification for continued operation with an adequate technical basis for interim operation until the design modification, under review by NRR, could be installed during the next refueling outage.

An NRC EQ followup inspection conducted shortly after the end of the assessment period identified narrowly focused corrective action to a previous EQ violation that resulted in questionable operability of equipment located in the drywell that was susceptible to submergence under LOCA conditions.

The licensee has been responsive to training initiatives with regard to operator licensing. The facility has implemented the revised requalification examination format in its program, and the total number of questions in the facility requalification examination bank exceeds the industry commitment. The requalification program has an overall program rating of satisfactory.

The engineering staff responded promptly to several operational events during the assessment period. Several reactor water cleanup (RWCU) system isolations occurred during this period that were planned and unplanned. The engineering staff, in response to the most recent isolation, initiated a modification to alter the RWCU isolation function from closing containment isolation valves to de-energizing the RWCU pumps. The engineering staff aggressively pursued operational problems associated with low river flow that resulted from the 1988 summer drought. This included inspection of safety- and non-safety-related heat exchangers for sludge induced loss of heat transfer capacity.

The reactor core isolation cooling (RCIC) system experienced several unplanned trips. The engineering staff conservatively declared the system inoperable, investigated, initiated repairs as necessary, and placed the system in an accelerated testing schedule until reliable performance was proven. However, a thorough evaluation of the possible root causes was not apparent. For example, the station's staff did not consider the operability of the exhaust line drain check valve and the vacuum breaker check valves as a possible cause of the second start trips of the RCIC turbine. Also, the station did not evaluate the difference in voltage obtained during battery tests (terminal vs. sum of individual cells) and did not pursue resolution of all problems on the RCIC steam line flooding operability concern.

Staffing was adequate; however, several indications, such as backlog of operating experience tracking system (OETS) items and incomplete responses to NRC queries may indicate staffing constraints. The licensee has implemented program changes to relieve system engineers from administrative-type duties to allow them to concentrate more on technical matters. Four additional engineering associates were added in this effort.

The training and qualifications program appeared effective, and positively contributed to the success of work activities. The program appeared to be well-defined and was implemented with dedicated resources. The engineering staff has a good percentage of SRO-licensed personnel. Most of the engineering staff participate in operation of the plant as shift emergency communicators or STAs. The staff is stable, and its members typically have a high level of plant experience. Film technicians were certified as Level II and III radiographers, indicating that adequate expertise was available in the microfilming efforts of the radiographs.

2. Performance Rating

The licensee's performance is rated Category 2 in this area. The licensee was rated Category 2 during the previous assessment period.

3. Recommendations

None.

G. Safety Assessment/Quality Verification

1. Analysis

This is a new functional area and consequently was not rated in previous SALP reports. Evaluation of this functional area was based on the results of two inspections performed by regional specialist inspectors, an EOP inspection, one special inspection performed by the project engineer, and 12 routine inspections conducted by the resident inspectors. NRC staff reviews of licensee submittals and requests for amendments to the Monticello Operating License also were considered.

Enforcement history improved with no violations issued. During the previous assessment period, three violations (two Severity Level IV and one Severity Level V) were identified in the functional area of Quality Programs and Administrative Controls Affecting Quality.

The EOP inspection team found that the licensee has no formal program for administrative maintenance of EOPs and their supporting documentation although an administrative control procedure has been in draft for some time. Although no items of immediate safety significance resulting from inadequate controls were identified, a formal administrative control program that included QA review and audit functions would have prevented many of the programmatic deficiencies identified during the inspection. The licensee staff demonstrated that adequate administrative controls and qualified personnel were available to address the deficiencies identified by the inspectors and that managerial involvement and support for resulting deficiencies was appropriate.

Licensee management has increased the plant's involvement in self-improvement and self-assessment activities. An example of this increased involvement was the licensee effectively implementing a relatively new program, the Human Performance Evaluation System (HPES). The licensee has been training people throughout the organization to carry out this program.

Licensee involvement and control in quality verification and response to operational events has improved. This was evidenced by the licensee's progress in conducting performance-based audits and the effectiveness of implementing corrective actions of audit findings. However, security audits early in the SALP period lacked the depth to detect problems in the implementation of the security program that were evident during NRC inspections. Also, management involvement to ensure implementation of procedural requirements during the preparation of a radwaste shipment was not adequate. Although the licensee's resolution of the quality verification problems for the specific work in progress was good and corrective actions were initiated to prevent recurrence of similar activities, the more generic problem regarding personnel from several departments failing to adhere to written procedures has not been well addressed.

QA staffing was ample and stable with an onsite QA/Quality Control (QC) staff and a separate corporate QA staff. Corporate QA evaluation of work performed in the plant and in the plant conduct of appropriate corrective actions was good. The group has a full-time site representative doing performance-based surveillances who reports to corporate QA through simple reporting requirements. This individual was independent of the site QA/QC group. The site QA person determined plant followup of findings, recommendations, and corrective actions. Corporate QA was performing comprehensive quality verification as evidenced by the work done on the modification process.

The QA audit and surveillance programs were well-defined and effectively implemented. QA staff provided extensive surveillance coverage during the refueling outage, startup, and plant operating periods. Programmed audits were at a minimum so that staff would be available for identified problem areas. Review of the audits determined that they were sufficiently detailed and investigations and findings were well-documented. For example, as a result of concerns with the modification process raised by the NRC, the licensee's corporate QA organization conducted an audit of 13 modification packages to determine whether the functional operability of selected safety systems had been adversely impacted by modification. The audit emphasized technical adequacy, documentation of design, traceability, installation, and post-modification testing. The QA team concluded that the functional operability of the systems was not compromised by the modification process, that the process was effective when properly implemented, and that changes made to the process in 1984 had resulted in improvements. Problems were noted with regard to attention to detail, organizational interfaces, temporary procedure changes, timeliness of close-out, and administrative control of modification packages.

The licensee's approach to the identification and resolution of technical issues from a safety standpoint was very good. For example, when the large backlog of plant OETS assignments and actions that required engineering evaluation and resolution was identified by the licensee as a problem, the licensee contracted for additional engineers to reduce the backlog. Since the additional individuals have been on the staff, the number of open OETS items has been reduced from 690 on January 1, 1988, to 524 on December 31, 1988. This includes resolving an additional 590 new items, such as NRC Information Notices, SILs, and TILs that were added to the current number of assignments and actions during the year.

Review of LERs and Significant Operating Events (SOEs) indicates that the licensee performed adequately in identifying deficiencies, resolving issues, and preventing recurrence. The licensee was continuing to improve methods of trending and performing root cause analysis and to increase the effectiveness of the use of data from these programs.

During this assessment period, the licensee submitted changes to the Plant Security Plan in response to the rule change pertaining to 10 CFR 73.55, Miscellaneous Amendments and Search Requirements. The licensee also submitted a change

to the Plan addressing vital equipment. The licensee had a clear understanding of the Commission's security regulations, which was demonstrated by the quality of the submittals, and there was clear evidence of prior planning in developing the proposed changes. However, implementation of the changes was weak.

Licensee responsiveness to generic communications was timely and thorough, as evidenced by its acceptable responses to NRC bulletins on fastener testing (Bulletin 87-02) and non-conforming materials (Bulletin 88-05). In a few instances, additional information and/or clarification of the responses was needed.

A detailed review of the licensee's Operations Committee and Safety Audit Committee (SAC) indicated that the licensee did a good job of reviewing problems, initiating investigations and ensuring followup of corrective actions for previously identified violations, reportable events, and areas of weakness. However, a number of weaknesses were noted in the SAC. During a portion of this SALP period, the membership of the SAC was one short due to the retirement of one of the non-NSP members. Normal membership, in accordance with the SAC charter, consisted of four NSP affiliated members and five non-NSP affiliated members, thus establishing and maintaining the desired potential for effective non-biased objectivity and independence of the safety reviews. The SAC operated for several months with a four and four membership which was contrary to the charter. Minutes of the meetings of the SAC were found to be deficient in the details of the proceedings, e.g., during reviews of the Operations Committee (OC) required submittals, the extent of SAC activities and of their concerns was not effectively maintained. Records of the experience and qualifications of the SAC members were not prepared in a uniform manner, were not maintained current and were generally unresponsive to the need to clearly establish the basis for the levels of expertise attributed to the various members and as required for the operation of the committee. The overall compliance of the SAC to the established technical specification requirements was good; however, the above noted items indicated a potential weakness in the administration of the activity. Prior to the end of the SALP period the licensee did initiate some action to respond to these weaknesses.

Plant management and operations department personnel were responsive to QA findings and enhancement recommendations. Also, the licensee responsiveness to a violation for failure to follow quality verification procedural requirements was good. Upon being notified of the NRC concerns, the licensee issued a temporary QC hold on work in progress, began an immediate investigation, and initiated appropriate corrective actions in a timely manner.

The training and qualification program contributed to an understanding of work by the QA/QC groups. The HPES Human Performance Task Force received adequate training for implementation of the program.

2. Performance Rating

The licensee's performance is rated Category 2 in this area. Because this is a new area, no rating is available for the previous assessment period.

3. Recommendations

None.

V. SUPPORTING DATA AND SUMMARIES

A. Licensee Activities

Monticello began the assessment period in a refueling outage. The plant operated at routine power levels up to 100% through the majority of this assessment period and experienced several power reductions for maintenance and surveillance activities. In mid-January 1989, the plant began a coast down in preparation for its scheduled August 1989 refueling outage, and ended the assessment period operating at power levels up to 88%.

Monticello experienced 7 ESF actuations, and 2 reactor scrams. One scram occurred while operating above 15% power as a result of equipment failure and 1 scram occurred with no rod motion as a result of personnel error.

Significant outages and events that occurred during the assessment period are summarized below:

Significant Outages and Major Events

1. On December 16, 1987, the plant concluded its 1987 refueling outage.

2. On December 16, 1988, Monticello operated continuously for 363 days, thus breaking its previous record of 198 days of continuous operation.

3. On December 16, 1988, the unit experienced of forced outage as the result of erratic behavior of instrument pressurizing valve. The unit remained shut down for about 24 hours to perform repairs on a metering valve that bypasses the instrument sensing line isolation valve.

B. Inspection Activities

Thirty-four inspection reports are discussed in this SALP report (December 1, 1987, through February 28, 1989) and are listed in Paragraph 1 of this section, Inspection Data. Table 1 lists the violations per functional area and severity level. Significant inspection activities are listed in Paragraph 2 of this section, Special Inspection Summary.

1. Inspection Data

Facility Name: Monticello
Docket No: 50-263
Inspection Reports No: 87013, 87015 through 87016, 87018, 87021, 88003 through 88006, 88008 through 88022, 88026 through 88028, 88200, 89002 through 89005, and 89007 through 89008.

Table I

Number of Violations in Each Severity Level

Functional Areas	I	II	III	IV	V
A. Plant Operations	-	-	-	3	-
B. Radiological Controls	-	-	-	3	-
C. Maintenance/Surveillance	-	-	-	2	-
D. Emergency Preparedness	-	-	-	-	-
E. Security	-	-	-	17*	-
F. Engineering/Technical Support	-	-	-	2	-
G. Safety Assessment/ Quality Verification	-	-	-	-	-
TOTALS	I -	II -	III -	IV 27	V -

*Five of these violations were identified during SALP 7, but not issued until SALP 8 (Inspection Report No. 263/87017). They are included in the totals for this SALP.

2. Special Inspection Summary

a. During July 11-22, 1988, a team inspection was conducted to evaluate the licensee's program for development and implementation of EOPs (Inspection Report No. 263/88200).

b. During August 15-25, 1988, a special inspection was conducted to review the history of RCIC problems and the adequacy of the licensee's evaluation and their corrective actions (Inspection Report No. 263/88015).

c. During October 3-5, 1988, a team inspection was conducted of the licensee's annual EP exercise (Inspection Report No. 263/88019).

d. During November 2-3, 1988, a special inspection was conducted to complete the evaluation of the licensee's program for microfilming radiographs of piping system welds (Inspection Report No. 263/88022).

C. Escalated Enforcement Actions

1. An Order imposing a civil penalty in the amount of $50,000 was issued to the licensee on February 19, 1988. The licensee paid the civil penalty in the amount of $50,000 during this assessment period. (RIII Enforcement Case No. EA-87-147, Enforcement Notices No. EN-87-0785 and No. EN-87-085A).

2. Escalated enforcement action for design deficiencies and circumstances surrounding the non-fail safe design of the EDG ventilation dampers, and items relating to 10 CFR 50.59 safety evaluation requirements, licensee response, commitments and corrective actions resulted in no violations being issued (Enforcement Case No. EA-88-275).

D. Confirmatory Action Letters

On October 4, 1988, CAL-RIII-88-028 was issued to the licensee addressing the licensee's corrective actions regarding the effect of a dc power supply failure on the performance of emergency core cooling systems.

E. License Amendments Issued

Amendment No.	Description	Date
54	Reload analysis.	December 23, 1987
55	Incorporates containment isolation testing.	November 25, 1987
56	Incorporates Anticipated Transient Without Scram requirements.	December 11, 1987
57	Allows increased sodium pentaborate concentration for the standby liquid control system.	September 23, 1988
58	Revises license to incorporate Security Plan revision.	December 13, 1988
59	Administrative changes, corrections and clarifications of existing requirements.	February 16, 1989
60	Corrects errors in Section 3/4.7.	February 28, 1989

F. Review of Licensee Event Reports Submitted by the Licensee

1. Licensee Event Reports (LERs)

Sixteen LERs were issued during this assessment period. Table 2 shows cause code comparisons of SALP 7 versus SALP 8 LERs.

LER Nos: 87018 through 87024, 88001 through 88005, 88007 through 88008, and 89001 through 89002.

Table 2

CAUSE AREAS	(18-MO) No. (Percent) SALP 7	(15-MO) No. (Percent) SALP 8
Personnel Errors	12 (38.7%)	9 (56.2%)
Design Problems	5 (16.1%)	1 (6.3%)
External Causes	0 (0.0%)	0 (0.0%)
Procedure Inadequacies	5 (16.1%)	2 (12.5%)
Component/Equipment	6 (19.4%)	3 (18.7%)
Other/Unknown	3 (9.7%)	1 (6.3%)
TOTALS	31	16
FREQUENCY (LERs/MO)	1.7	1.1

NOTE: The above information was derived from review of LERs performed by NRC Staff and may not completely coincide with the site's cause assignments.