INITIAL SALP REPORT

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

Inspection Report No. 50-456/92001;50-457/92001

Commonwealth Edison Company

Braidwood Station

May 1, 1991, through September 30, 1992

CONTENTS

I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated U. S. Nuclear Regulatory Commission (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. It 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 a facility's performance in each functional area.

An NRC SALP Board, comprised of the staff members listed below, met on November 12, 1992, 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."

This report is the NRC's assessment of the licensee's safety performance at Braidwood for the period May 1, 1991, through September 30, 1992.

The SALP Board for Braidwood was composed of the following individuals:

Board Chairman

W. L. Axelson, Deputy Director, Division of Radiation Safety and Safeguards (DRSS)

Board Members

H. B. Clayton, Chief, Division of Reactor Projects, Branch 1
S. G. DuPont, Senior Resident Inspector, Braidwood
J. E. Dyer, Director, Project Directorate III-2, Office of Nuclear Reactor Regulation (NRR)
W. L. Forney, Deputy Director, Division of Reactor Projects (DRP)
H. J. Miller, Director, Division of Reactor Safety (DRS)
R. M. Pulsifer, Project Manager, Project Directorate III-2, NRR

Other attendees at the SALP Board Meeting

C. E. Brown, Reactor Engineer, Technical Support Staff, (TSS) DRP
M. J. Farber, Chief, Division of Reactor Projects Section 1A
B. K. Grimes, Director, Division of Operating Reactor Support, NRR
D. E. Jones, Reactor Engineer, Section 1A, DRP
C. J. Paperiello, Deputy Regional Administrator
J. R. Roton, Resident Inspector, Braidwood

II SUMMARY OF RESULTS

Overview

This assessment period was from May 1, 1991, through September 30, 1992. The licensee's overall performance level during this assessment period was good.

In the area of plant operations, licensee performance has improved. Improvements have been noted in the areas of shutdown risk, staffing, and training.

Performance in the area of radiological controls remained constant with improvements noted in the areas of staffing, ALARA program, and radiological chemistry laboratory proficiency. However, challenges were the impact of contaminated areas on operator rounds, and worker contamination control practices.

Performance in the area of maintenance and surveillance remained constant with no challenges noted. Strengths were noted in predictive/preventive maintenance, work planning, staffing, and training.

The area of emergency preparedness declined due primarily to training deficiencies caused by the failure to fill the EP trainer position in a timely manner, and the failure to identify technical issues.

Performance in the area of security remained constant during this assessment period. Strengths were noted in management support, equipment effectiveness, staffing, and self assessment.

The area of engineering and technical support improved during this assessment period. Improvement was noted in many areas, most notably in the involvement of engineering in day to day operations, monitoring of equipment performance and maintenance activities. Management challenges will be to address problems in the motor operated valve program and to sustain improvement initiatives.

Performance in the area of safety assessment quality verification improved. A challenge was noted in interdepartmental teamwork. On the positive side, onsite QA activities, and the shutdown risk program were strengths

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	2	Improving
Radiological Controls	2	2	
Maintenance/Surveillance	1	1	
Emergency Preparedness	1	2	
Security	1	1	
Engineering/Technical Support	2	2	Improving
Safety Assessment/Quality Verification	2	2	Improving

III. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

Evaluation of this functional area was based on the results of routine inspections by resident and regional inspectors.

Enforcement history improved and was good. There were four Severity Level IV violations of minor safety significance.

Management effectiveness in ensuring quality during routine operations was good, with improvements noted during the latter part of the assessment period. During the first half of the assessment, personnel errors and control room conduct indicated less than effective management involvement. However, aggressive corrective actions, which included the addition of control room supervisory and operating engineering personnel, resulted in noticeable improvements in communications and teamwork between the various departments during potentially safety significant plant evolutions. During the last quarter of the assessment, conduct of operations was excellent.

Management was effective in improving shutdown risk conditions. The inability to address shutdown risk conditions was a significant weakness during the previous assessment period; however, the current program is considered a strength and has resulted in the elimination of shutdown risk associated events. Knowledge of plant and equipment status was also identified as a weakness during the two previous assessments. Management improvements to ensure the availability of current plant and equipment status to operating personnel included addressing shutdown risk concerns with the installation of a Braidwood developed computer display for decay heat removal systems status, and implementing an effective monitoring program to indicate the degree of risk and contingencies associated with evolutions during shutdown conditions.

Other weaknesses noted during the previous assessment included the lack of enforcement of management's expectations, significant communication problems during the conduct of evolutions, and failure to identify and correct deficient performance. However, management's efforts to correct these weaknesses were effective.

Management was active in performing self-assessments of the conduct of operations. These self-assessments resulted in increased participation by operations personnel in safety review committees, and the identification and communication of potential problems to the cognizant departments. An example was when operational personnel notified the technical staff of a minor hydraulic leak on a valve operator found during the performance of a surveillance. The leak was discovered when operational personnel supplemented the scope of the surveillance by performing a system walkdown. This practice is currently part of the routine expectations of operational personnel while performing surveillances.

The response to operational events improved and was excellent. Minor equipment malfunctions caused four of the five reactor trips experienced by the two units during the assessment period. The trips were uncomplicated and were not caused by operator actions. During all of the trips, operations personnel easily mitigated the events. Operations personnel also demonstrated excellent response to many large electrical demand changes without an incident.

During the previous assessment, several significant events occurred, indicating weaknesses in the control of activities while in shutdown conditions. During this assessment, two refueling outages were completed and another was started without incident. Significant improvements were noted in the conduct of task and evolution briefings which reduced the occurrence of personnel errors during the last quarter of the assessment. These briefings involved all departments participating in any task or evolution that could affect plant operational safety.

The approach to identifying and resolving technical issues from a safety standpoint improved and was good. During the two previous assessments, this was a weakness as indicated by repetitive events. During this assessment, no repetitive events occurred and events in general were reduced. Operations personnel were knowledgeable of technical issues at Braidwood and other facilities. On several occasions, technical issues were aggressively resolved before the issue developed into a problem. The Salem turbine overspeed event and the Prairie Island loss of decay heat removal event were two examples that resulted in the revision of the Braidwood testing and operational procedures.

Conservatism was routinely exhibited when there was potential for a safety significant event as demonstrated by the shutdown of Unit 2 when a minor steam leak developed on a steam generator safety relief valve. Although continued operation was allowed, management chose to shut down Unit 2 and repair the safety valve to avoid potential adverse safety conditions. Another example was the technically sound and comprehensive resolution of the high flow on the reactor coolant pump number one seal. Efforts to resolve the issue resulted in a generic resolution affecting several other facilities.

Staffing was excellent, with the addition of control room supervisory and operating engineer personnel. The use of overtime was significantly reduced compared to previous assessments.

Training was excellent as demonstrated by the 100-percent pass rate (17 senior reactor operators and 11 reactor operators) during NRC-administrated requalification and initial examinations. Training was also instrumental in implementing the shutdown risk program by developing shutdown scenarios reflecting the actual planned evolutions during the last Unit 1 refueling outage. These scenarios exceeded NRC requirements and prepared the operators for the outage.

2. Performance Rating

Performance is rated Category 2 with an improving trend in this area. Performance was rated Category 2 during the previous assessment period.

3. Recommendations

None.

B. Radiological Controls

1. Analysis

Evaluation of this functional area was based on the results of five inspections by regional inspectors and observations by the resident inspectors.

Enforcement history was excellent with no violations identified.

Management effectiveness in ensuring quality was good; however, there were instances of weak performance. Support of efforts to maintain exposure as low as reasonably achievable (ALARA) was excellent as demonstrated by a plant-wide ALARA safety meeting, early boration and hydrogen peroxide addition, use of remote video monitoring and inspection equipment, and a more efficient method of inspecting small bore piping. Further indication of management support was a program to reduce the radioactivity in water discharged from the plant and the use of an industry expert to review the 10 CFR 61 waste classification and characterization program. Problems identified in the previous assessment period, that were subsequently addressed, included contractor radiation protection technician performance, and the high frequency of contaminated water spills.

However, management was less effective in worker contamination control practices, reducing the impact of contaminated areas on operator rounds, timeliness of effluent analyses and repair of monitoring equipment, and pre-job review of survey data (six workers received unplanned exposures). In addition, weaknesses in work planning caused job performance problems resulting in more dose than planned during the torquing of nuclear instrumentation cover bolts and reactor head O-ring work.

The approach to identifying and resolving technical issues from a safety standpoint was excellent; however, there were isolated examples of weak performance. The total station dose in 1991 was only 550 person-rem despite two refueling outages. For the first 9 months of 1992, until the end of the assessment period, dose was also low at approximately 100 person-rem. The number of personnel contamination events was also low, with 334 in 1991 and approximately 70 in the first 9 months of 1992. The radiological environmental monitoring program was properly implemented and chemistry laboratory proficiency was excellent with 2[illegible] agreements in 29 radiological comparisons. A recurrent problem with the containment fuel-handling incident area radiation monitors was addressed during the assessment period. In 1991, the quantity of radioactive material in liquid effluent decreased from previous years owing to a "curie reduction" program; however, the quantity in gaseous effluent increased significantly, although it was still well below regulatory limits. The initial attempt to determine the cause of the increase was not aggressively undertaken and the subsequent evaluation that the

increase was due to several leaky valves was prompted by NRC concerns. With the repair of the valves, the activity of the gaseous effluent in 1992 returned to a more typical level.

Staffing was excellent. Key positions that were vacant, including the ALARA coordinator and the radiation protection manager, were filled on a priority basis and several health physicists and a chemist, all with degrees, were added to the staff. A licensed operator recently appointed to the radioactive waste operations group enhanced the performance of that group.

The training and qualification effectiveness was good and continued to improve during the assessment period. Examples of program effectiveness were seen in the performance of radioactive material shipping personnel and radiation worker implementation of ALARA training.

2. Performance Rating

Performance is rated Category 2 in this area. Performance was rated Category 2 during the previous assessment period.

3. Recommendations

None.

C. Maintenance/Surveillance

1. Analysis

Evaluation of this functional area was based on the results of 16 routine inspections by the resident inspectors, and 1 special and 2 routine inspections by regional inspectors.

Enforcement history declined slightly from the previous assessment period and was good. Three Severity Level IV violations were identified. One Severity Level IV violation was attributed to four separate personnel error events. The violations were not programmatic or repetitive.

Management effectiveness in ensuring quality was excellent and remained a strength. Management was effective in substantially reducing personnel errors during the latter part of the assessment period. Personnel were effectively utilized for planning and scheduling of work activities, including arranging for pre-staging of parts and routine visits to the job site by supervisors. Significant improvements were noted in the reduction of secondary plant steam and oil leaks. The introduction of a standardized format for nuclear work requests resulted in increased rigor in planning and execution of maintenance work.

There were two well-planned and -executed outages during this assessment period. Outage management maintained the overview required to ensure the safety of the plant and personnel involved in the various work activities. The use of a 24-hour rotating shift manager position to ensure that proper attention was directed to the outage work path and that new work was properly

evaluated and categorized was a strength.

The surveillance program was successfully managed and implemented, with tests consistently completed on time. Surveillance procedures were controlled, revised, and maintained by the plant organization most knowledgeable and responsible for the equipment. The post-maintenance test program was good with responsibility assigned to the appropriate maintenance superintendent and system engineer to determine the appropriate post-maintenance test. Operations personnel ensured that the tests were properly authorized, performed, reviewed, and documented before returning the equipment to service.

The predictive maintenance program made excellent use of vibration monitoring, lube oil analysis, thermography, and other trending techniques to assess equipment performance. Examples included the use of thermography to prioritize valve repairs and the trending of various moisture separator reheater parameters to identify the potential degradation of the chevron moisture separator assemblies. Additionally, radiography was successfully used to identify potential system degradation caused by erosion/corrosion.

The approach to identifying and resolving technical issues from a safety standpoint was excellent. Effective daily planning ensured coincidence of corrective and/or preventive maintenance and surveillance activities with equipment outages, which contributed to the high availability of plant equipment. Weaknesses previously identified in the in-service inspection (ISI) program had received appropriate management attention and the ISI program was well planned and controlled. The identification and resolution of technical issues associated with plant modifications were good.

The work order backlog was routinely evaluated and managed by a program that considered available personnel. Additional, offsite resources were available to control backlog size, resulting in a well-managed backlog. Work orders scheduled to be completed during outages required senior management approval to be deferred and the number actually deferred was minimal (less than one percent for the outages discussed in this assessment).

Staffing was excellent. The low turnover rate of both workers and supervisors contributed to this. Programs remain in place to rotate maintenance workers into staff positions as planners. Rotations were controlled and quality was enhanced by improved communication and coordination between work groups. A previous weakness in the control of overtime was corrected during this assessment period.

Training and qualification were good. The availability and use of mockups and surplus equipment significantly improved the performance of the maintenance staff in the execution of the actual work.

2. Performance Rating

Performance is rated Category 1 in this area. Performance was rated Category 1 during the previous assessment period.

3. Recommendations

None.

D. Emergency Preparedness

1. Analysis

Evaluation of this functional area was based on the results of one routine and two emergency preparedness (EP) exercise evaluation inspections by regional inspectors.

Enforcement history declined from the previous assessment period and was good, with two Severity Level IV violations.

Management effectiveness in ensuring quality was good. The maintenance of the emergency response facilities, emergency plan, and associated implementing procedures was excellent. Minor enhancements continued to be made to the emergency response facilities. However, management was slow to fill the EP trainer position.

The approach to the identification of technical issues from a safety standpoint was acceptable, while the resolution of these issues was excellent. The licensee failed to identify two concerns related to the EP training program; out-of-date lesson plans and specialized EP training. However, once these concerns were identified by the NRC, the corrective actions were thorough and timely. In support of a revision to the emergency plan, the licensee identified the needed revision of nearly all of the emergency plan implementing procedures and completed the revisions in a timely manner.

The response to operational events was excellent. Four operational events were properly and conservatively classified as Unusual Events. Timely, accurate notifications of the events were made to State, local, and NRC officials.

Exercise performance was generally excellent. No performance concerns were identified during the 1991 annual exercise. During the 1992 exercise, one exercise weakness was identified when the control room staff failed to use the emergency action levels to classify conditions that warranted Unusual Event classifications. Both exercises were challenging to the emergency response organization (ERO) and included assembly and accountability, a simulated loss of offsite power to essential equipment, activation of the security plan, and simulated NRC participation.

The onsite EP group staffing was acceptable. During this assessment period, there was a complete turnover in the onsite EP staff. In addition, a part-time assistant EP coordinator was added to the onsite EP staff. Although a new EP trainer with excellent qualifications was assigned, this did not occur until about 4 months after the previous trainer received a promotion. The lack of a specifically assigned EP trainer had a negative effect on the implementation of the training program. The ERO had excellent staffing with qualified individuals assigned to each key position. Support positions also

were excellently staffed.

The EP training program was good. However, the failure to fill the EP trainer position in a timely manner led to two NRC identified concerns related to the EP training program. All personnel assigned to the ERO were current in their EP training; however, the training lesson plans were out-of-date and inconsistent with the approved emergency plan. The other weakness, which was previously identified at another Commonwealth Edison facility and not acted upon by Braidwood, was that the emergency response personnel assigned to damage and repair teams were not receiving the required specialized EP training.

2. Performance Rating

Performance is rated Category 2 in this area. Performance was rated Category 1 during the previous assessment period.

3. Recommendations

None.

E. Security

1. Analysis

Evaluation of this functional area was based on the results of three security inspections and one fitness-for-duty inspection by regional inspectors.

Enforcement history remained excellent, with one Severity Level IV violation of minor safety significance.

Management effectiveness in ensuring quality continued to be excellent. Direct management involvement in maintenance support, and computer and access authorization operations resulted in more timely and effective repairs, improved computer performance and the consolidation of new security badge data entry. The corporate security office provided excellent support and guidance to site security management. Comprehensive monthly tracking and trending of reports of critical security parameters assisted management in evaluating security system performance and resulted in a timely and comprehensive program to heighten security awareness. Security management played an effective role in the planning and implementation of security requirements associated with the expansion of the protected area. Overall implementation of the fitness-for-duty program continued to receive excellent management attention and support.

The approach to identifying and resolving technical issues from a security standpoint was excellent. The licensee designed and installed a card reader system that significantly reduced failure rates. The construction and operation of a new personnel processing center improved badge fabrication and fitness-for-duty testing facilities. Additional equipment upgrades were made to the video capture system printer, several protected area barriers, and entry turnstiles. Although, the licensee failed to identify a design weakness

associated with vital area door moldings, corrective action was taken before the end of the assessment period.

Response to security events was excellent. Security operational events were properly identified, analyzed and documented during the assessment period.

Security staffing continued to be excellent. Organizational changes improved the effectiveness of implementing day-to-day operational activities and resulted in improved communication.

The effectiveness of the training and qualification program was excellent; however, the training files were unorganized and poorly maintained. The entire system was revised and improved prior to the end of the assessment period.

2. Performance Rating

Performance is rated a Category 1 in this area. Performance was rated Category 1 during the previous assessment period.

3. Recommendations

None.

F. Engineering/Technical Support

1. Analysis

Evaluation of this functional area was based on the results of 13 routine and special inspections and 2 operator licensing examinations.

Enforcement history was good with two Severity Level IV violations.

Management effectiveness in ensuring quality was generally good. Improved management involvement resulted in the onsite engineering and technical support organizations increasing their involvement and responsibilities in plant modifications, operability determinations, and lessons learned from events throughout industry. Several site-specific initiatives expanded into lead projects for Commonwealth Edison Company plants. The most notable was a program, developed by the Braidwood onsite corporate engineering group, that made daily safety projections to enable management and operating staff to schedule activities with more consideration of operational safety. This was a numerical system for tracking the availability of safety systems. In addition, management, in making system assignments, considered the complexity of the system with the level of experience of the individual. System engineers were held accountable for monitoring and taking action to ensure the reliability and the availability of assigned systems.

Conversely, management effectiveness was limited concerning Generic Letter (GL) 89-10 for the motor-operated valve testing and surveillance program. Self-assessment of the GL 89-10 program addressed only the conformance to limited corporate guidance, which left open several areas in which errors or

improper assumptions were possible. Also, corporate engineering was aware of generic problems with the assumptions used for degraded voltage calculations affecting all CECo sites and had established a schedule to review the calculations. However, management had not aggressively approached the issue to ensure that no potential motor-operated valve (MOV) operability concerns existed at Braidwood. In addition, a corporate decision to generically eliminate all check valves 2 inches and smaller from the check valve program was a weakness.

The approach to identifying and resolving technical issues from a safety standpoint was good and had improved from the previous assessment period. The technical support of maintenance was also good. Systems engineers monitored performance and identified adverse trends and repetitive equipment failures and appropriate corrective actions. The engineers had good technical and administrative knowledge. The formal review of check valve applications, for those check valves included in the scope of the program, was a strength. A problem with a criticality estimate that exceeded an administrative limit was expeditiously resolved. In addition, engineering made several comprehensive and proactive evaluations to ensure safety. Examples included the approach to the Salem turbine testing concerns, design deficiencies discovered at Dresden and LaSalle, proactive expansion beyond the scope of issues contained in GL 88-17 for loss of decay heat removal related instrumentation enhancements, vendor's design errors in the reactor protection system's temperature set-points, and a safety issue associated with the lack of guidance relating to possible degraded conditions of reactor coolant pump seals.

An example for which the resolution of technical issues was not adequately supported with technical data was GL 89-10. An understanding of the issues was generally apparent, but corporate oversight of site implementation was lacking. This led to problems with degraded voltage calculations, valve stem friction factors, and lubrication frequencies.

Design deficiencies were significantly reduced compared to the previous assessment period with few operational events occurring as a result of design or installation errors and, of those, most dealt with original design deficiencies. The responses to these issues were good and indicated an improvement compared to the previous assessment period. These included the over-temperature delta-temperature setting design error, lessons learned from the LaSalle electrical distribution safety functional inspection (EDSFI), the existence of a positive moderator temperature coefficient during the Unit 1 startup, and the various electrical card problems with the reactor control rods.

Staffing was good in most technical areas, as evidenced by the low backlog of work requests requiring engineering reviews, the low backlog of modifications, and the limited use of overtime. Significant efforts were made to eliminate the excessive overtime concerns identified during the previous assessment. However, strained resources appeared to be a negative factor in the adequate and timely completion of the GL 89-10 program.

The effectiveness of the engineering and technical support staff training and qualification was excellent as evidenced by the lack of errors attributed to

training. During this period, management improved its nuclear engineering certification program and required more of the engineering staff to be formally certified.

The operator licensing training and qualification program was excellent based on the 100-percent pass rate of the individuals taking the initial and requalification examinations, which was an improvement from the previous assessment period. However, during the requalification program review, a minor weakness was noted in the lack of sufficiently validated simulator scenarios addressing emergency contingency or functional restoration procedures.

2. Performance Rating

Performance is rated a Category 2 with an improving trend in this area. Performance was rated Category 2 during the previous assessment period.

3. Recommendations

None.

G. Safety Assessment/Quality Verification

Evaluation of this functional area was based on the results of 10 routine inspections by resident, regional, and headquarters inspectors.

Enforcement history was excellent, with no violations.

Management effectiveness in ensuring quality was generally excellent. Significant improvements were made during this assessment period. Root cause determinations -- a previous weakness -- received excellent management support resulting in good and effective determinations. The quality verification function improved in both performance-based methodology and comprehensive assessments. These assessments provided independent observations enabling site management to implement improvements, such as, assistance provided by the quality organizations to station management in identifying and correcting weaknesses relating to operator performance and engineering support. The quality assurance organization also increased its scope to include work safety practices, plant performance trending, and observation of contractor work practices. This increased work scope was effective and resulted in noticeable improvements, such as, the reduction of excessive overtime. An example of the development of teamwork across departments, during this assessment, was the expanded role of the quality organization to include the identification of deficiencies for operability impact assessments. The failure to promptly recognize the inoperability of safety-related valves is an example where component status was not communicated to the appropriate department.

The onsite nuclear safety organization was instrumental in the implementation of shutdown risk methodologies from a safety approach and was a strength. The programs included the use of the plant-specific simulator to enable the operators to gain experience in addressing possible risk situations and to allow reducing shutdown risk factors by evaluating the scheduling of refueling

outage activities. Management effectiveness in implementing shutdown risk programs was excellent as evidenced by the implementation of task-related contingency procedures, daily plant status reports reflecting actual conduct of activities, and effective briefings that addressed contingencies and risk.

During the previous assessment, management did not enforce the fulfillment of expectations for plant performance during evolutions and responsiveness to events was mixed. In response to these concerns and to an increase in personnel errors during the first half of this assessment period, management initiated the human performance awareness (HPA) team. The team developed and implemented a station HPA procedure to inform personnel of management's expectations for awareness while performing work. Management expectations were also enforced by increased personal accountability.

The approach to identifying and resolving technical issues from a safety standpoint improved and was good. Management improved its responsiveness to internal and external technical issues. During previous assessments, internally identified technical issues appeared to be the responsibility of only a few organizations. During this assessment, the identification process expanded to all organizations as the result of the effective response to personnel errors as discussed earlier which resulted in increased participation by the plant organizations. The responsiveness to externally generated technical issues also improved, as exemplified by the good response to the Salem turbine overspeed trip, LaSalle electrical design deficiencies, and shutdown risk. Management developed and implemented several programs that were effective in providing appropriate attention to both hardware and process problems. An example included forming the HPA team, which contributed to the overall plant improvements. Another example was lowering the review threshold to include problems and technical issues that would not normally be considered because they lacked safety significance. This gave management the ability to correct minor technical issues before they became significant or resulted in component or system operability concerns. A third example was centralizing all deficiency reports from the different reporting mechanisms into a usable report that enhanced management's ability to assess plant performance and status.

The quality and technical content of submittals, including amendment requests and those submittals responding to NRC initiatives (bulletins and generic letters) were good. In some instances (an amendment request concerning the venting of emergency core cooling systems and Bulletin 88-08 concerning thermal stresses of piping systems connected to the reactor coolant system), additional information had to be provided through meetings, telephone conversations, and/or written communication. Several areas required significant interactions; however, it was evident that the concerns were fully understood and this additional information was usually of good technical quality and was provided in a timely manner.

Staffing of quality assurance and quality control groups was excellent, as evidenced by their ability to improve performance and maintain a low backlog of issues without excessive use of overtime. The various quality and safety verification organizations were staffed with operational, maintenance, and safety experienced personnel. Resources were available to implement the audit

schedule and to witness work activity hold points. The actions of the quality assurance organization demonstrated good performance-based audit practices.

Training and qualification effectiveness improved significantly and was excellent. The entire quality control staff received training and qualified in many disciplines. With the cooperation of the training department, the organization also developed a visual weld inspection training program which will be implemented at other sites.

2. Performance Rating

Performance is rated a Category 2 with an improving trend in this area. Performance was rated Category 2 during the previous assessment period.

3. Recommendations

None.

IV. SUPPORTING DATA AND SUMMARIES

A. Major Licensee Activities

Significant outages and other major events are listed below:

1. On May 10, 1991, errors in rod worth were discovered during low power physics testing following a scheduled refueling outage.

2. On May 21, 1991, Unit 2 was returned to service following a short maintenance outage to repair two containment purge isolation valves.

3. On August 5, 1991, Unit 2 was returned to service following a negative flux rate trip due to a few dropped control rods as a result of bad control circuit cards.

4. On November 4, 1991, the Unit 2 "2A" seal filter was partially ejected from the filter housing and cavity and a spill of contaminated water occurred due to improper isolation.

5. On November 6, 1991, an unplanned Unit 1 reactor trip occurred due to low level in the 1A steam generator as a result of the loss of the B feedwater pump due to a break in an electrohydraulic control line.

6. On November 26, 1991, Unit 2 was synchronized to the grid following a refueling outage.

7. On February 5, 1992, Unit 1 was shutdown to repair the electrohydraulic control system.

8. On February 25, 1992, Unit 2 experienced an automatic trip due to a failed circuit card in the digital electrohydraulic control system.

9. On March 15, 1992, Unit 2 experienced an automatic trip due to personnel error.

10. On May 24, 1992, Unit 2 was shutdown for a scheduled 7 day maintenance outage.

11. On May 31, 1992, Unit 2 entered a forced outage when the "A" and "B" rod control motor generator tripped due to an overvoltage relay setting drift and overexcitation.

12. On September 5, 1992, Unit 1 commenced a planned refueling outage.

13. On September 10, 1992, Unit 2 automatically tripped due to an inadvertent isolation of an extraction steam valve by a contractor.

B. Inspection Activities

The inspection reports discussed in the SALP are listed below:

Unit 1, Docket Number 50-456, Inspection Report Numbers: 91012, 91014-91017, 91019-91026, and 92002-92020.

Unit 2, Docket Number 50-457, Inspection Report Numbers: 91010, 91013-91020, 91022, 91024-91026, and 92002-92020.