UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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APR 9 1993

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Omaha Public Power District
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SUBJECT: INITIAL SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE (SALP) REPORT

This forwards the initial SALP report (50-285/93-99) for the Fort Calhoun Station. The SALP Board met on February 26, 1993, to evaluate Fort Calhoun's performance for the period of August 1, 1991, through January 30, 1993. The performance analyses and resulting evaluations are documented in the enclosed initial SALP report.

In accordance with NRC policy, I have reviewed the SALP Board's assessment and concur with the ratings. Good performance in the areas of Plant Operations and Maintenance/Surveillance resulted in a Category 2 rating. Good performance in the Radiological Controls functional area resulted in a Category 2 rating, but this represents a decline from the superior level of performance that was observed during the previous assessment period. Superior performance in the Emergency Preparedness functional area resulted in an increase to a Category 1 rating. Continued superior performance was noted in the areas of Security, Engineering/Technical Support, and Safety Assessment/Quality Verification, which were rated as Category 1.

Overall, licensee performance was good. It was apparent that management's priority was the safe operation of the facility. However, the plant perturbations caused by personnel errors and the loss of shutdown cooling indicated a need for increased management attention in these areas. In addition, weaknesses in the radiological protection program were evident due to the two uptake events that occurred during this assessment period.

On the basis of the SALP Board's assessment, the length of the SALP period will be approximately 15 months. Accordingly, the next SALP period will be from January 31, 1993, to May 7, 1994.

A management meeting has been scheduled with you and your staff to review the results of the initial SALP report. The meeting will be 1 p.m. on April 30, 1993, at the Fort Calhoun Station training center. Within 20 days of this management meeting, you may provide comments on and amplification of, as appropriate, this initial SALP report.

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Your written comments, a summary of our meeting, and the results of my consideration of your comments will be issued as an appendix to the enclosed initial SALP report and will constitute the final SALP report.

Sincerely,

James L. Milhoan
Regional Administrator

Enclosure:
Initial SALP Report
50-285/93-99

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SRI	C:TSS	PM:NRR	AD:RIV/V
RPMullikin RPM	for PHHarrell RPM	SBloom	MVirgilio
03/29/93	03/29/93	04/06/93	04/8/93

DD:DRP	DD:DRS	D:DRSS	DRA	RA
TPGwynn	ATHowell	LJCallan	JMMontgomery	JLMilhoan
4/6/93	4/7/93	4/8/93	/ /93	4/8/93

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INITIAL SALP REPORT

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT NUMBER

50-285/93-99

Omaha Public Power District

Fort Calhoun Station

August 1, 1991, through January 30, 1993

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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 based upon 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 licensee 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 February 26, 1993, to review the observations and data on performance and to assess licensee performance in accordance with NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance."

This report is the NRC's assessment of the licensee's safety performance at the Fort Calhoun Station for the period August 1, 1991, through January 30, 1993.

The SALP Board for Fort Calhoun was composed of:

Chairman

L. J. Callan, Director, Division of Radiation Safety and Safeguards (DRSS), Region IV

Members

M. Virgilio, Assistant Director for Region IV & V Reactors, NRR
T. Gwynn, Deputy Director, Division of Reactor Projects (DRP), Region IV
A. Howell, Deputy Director, Division of Reactor Safety (DRS), Region IV
P. Harrell, Chief, Technical Support Staff, DRP, Region IV
R. Mullikin, Senior Resident Inspector, Fort Calhoun Station, DRP
S. Bloom, Project Manager, Fort Calhoun Station, NRR

The following personnel also participated in or observed the SALP Board meeting:

C. Skinner, Intern, Technical Support Staff, DRP, Region IV
G. Hubbard, Acting Director, Project Directorate IV-1, NRR
L. Constable, Chief, Plant Support Section, DRS, Region IV
R. Vickery, Reactor Inspector, DRS, Region IV
D. Powers, Chief, Maintenance/Surveillance Section, DRS, Region IV
I. Barnes, Technical Assistant, DRS, Region IV
P. Baranowsky, Region IV Coordinator, Office of the Executive Director of Operations
J. Pellet, Chief, Operations Section, DRS, Region IV
R. Azua, Resident Inspector, Fort Calhoun Station
B. Murray, Chief, Facilities Inspection Program Section, DRSS, Region IV

II. SUMMARY OF RESULTS

Overview

Overall, licensee performance was good. It was apparent that management's priority was the safe operation of the facility. This was apparent both in the conservative operability determinations made and the heightened awareness of shutdown risks. Performance in the Plant Operations functional area was very good. Significant improvements were noted in the quality of emergency and abnormal operating procedures as well as the guidance provided to operations personnel. In addition, the number of licensed operators was increased to an appropriate level. During an actual event that challenged the operations staff and emergency response organization, the response was excellent. However, the plant perturbations caused by personnel errors and the loss of shutdown cooling indicated a need for increased management attention in these areas.

Performance in the Radiological Controls area declined. Weaknesses in the radiological protection program were identified due to two uptake events. Overall, the radiation protection department had a good performance level. Excellent performances were noted in the ALARA program, radioactive waste effluents management, radiological environmental monitoring, transportation of radioactive materials and wastes, training, and audits and surveillances.

Performance in the Maintenance/Surveillance area was good. However, oversight of surveillance activities during refueling outages and nonsafety-related maintenance activities that could impact safety-related systems may need increased management attention.

Performance in the Emergency Preparedness area increased to an excellent level as indicated by the response to an actual ALERT and during exercises, drills, and walkthroughs with operating crews. Performance in the Security functional area was maintained at an excellent level.

Performance in the Engineering/Technical Support area was superior. Examples of the licensee's superior performance were the resolution of engineering issues and the identification of design issues and the communication of these issues to the NRC staff. In addition, the systems engineering program was notable.

Performance in the Safety Assessment/Quality Verification area was maintained at a superior level. Licensee management provided notable oversight of the safe operation of the facility, except for the incident involving unauthorized sampling of a liquid waste system.

Functional Area	Rating Last Period (05/01/90 to 07/31/91)	Rating This Period (08/01/91 to 01/30/93)
Plant Operations	2I*	2
Radiological Controls	1	2
Maintenance/Surveillance	2I*	2
Emergency Preparedness	2	1

Functional Area	Rating Last Period (05/01/90 to 07/31/91)	Rating This Period (08/01/91 to 01/30/93)
Security	1	1
Engineering/Technical Support	1	1
Safety Assessment/ Quality Verification	1	1

*I Improving Trend - Licensee performance was determined to be improving during this assessment period. Continuation of the trend may result in a change in the performance rating.

III. CRITERIA

The evaluation criteria, category definitions, and SALP process methodology that were used, as applicable, to assess each functional area are described in detail in NRC Manual Chapter 0516, dated September 28, 1990. This chapter is available in the Public Document Room files. Therefore, these criteria are not repeated here, but will be presented in detail at the public meeting to be held with licensee management.

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

This functional area consists primarily of the control and execution of activities directly related to operating the plant.

Evaluation of this functional area was based on routine inspections performed by the resident inspectors and six inspections performed by region-based personnel. In addition, the results from an Augmented Inspection Team were included in this assessment.

The previous SALP report (NRC Inspection Report 50-285/91-99) recommended that management continue with the efforts that were already in progress for increasing the number of licensed, on-shift operators and upgrading the emergency operating procedures. In addition, it was recommended that operations management become more proactive in providing guidance and direction to operations personnel.

During this assessment period, the licensee increased the number of licensed, on-shift operators to an appropriate staffing level. Operations management was proactive in its approach to providing guidance and direction to operations personnel and, as a result, a previous concern with onshift communications was appropriately addressed. The inspectors noted that the licensee provided shift briefings before nonroutine activities and used the simulator to provide operators with the expected plant response to potential plant transients. For example, a condition occurred in the plant that resulted in the potential for the loss of a dc bus. The licensee used the

simulator to demonstrate how the plant would respond if the dc bus was lost in order to prepare operations personnel in the event that the plant transient occurred.

It was noted, during the conduct of routine, day-to-day plant operations, that the operations staff maintained an excellent awareness of plant status and limiting conditions for operation in effect. Excellent coordination and communication between operations personnel and other groups was observed. Plant housekeeping was generally maintained at an excellent level, with some exceptions. Management personnel routinely toured all plant operating spaces.

The response by the on-shift operations staff to the July 3-4, 1992, stuck open pressurizer code safety valve, loss-of-coolant event demonstrated an outstanding level of performance by the licensed operators for off-normal events. The excellent response by the licensed operators ensured that this event did not result in a threat to the public. Another on-shift licensee crew was challenged by a similar, but less severe event on August 22, 1992, and also responded very well.

Although overall operations personnel performance was excellent, there were plant perturbations caused by personnel error. An operator trainee caused the generation of a containment isolation actuation signal during a surveillance test when an override switch was not fully engaged. An operator trainee also caused an automatic start of Diesel Generator 2 after failing to synchronize Emergency Diesel 1 to the bus during surveillance testing. During the refueling outage, an operator failed to put a reactor trip channel for low flow in bypass before shutting down a reactor coolant pump and, as a consequence, a reactor trip signal was initiated. An operator inadvertently started Emergency Diesel Generator 2 during the performance of a surveillance test by pushing the local start button instead of the alarm acknowledge button at the local panel. Overpressurization of the steam generator blowdown system occurred because of an oversight by licensed operators during the development of a equipment tagout. These events indicated a lack of attention to details by the operations staff. The events initiated by operator trainees occurred relatively early in this assessment period and the licensee has taken appropriate actions to address this issue.

The Fort Calhoun Station experienced three automatic reactor trips during this assessment period. One trip was due to personnel error when a level sensor for a main steam reheater was incorrectly returned to service. This was the first automatic trip since July 1986. The other two trips were due to equipment malfunctions. The first resulted from the malfunction of a nonsafety-related inverter and the second resulted from the failure of the power supply for the electrohydraulic control system for the main turbine.

Operator training effectiveness and the relationship between the operations and training organizations continued to improve during this assessment period. Operations management involvement in the operator licensing examination process was evident. This cooperative relationship resulted in a beneficial teamwork approach to resolving training issues. The 100 percent pass rate on

two sets of initial license examinations and on the requalification examination demonstrated the licensee's commitment to improving licensed operator training.

The licensee made significant improvements in the content of the emergency and abnormal operating procedures. The procedures were well organized, logical, and provided effective transitions to other procedures and attachments. The Augmented Inspection Team credited the upgrade of the emergency operating procedures as a contributing factor to the successful response to the July 3-4, 1992, stuck open pressurizer code safety valve, loss-of-coolant event. The operators' knowledge and skills and the labeling of plant equipment were considered strengths. Good measures for configuration control, maintenance of the procedures, and training on the procedures were noted.

The operations staff's performance during the refueling outage was good. The licensee implemented measures to reduce shutdown risk, which included the installation of a temporary diesel generator, the policy to always have three electrical sources available at all times, and to restrict midloop operations to less than 12 hours. Despite these measures, a 7-minute loss of shutdown cooling occurred because of the shutdown of the cooling pump. The electrical system was in an abnormal lineup during the performance of a surveillance test and an overloaded breaker caused the bus that powered the shutdown cooling flow control valve controller and flow indication to be lost. Operators secured the running low pressure safety injection pump to prevent a possible runout condition due to the flow control valve failing open. The cause of the electrical system being in an abnormal lineup during surveillance testing was a lack of oversight by the licensee.

At the beginning of the refueling outage, the licensee failed to implement adequate controls designed to preclude foreign materials from entering the refueling and spent fuel pool exclusion areas. After this concern was identified by the NRC, it was immediately resolved by the licensee in a satisfactory manner. Fuel movement was performed efficiently and without an incident. However, a weakness was noted in the use of visual and audio aids to assist the refueling crew inside containment. It was also noted that the refueling crew did not always check the path of the refueling machine trolley and bridge and formal guidance was needed concerning the control of suspended irradiated fuel assemblies.

Licensee management generally made conservative equipment and component operability decisions. When it became apparent in September 1991 that a potential common-mode failure existed with the emergency station batteries because of case cracking, the licensee shut down the plant and replaced the batteries. However, the licensee had prior indication in July 1991 that a battery common-mode failure potential was present and failed to take actions to address battery operability. To reduce shutdown risk during the replacement of the batteries, the licensee used the initial group of removed batteries as a backup while new batteries were being installed. The backup batteries could have been manually connected to a dc bus if needed. An example of conservative decisionmaking occurred when the licensee suspended plant heatup from the refueling outage after cracked cam followers were

discovered on 4160-volt breaker switches. The critical switches were replaced before heatup continued.

In summary, overall performance in the area of plant operations was good. The licensee appropriately addressed all of the weaknesses that were identified in the previous SALP report. The operating staff's performance was excellent, both in day-to-day operations and response to events. The personnel errors that resulted in plant perturbations demonstrated a lack of attention to details. Management involvement in plant operations was also excellent. Management generally made conservative decisions in regard to safe plant operation, with the exception of battery operability. Operator training effectiveness was apparent by the 100 percent pass rate on both initial and requalification examinations. The emergency and abnormal operating procedures showed significant improvement. The performance of the operations staff during the refueling outage was good. However, a lack of oversight by the licensee resulted in a loss of shutdown cooling.

2. Performance Rating

The licensee is considered to be in Performance Category 2 in this functional area.

3. Recommendations

a. NRC Actions

Review the licensee's outage management controls program during the next scheduled refueling outage.

b. Licensee Actions

Improve controls over outage management and address the occasional lack of attention by operations personnel.

B. Radiological Controls

1. Analysis

This functional area consists primarily of activities related to radiation protection, radioactive waste management, radiological effluent control and monitoring, radiological environmental monitoring, and transportation of radioactive materials.

This area was inspected four times by region-based radiation specialist inspectors and on a continuing basis by the resident inspectors. Excellent performance was noted in this functional area during the previous assessment period and no specific concerns or recommendations were identified.

During this assessment period, several violations were identified relating to two uptake incidents that occurred during February and April 1992. The violations involved improper implementation of the radiation protection program, which included the failure to follow radiation protection procedures,

poor communications among radiation protection department personnel, and the lack of supervisory oversight. The violations were related to the specific events and did not indicate a significant breakdown in the overall radiation protection program.

The licensee's investigation and assessment of the uptake incidents were excellent. The root cause analysis of each uptake incident was very good. The investigation identified some minor weaknesses in the radiation protection program that contributed to the violations. The corrective actions for the uptake incidents and other events involving radiation protection were prompt, comprehensive, and conservative. The licensee's performance was excellent regarding the difficult evaluation of transuranic radioactive radionuclides involved in one of the uptake incidents.

Management provided excellent support for the radiation protection program. In general, radiation protection supervisory oversight of the day-to-day activities was very good. Radiological protection personnel were found to be knowledgeable of their responsibilities and performed their duties in a professional manner. Their efforts in support of plant activities during the 1992 refueling outage, following the loss-of-coolant event on July 3-4, 1992, and activities related to the testing and removal of the pressurizer code safety valves were excellent. A very good radiological occurrence report program was implemented.

An excellent planning and preparation program was established for the 1992 refueling outage. An excellent inventory of radiation protection supplies and equipment was maintained for refueling outage activities. Excellent coordination existed between the radiation protection department and other departments. External and internal radiation exposure controls were implemented effectively. High radiation and very high radiation areas were properly posted and controlled.

An excellent as-low-as-reasonably-achievable (ALARA) program was implemented. The radiological protection department was proactive in the area of ALARA briefings, which were conducted prior to the performance of complex maintenance and operational activities and/or when the potential for high radiation exposure was present. The ALARA prejob briefings were thorough and emphasized good radiological protection practices. The ALARA suggestion program was very good. The ALARA program looked for ways to reduce person-rem exposures and personnel contamination events. The person-rem exposures for 1992 were about at the established goal, whereas the personnel contamination events exceeded the goal.

An excellent liquid and gaseous radioactive waste effluent program was maintained. Quantities of radionuclides released in liquid and gaseous waste effluents, and radiation doses to the environment calculated from the effluent releases, were within the Technical Specification and Offsite Dose Calculation Manual limits. Semiannual radioactive effluent release reports were submitted in a timely manner and contained all of the required information presented in the required format. One abnormal radiological gaseous release occurred during this assessment period. Changes to the Offsite Dose Calculation Manual and process control program were documented properly. A good program was

established for testing the air cleaning systems. It was noted that several of the effluent radiation monitors were out of service for extended periods of time and, in some cases, the licensee's efforts to return the monitors to service have not been fully successful.

An excellent radiological environmental monitoring program was maintained. The program was well managed and included very good implementing procedures. The environmental sampling stations and equipment were well maintained and calibrated. The environmental thermoluminescent dosimeter program was well maintained and the thermoluminescent dosimeter results compared very well with the NRC's thermoluminescent dosimeter results at collocated sites. Annual radiological environmental operating reports were timely and contained the required information.

Excellent solid radwaste and radioactive materials transportation programs were maintained. Excellent procedures for the preparation and shipment of radioactive waste and other radioactive materials were implemented. The licensee properly characterized, classified, and prepared radioactive waste for shipment and burial. Radioactive materials and waste shipments were made without incident or problems.

Staffing was maintained at appropriate levels in the chemistry, radwaste, and radiological services departments. Two supervisor positions had been open in the radiation protection departments since mid-1992. The various departments experienced a very low turnover of technical personnel. The radiation protection staff was sufficient and appropriately supplemented with contract radiation protection technicians during outages.

Excellent training and qualification programs were established and implemented for personnel in this functional area. The radiological controls area personnel were well trained and qualified. Training instructors were well qualified. Excellent coordination existed between the training department and the various contributing departments that received training in this functional area. An excellent radiological training program was established for radiation workers.

Excellent audits and surveillances were performed in the radiological controls area. The audits and surveillance identified several findings that were reflective of an aggressive audit program. Corrective actions for the findings were timely and technically sound. The audit teams included technical experts to review the specific program areas.

In summary, several violations were identified that involved the two uptake events which occurred in early 1992. A thorough investigation was performed by the licensee regarding the events and some weaknesses in the radiation protection program were identified. In general, the radiation protection department maintained a good performance level. An excellent ALARA program was maintained. Excellent performances were noted in the areas of radioactive waste effluents management, radiological environmental monitoring, transportation of radioactive materials and wastes, training, and audits and

surveillance. Effluent monitors have been out of service for extended periods. Management provided strong support for the radiological controls area.

2. Performance Rating

The licensee is considered to be in Performance Category 2 in this functional area.

3. Recommendations

a. NRC Actions

Review in-plant implementation of the licensee's radiological protection program.

b. Licensee Actions

Address filling of the vacant positions in the radiological protection department, resolve the performance of effluent monitors, and resolve the causes for the high numbers of contaminations.

C. Maintenance/Surveillance

1. Analysis

This functional area consists of activities associated with the preventive and corrective maintenance of plant structures, systems, and components. This area also includes the conduct of surveillance testing, and inservice testing and inspection activities.

NRC inspection efforts consisted of routine inspections by the resident inspectors and six inspections performed by region-based inspectors. In the last SALP report, no recommendations were made for overall program improvement.

The maintenance program has undergone a number of improvements, which resulted in overall good physical appearance of the plant and in the good performance of maintenance activities. The licensee continuously upgraded the preventive maintenance program and optimized the program's approach. The maintenance training program included a notable range of courses designed to familiarize the maintenance staff with vital plant systems. As a result, the licensee maintained a stable and well-qualified maintenance work force. In addition, a strong calibration program was developed and calibration scheduling was effectively controlled to ensure compliance with program frequencies. Calibration procedures were exceptionally well written, detailed, and comprehensive.

The inservice inspection program and implementing procedures were well written and consistent with requirements of Section XI in the ASME Code. The repair and replacement program provided appropriate instructions for controlling repair and replacement activities and performing any required preservice and

inservice inspection program examinations. Observation of inservice inspection program examinations and review of personnel certification records indicated that the nondestructive examinations were properly performed by qualified personnel using qualified procedures.

The Fort Calhoun Station experienced a reactor trip during this assessment period that was directly related to the performance of a nonsafety-related maintenance activity. Reviews of the nonsafety-related activity did not address the potential deleterious effects these activities could have on safety-related activities. As a result, actions needed to eliminate the potential were overlooked. Other maintenance errors identified during this assessment period were found to have minor safety significance with no programmatic concerns identified. The licensee took prompt actions to correct identified maintenance deficiencies.

The implementation of the maintenance program by the licensee was very good. Maintenance activities were performed in accordance with approved procedures and were well coordinated. Preplanning of maintenance activities and attention to detail by maintenance personnel were notable strengths, with very good communication between maintenance personnel in the field and other organizations. Management oversight of maintenance activities was excellent throughout this assessment period, with supervisory personnel presence noted during complex activities and periodically during the performance of more routine efforts.

The systems engineering organization was actively involved in maintenance and surveillance activities. The oversight provided by the engineers helped to ensure that the maintenance and surveillance programs were implemented in a very good manner.

The licensee's implementation of the surveillance program was noteworthy, with one exception. Because of a lack of oversight by the outage control center during the performance of surveillance activities during the refueling outage, shutdown cooling was lost due to an overloaded electrical bus. Surveillance tests were scheduled and performed as required by the Technical Specifications. Personnel adherence to surveillance procedures was excellent. The Type B and C local leak rate test results were good. Coordination among surveillance, systems engineering, and operations personnel during testing activities was very good.

In summary, performance in this functional area was good. The licensee has been proactive and has taken actions to continually improve the maintenance program. Procedural compliance was very good. Management oversight of this functional area was notable. A loss of shutdown cooling resulted from the lack of oversight during the performance of surveillance testing. Plant perturbations resulted from nonsafety-related maintenance activities.

2. Performance Rating

The licensee is considered to be in Performance Category 2 in this functional area.

3. Recommendations

a. NRC Actions

None

b. Licensee Actions

Perform an assessment of the effect that nonsafety-related maintenance activities could have on safety-related systems and provide an appropriate level of oversight of surveillance testing during refueling outages.

D. Emergency Preparedness

1. Analysis

This functional area includes activities related to the establishment and implementation of the emergency plan and implementing procedures, onsite and offsite plan development and coordination, support and training of emergency response organizations, licensee performance during exercises and actual events that test the emergency plans, and interactions with onsite and offsite emergency response organizations during planned exercises and actual events.

Evaluation of this functional area was based on the results of two inspections conducted by regional emergency preparedness analysts and observations by the resident inspectors.

The previous SALP report noted that management attention and aggressive actions should be taken to improve overall performance.

During this assessment period, there were five actual emergency declarations. Four of the declarations were classified as Notification of Unusual Events, resulting from entering a Technical Specification shutdown action statement. In all four of the cases, the licensee made timely classifications and offsite notifications. On July 3, 1992, an Alert was declared because of a loss-of-coolant event. During this event, emergency response facilities were activated and response personnel successfully implemented major portions of the emergency plan and implementing procedures. The Augmented Inspection Team noted that the licensee's overall response during this event was excellent.

In addition to the effective response to actual classified events, the licensee's emergency response organization demonstrated improved performance during emergency drills and the 1992 emergency exercise. During the exercise and drills, NRC evaluators and observers noted efficient and effective implementation of the emergency plan and implementing procedures. Implementation of abnormal and emergency operating procedures by the operations staff was very good. Emergency command and control was excellent and technical assessment and mitigation efforts were strong. During the exercise, operational support personnel performed well and improvements were noted in the exercise of radiological controls during emergencies. The exercise scenario was run using the control room simulator in the dynamic mode to enhance challenge and realism. One minor exercise weakness was identified

during the 1992 exercise involving the failure to make prompt emergency classification of conditions corresponding to a Site Area Emergency.

Emergency training drills exceeded requirements in both number and scope. For example, a casualty control drill, not required by the NRC, was held to provide enhanced training for maintenance personnel assigned to the Operations Support Center staff. The licensee's exercise and drill critiques were effective in identifying areas in need of corrective action.

The operational status inspection found that changes to the emergency plan were generally reviewed and submitted to NRC in an appropriate manner. Emergency facilities, equipment, and supplies had been maintained in a state of operational readiness. An appropriate level of staffing had been maintained for the emergency response organization and an excellent program had been implemented to train and maintain the proficiency of these response personnel. Comprehensive and effective audits of the emergency preparedness program had been performed.

The licensee maintained a cooperative and supportive working relationship with offsite response organizations. The Federal Emergency Management Agency did not evaluate the 1992 exercise; however, they did evaluate an unannounced/off-hours drill and a medical drill involving offsite agencies. No deficiencies were identified during the drills.

In walkthroughs conducted with shift crews during the operational status inspection, the three teams evaluated demonstrated excellent proficiency in implementing the emergency plan and implementing procedures in response to a rapidly escalating scenario. All simulated events were properly classified. Timely and accurate notifications were made to offsite authorities. Dose assessments and protective action recommendations were based on plant conditions and were appropriate.

In summary, licensee management and staff continued to improve the emergency preparedness program. Efforts produced excellent results in key emergency preparedness areas. The excellent training provided to emergency response organization personnel was evident during exercises, drills, and walkthroughs with operating crews. The performance of the emergency response personnel during the Alert was excellent. The emergency preparedness program has been effectively managed.

2. Performance Rating

The licensee is considered to be in Performance Category 1 in this functional area.

3. Recommendations

None

Ex3

E. Security

1. Analysis

This functional area includes activities that ensure security of the plant, including all aspects of access control, security background checks, and protection of safeguards information.

Evaluation of this functional area was based on the results of two inspections performed by region-based physical security specialist inspectors and routine observations by the resident inspectors. In addition to the normal regional inspections, a special Operational Safeguards Response Evaluation was also performed during this assessment period.

The previous SALP report noted a strong and effective security program. No specific recommendations were included in the previous report.

During this assessment period, one repeat Severity Level III violation was identified involving the protection of safeguards information. The licensee took effective corrective actions, with substantial programmatic changes made with respect to the handling of safeguards information. Overall, the enforcement history was good during this assessment period.

Management continued to provide strong support to ensure that an effective security program was maintained. Management was actively involved in day-to-day activities and provided excellent oversight of the implementation of the security program.

Quality assurance audits of the security program were thorough, performance oriented, and comprehensive. The audits of the self-screening contractors were very comprehensive and identified several problems with contractor programs. The security organization provided timely, effective, and technically correct responses to the audit findings and recommendations.

The testing and maintenance program was effective in ensuring that security systems were maintained operational. Testing personnel were well trained and allowed to use their initiative when testing the security systems.

The licensee submitted four Physical Security Plan revisions pursuant to 10 CFR Part 50.54(p) that involved significant changes to their program. The changes were in compliance with the requirements of Part 50.54(p).

The licensee had an appropriate number of security force personnel assigned to normal shifts. During the 1992 refueling outage, prior planning by the security management staff resulted in a significant reduction in overtime hours, when compared to previous outages.

The security training program was very effectively administered and implemented. Training records were well maintained. Excellent training facilities and training aids were maintained and used. A new weapons training range was constructed and effectively used. In preparation for the Operational Safeguards Response Evaluation inspection, tactical training was

emphasized and the excellent results indicated the effectiveness of the training. During this evaluation, the security force demonstrated the ability to bring sufficient response assets to bear quickly and effectively against simulated armed intruders. The Operational Safeguards Response Evaluation pointed out that there exists a strong security management team that was involved in and supportive of the security program. The security forces demonstrated an effective contingency response capability and a strong defensive strategy. Another positive element of the response capability was the command, control, and communications. The overall results of the Operational Safeguards Response Evaluation inspection was evidence of a well-motivated and well-trained security force.

In summary, the licensee had maintained an excellent security program. The security organization was appropriately staffed with well trained officers. The security management staff was proactive, professional, and received excellent management support from plant and corporate management. The results of the Operational Safeguards Response Evaluation were indicative of a strong security program.

2. Performance Rating

The licensee is considered to be in Performance Category 1 in this functional area.

3. Recommendations

None

F. Engineering/Technical Support

1. Analysis

This functional area consists of technical and engineering support for all plant activities. It includes all licensee activities associated with the design of plant modifications; engineering and technical support for operations, outages, maintenance, testing, surveillance, and procurement activities; training; and configuration management.

NRC inspection efforts consisted of routine inspections by the resident inspectors and seven region-based inspections. The inspection effort included team inspections to assess the motor-operated valve program, as specified in Generic Letter 89-10, "Safety-Related, Motor-Operated Valve Testing and Surveillance," and engineering and technical support functions.

The previous SALP report did not address any recommendations. Enforcement history during this assessment period was excellent.

The licensee's engineering organization continued to be proactive in the identification and resolution of engineering issues. For example, the licensee reviewed information supplied by the NRC concerning a potential safety issue at another facility. This resulted in the discovery that backleakage could occur through the safety injection and refueling water tank

discharge check valves during the recirculation phase. This could have allowed radioactive water to enter the tank, which is vented to atmosphere. The licensee's prompt evaluation of this concern allowed the valves to be replaced during the 1992 refueling outage.

The systems engineering program generally continued to function well. One example was the discovery that a personnel access lock equalizing valve had never been leak rate tested. Systems engineering was also involved in the discovery that cam followers on certain safety-related switches were susceptible to cracking. The system engineer's performance in day-to-day activities was excellent. They were observed to be actively involved in all activities associated with their system. The system engineers' performance with regard to surveillances and maintenance was excellent. However, the systems engineering organization was responsible for inappropriately taking reactor coolant drain tank samples, resulting in the loss of containment integrity. This sampling was performed without the use of an approved procedure. In addition, in response to a problem that involved battery case cracking, a root cause analysis indicated that a potential common-mode failure existed. This root cause analysis did not receive timely attention and action by plant management.

The licensee's design basis reconstitution program continued to identify items that were outside the plant's design basis. The identification of design issues and the communication of these issues to the NRC staff was considered superior.

The engineering organization's response to plant events and other complex activities was superior. The engineering organization performed well during the refueling outage with support for the reactor vessel thermal shield inspection and repair, reactor vessel inservice inspection, steam generator eddy current testing, ultrasonic testing of the off-loaded fuel, emergency battery replacements, and the installation of a temporary diesel generator. However, in response to the loss of shutdown cooling, engineering provided incorrect procedural guidance to limit the 480-volt bus loading. The result was a subsequent loss of three 480-volt busses. This was considered an isolated occurrence.

The licensee's initial efforts in developing a program in accordance with its commitments to Generic Letter 89-10 was generally good. Some weaknesses were identified in the licensee's program, but these weaknesses were typical of those found throughout industry, and no operability concerns were identified.

The licensee maintained a competent nuclear engineering staff with notable in-house computing and reload safety analysis capabilities. The licensee's nuclear engineering staff was assertive in maintaining cognizance of fuel performance and potential adverse impacts, as evidenced by the requirement that all proposed changes to fuel assembly design be reviewed and approved by the licensee prior to implementation in the reload batch. The licensee's fuel examination activities and first-time application of a fuel assembly reconstitution process were successful and performed without encountering any significant problems.

The licensee developed and implemented an effective program to control design changes, modifications, and temporary modifications in accordance with the Technical Specifications, Updated Safety Analysis Report, and regulatory requirements. The licensee's process for the performance of safety evaluations was considered to be exceptional. For example, the number of active temporary modifications was relatively few and those that were in effect were properly implemented.

The implementation of plant modifications was considered good. The modifications to the electrical power system for the electrohydraulic control system were implemented in a timely manner and should improve the reliability of the facility. The licensee's analysis for the revision to the high pressurizer pressure reactor trip and pressurizer power-operated relief valve setpoints following the loss-of-coolant event provided an appropriate basis. The prompt implementation of the modification to readjust these setpoints was found to be commendable. The licensee's calculations and evaluations related to the electrical distribution system were noteworthy. The replacement of two safety injection and refueling water tank valves was properly implemented.

Engineering management's oversight of the engineering organization's involvement with safety issues continued to be superior. Design Engineering interfaced well with their site contacts and system engineering. Communication between the engineering departments and the rest of the plant organization was very good. The staffing levels were considered to be consistent with the workload. The design basis documents and user friendly procedures were found to be a positive influence on design engineering job performance. The licensee had identified several strategic engineering initiatives. For example, the licensee initiated actions to enhance steam generator reliability, plant reliability, and outage planning and control. These initiatives were commendable.

The system engineer training program was a strength in the development of an effective system engineering program. The system engineer's coordination of activities related to their assigned systems was viewed as superior. The system engineers had developed very good credibility and working relationships throughout the licensee's organization. There was a strong sense of ownership of systems by the system engineers.

The training department's performance in operator training was very good. This was evident in the 100 percent pass rate on two sets of initial licensee examinations and the requalification examination.

In summary, the licensee's overall performance in this functional area was superior. The licensee's engineering organization continued to be proactive in the resolution of engineering issues. The systems engineering program was notable. Some engineering problems were considered isolated cases and not indicative of a programmatic problem. The identification of design issues and the communication of these issues to the NRC staff was considered superior. Engineering made significant efforts to resolve ongoing issues. Engineering management's oversight of the engineering organization's involvement with safety issues continued to be excellent. The licensee maintained a competent

nuclear engineering staff with notable capabilities. The licensee developed and implemented excellent programs for design changes, modifications, and temporary modifications.

2. Performance Rating

The licensee is considered to be in Performance Category 1 in this functional area.

3. Recommendations

None

G. Safety Assessment/Quality Verification

1. Analysis

This functional area includes licensee activities associated with the implementation of licensee safety policies; licensee activities related to amendment, exemption, and relief requests; responses to generic letters and bulletins; the resolution of safety issues and performance of safety evaluations; safety committee and self-assessment activities; licensee activities related to the identification and resolution of equipment and programmatic problems; and licensee activities associated with quality verification functions.

NRC inspection efforts in this area consisted of the core inspection program, regional initiative inspections, and NRR program reviews. The previous SALP report did not identify any recommendations in this functional area.

The licensee's commitment to safety was evident during the refueling outage. A control center was formed as the central coordinating body for the outage, which had the overall, day-to-day responsibility for outage activities. Two assistant plant managers were appointed as outage managers. The outage control center assumed responsibility for as much of the routine control room outage activities as possible. However, equipment taken out of service continued to require control room approval. A definite focus on reducing shutdown risks was prevalent, as exemplified by the installation of a temporary diesel generator as an additional power supply. The outage control center performed excellently throughout the outage, except for one instance where a surveillance test of the safety injection pumps was performed a day earlier than scheduled. As a result, shutdown cooling was lost for approximately 7 minutes. This event was considered an indication of a programmatic weakness with outage planning and control. Overall, the performance of the licensee during the refueling outage was very good.

The Nuclear Safety Review Group was effective in carrying out its charter, as evidenced by the group's involvement in major events and issues. A notable characteristic of the Nuclear Safety Review Group was its timeliness in addressing issues and issuing findings or recommendations. The Quality Assurance organization initiated a functional area trending program, which identified weaknesses or concerns. The issues identified by this process were

resolved in a timely manner. A good working interface was found between the Nuclear Safety Review Group and Quality Assurance. These groups provided good support to the Safety Audit and Review Committee. The Quality Assurance and Nuclear Safety Review Groups' overview of engineering activities were considered a strength.

The onsite and offsite committees were effective in the identification of issues. The onsite Plant Review Committee was proactive in assessing the adequacy of proposed corrective actions. The nuclear planning organization was engaged in a process of identifying strategic issues, such as steam generator reliability, or issues with long-term or future implications, such as the installation of a third permanent offsite power source. The majority of these strategic issues are safety-related. Quality control personnel were noted in the plant on numerous occasions. Excellent communication and coordination was apparent between the quality control inspectors and plant personnel.

The licensee has expended significant resources in the upgrade of all plant safety-related and nonsafety-related procedures. As a result of these efforts, the procedures provide concise and effective instructions for the performance of tasks. The quality of plant procedures was generally excellent based on the licensee execution of the procedures. On occasion, minor inconsistencies were noted in the procedures, but personnel involved backed out of the procedures and obtained clarification before recommencing the ongoing evolution.

The licensee has been proactive in the identification and correction of problem areas. The licensee continued to exert a strong effort toward the identification of problems related to safety and conditions adverse to quality. An assessment of the licensee's corrective actions in response to inspection findings and licensee event reports revealed that the actions were thorough, proper, and timely.

A review of recent changes revealed innovative enhancements to the programs for root cause analysis and the investigation of human performance related to specific events. Human performance evaluation had evolved to the point where investigations were performed by a team staffed by members from nonrelated disciplines. All root cause analyses were performed by the system engineering group.

The actions resulting in the violation of containment integrity was an example where licensee management failed to exercise control over certain plant activities. The incident, where a liquid sample was taken from a drain valve (WD-1060) that was located between two containment isolation valves, was significant due to the number of occurrences and the nonquestioning attitude of those plant personnel that were aware of the activity. The sampling was allowed to be done without the use of an approved procedure, nor was the evolution approved for performance by the operations staff.

During this assessment period, the NRR staff reviewed a large number of license amendments and safety analyses performed by and for the licensee. Generally, the licensee's submittals demonstrated a clear and concise

understanding of the NRC guidance and concern and positively showed a management that was extremely involved in the licensing process. The submittals were generally technically competent, unambiguous, and complete. However, in some cases, additional information was required to complete the review. Occasionally, technical staff's responses to questions were inconsistent with prior submittals or the NRC staff had to explain the question. On several submittals, the licensee's review process failed to detect mistakes involving either the technical information or the writeup explaining the information. The licensing department initiated an additional level of review, but a subsequent submittal showed that the review process still needed improvement.

During a 10 CFR Part 50.59 package review, the NRC staff found that the licensee's evaluations were well prepared and well documented. Multidiscipline issues were addressed and included a review by engineers from various discipline groups. The affected sections of the Updated Safety Analysis Report were clearly identified and the safety evaluations addressed the potential safety concerns, including the Part 50.59 issues related to unreviewed safety questions. The review also found that a screening criteria and Part 50.59 reportability analysis existed if needed to process temporary modifications.

There have been four waivers of compliance issued to the licensee during this assessment period. The waivers dealt with the opening of the outer personnel air lock door, to perform repairs, and the performance of a steam generator inservice inspection following a loss-of-coolant event. The waivers requested by the licensee were thorough and complete.

Licensee management has provided an excellent level of oversight for the safe operation of the facility. Management and the licensee's staff demonstrated their capabilities when challenged by abnormal and emergency situations. Through management's and the staff's participation in industry working groups, they have effected changes in the facility operation based on their awareness of problem areas that are being identified at other facilities. Management's strong oversight of plant operations is due, in part, to their familiarity with the operation of the facility since all personnel in the line management function, up to and including the Senior Vice President, are former plant managers.

Overall, licensee management provided notable oversight of the safe operation of the facility, except for the incident involving unauthorized sampling of a liquid waste system. The licensee's independent oversight organizations were actively involved in ensuring that facility operations were performed in a safe manner. Licensee submittals made by the licensee were technically competent, unambiguous, and complete; however, some submittals required NRC staff assistance or were not consistent. The licensee's root cause analysis, Part 50.59 program, human performance evaluation system, and corrective action programs were excellent.

2. Performance Rating

The licensee is considered to be in Performance Category 1 in this functional area.

3. Recommendations

None

V. SUPPORTING DATA AND SUMMARIES

A. Major Licensee Activities

1. Major Outages

September 1991 - Replacement of station batteries

February 1992 - Refueling outage

July 1992 - Loss-of-coolant event

August 1992 - Premature lifting of a pressurizer code safety valve

2. License Amendments

Eleven license amendments were issued during this assessment period.

B. Direct Inspection and Review Activities

NRC inspection activity during the assessment period included 40 inspections. Approximately 4500 direct inspection hours were expended, which did not include operator licensing examinations or contractor hours.