

INITIAL SALP REPORT

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

INSPECTION REPORT NUMBERS

50-313/90-47
50-368/90-47

Entergy Operations, Inc.

Arkansas Nuclear One
Units 1 and 2

October 1, 1989, through November 30, 1990

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TABLE OF CONTENTS

I.	INTRODUCTION	3
II.	SUMMARY OF RESULTS	4
III.	CRITERIA	5
IV.	PERFORMANCE ANALYSIS	5
	A. Plant Operations	5
	B. Radiological Controls	9
	C. Maintenance/Surveillance	12
	D. Emergency Preparedness	15
	E. Security	17
	F. Engineering/Technical Support	19
	G. Safety Assessment/Quality Verification	22
V.	SUPPORTING DATA AND SUMMARIES	26
	A. Major Licensee Activities	26
	B. Major Direct Inspection and Review Activities	27

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's management regarding the NRC's assessment of their facility's performance in each functional area.

An NRC SALP Board, composed of the staff members listed below, met on January 9, 1991, to review the observations and data on performance and to assess licensee performance in accordance with Chapter NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance."

This report is the NRC's assessment of the licensee's safety performance at Arkansas Nuclear One for the period October 1, 1989, through November 30, 1990.

The SALP Board for Arkansas Nuclear One was composed of:

Chairman

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

Members

T. W. Alexion, Project Manager, Office of Nuclear Reactor Regulation (NRR)

A. B. Beach, Director, Division of Radiation Safety and Safeguards (DRSS),
Region IV

L. J. Callan, Director, Division of Reactor Safety (DRS), Region IV

T. P. Gwynn, Acting Director, Project Directorate IV-1, NRR

S. R. Peterson, Project Manager, NRR

C. C. Warren, Senior Resident Inspector, Arkansas Nuclear One, DRP,
Region IV,

T. F. Westerman, Chief, Project Section A, DRP, Region IV

The following personnel also participated in the SALP Board meeting:

P. J. Prescott, Reactor Engineer, Performance and Quality Evaluation
Branch, NRR

C. E. Rossi, Director, Division of Operational Events Assessment, NRR

M. A. Satorius, Project Engineer, Project Section A, DRP, Region IV

L. J. Smith, Resident Inspector, Arkansas Nuclear One, DRP, Region IV

II. SUMMARY OF RESULTS

A. Overview

During this assessment period, performance improved when compared to the ratings assigned in the previous assessment period. Licensee response to the Diagnostic Evaluation Team (DET) report, conducted at the end of the previous assessment period, and to the findings contained in the previous SALP, were extensive. The ANO Business Plan was developed to reflect the licensee's ongoing actions in response to those reports and their own evaluation of facility performance and ongoing improvement programs. Effective use of the business plan was a key factor in focusing licensee resources in areas where rapid, effective actions were necessary to implement positive change. The ability to identify, track, and effectively address problems has improved throughout this assessment period. Increased management involvement, dissemination of expectations and goals, and numerous program changes resulted in improvement in the development of timely effective corrective action.

Successful actions were initiated to improve the material condition of both units. Maintenance and engineering work backlogs were both reduced during this assessment period. Resolution of facility material deficiencies focused primarily on plant and personnel safety. The increased focus on timely resolution of facility material deficiencies was one element which led to high unit availability factors for both units.

Technical support to the plant staff was improved by a number of ongoing initiatives. Movement of the design engineering staff to the site significantly improved communications between engineering and other groups. Formation of a unitized system engineering group has also provided for improved and more timely engineering support.

The licensee took numerous measures to reduce the radiation source terms on both units, however, exposure totals for the facility continue to remain high. Evidence of weak radiological work practices by plant staff personnel was apparent throughout the assessment period and, when coupled with the high personnel radiation exposure, indicates that additional management attention in this area is warranted.

The licensee's performance category rating for each functional area assessed is provided in the table below, along with the ratings from the previous SALP assessment period:

<u>Functional Area</u>	<u>Rating Last Period (07/01/88 to 09/30/89)</u>	<u>Rating This Period (10/01/89 to 11/30/90)</u>	<u>Trend</u>
Plant Operations	2	2	*I
Radiological Controls	2	2	
Maintenance/Surveillance	3	2	
Emergency Preparedness	1	1	
Security	2	1	
Engineering/Technical Support	2	2	
Safety Assessment/ Quality Verification	3	2	

*I Improving Trend - licensee performance was determined to be improving during the assessment period.

III. CRITERIA

The evaluation criteria, category definitions and SALP process methodology which were used, as applicable, to assess each functional area are described in detail in NRC Manual Chapter 0516. 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 on February 27, 1991.

IV. PERFORMANCE ANALYSIS

A. Plant Operations (3258 Inspection Hours, 42 Percent of Total Inspection Effort)

1. Analysis

The assessment of this functional area consists chiefly of the control and execution of activities directly related to operating the plant.

NRC inspection effort consisted of the fundamental inspection program with regional initiative inspections, including an emergency operating procedure (EOP) team inspection on Unit 2 and an operational safety team inspection (OSTI) conducted late in the assessment period.

The previous SALP report (NRC Inspection Report 50-313/89-34; 50-368/89-34) recommended that the licensee: (1) provide management guidance to operators and establish consistent policy on logs, valve lineups, and independent verification requirements; (2) improve operations department interface with other departments; (3) increase reliability of the decay heat removal system and the accuracy of reactor coolant system (RCS) level indication; (4) improve the quality of operability determinations by improving operator knowledge of equipment/system operability

requirements; (5) establish high standards for station material condition and housekeeping; (6) continue efforts to reduce the backlog of minor deficiencies, particularly control room deficiencies; (7) continue the aggressive "blackboard" concept implementation, particularly for Unit 1; and (8) improve control of safety-related equipment status.

In response to the previous SALP and the DET reports, the licensee has aggressively pursued the above recommendations and other identified areas of weakness. The licensee has developed a long-term management tool, the ANO Business Plan, to track implementation of DET and SALP weaknesses. The business plan development also required prioritization and integration of previously identified weaknesses and long-range improvement programs. Management changes in the operations staffs of both units early in the assessment period provided the impetus to introduce a new philosophy for addressing known weaknesses. The licensee has become much more aggressive in attempting to resolve known areas of weakness resulting in more timely problem resolution and lowering of the age of items in the corrective action system. Guidance to the operating staff on logkeeping, valve lineups, and independent verification practices was implemented throughout the assessment period resulting in a standardization of these practices and an improvement in the methodologies used to perform valve lineups and independent verification. Increased management attention, improved control of outage activities, and heightened awareness of ongoing activities have significantly improved the performance of the decay heat removal system as evidenced by no losses of decay heat removal capability during the last Unit 1 refueling outage. Changes to the calibration procedures have improved the accuracy of the shutdown RCS level indications. Revision to the facility operability and condition report processes resulted in a distinct improvement in the timeliness and quality of operability determinations.

The licensee has developed a clear understanding of current plant material conditions and has set realistic goals for long-term improvements. New initiatives, such as routine valve overhauls, have had a positive effect on plant material condition. A number of factors, including management presence and increased expectations, have caused a noticeable improvement in the area of facility housekeeping. Housekeeping standards have been raised by the current management as evidenced by the commitment to initiate a long-term facility equipment preservation program. Overall facility housekeeping practices have been improving throughout the assessment period with the exception of the Unit 1 outage when housekeeping practices regressed. During this assessment period, the licensee has aggressively pursued the reduction of control room deficiencies. By establishing goals for the resolution of control room

deficiencies and providing a weekly status to plant management, the licensee kept the number and significance of those deficiencies low. Throughout the assessment period the licensee has been successful at keeping control room nuisance alarms to a minimum with both units operating "black board" for significant periods.

Licensee actions have been effective and management emphasis continues in response to operator-related events. Early in this assessment period, personnel errors on both units resulted in reactor trips. In response, licensee management initiatives to reduce operator errors and increase attention to detail have been successful with operator error rate falling throughout the second half of the assessment period. Control room operators routinely display a proper reactor safety attitude and performance during all phases of operation has normally been conducted in a professional and technically competent manner.

Although differences in unit operation exist, management effort in providing for consistency, where appropriate, have been effective.

A more questioning approach and increased attention to detail by operations personnel, in addition to enhanced procedures, have improved the timeliness and quality of initial operability determinations. Improved interfaces with the engineering resources have also enhanced the operability determination process.

Increased staffing levels within the operations area reflect a senior management commitment to reducing workload demands on the onshift crews. Additionally, the licensee has committed to onshift engineering expertise in the form of a shift engineer to be implemented by March 1991. Support to the operating staff by the newly formed systems engineering group has improved throughout the assessment period and efforts to reduce the administrative workload on licensed operators is commendable.

Current staffing levels of licensed personnel allow both units to remain in a six-shift rotation throughout the assessment period, although Unit 2 reactor operator staffing is presently minimal. Overall, active license numbers dropped on both units, from 57 to 48 for Unit 1 and from 54 to 37 on Unit 2, however, the majority of the attrition was due to a management decision to allow administrative licenses to lapse, and the overall effect on operations was minimal.

In the area of operations, an EOP inspection on Unit 2 identified significant failings in the technical adequacy of the EOPs and the availability of sufficient number of nonlicensed operators to respond to certain events. It appears that the areas of

weakness could have been identified by licensee personnel had lessons learned from the Unit 1 EOP inspection in 1988 been applied to the Unit 2 EOPs. Although strong operator knowledge and performance was able to offset the EOP procedural weaknesses, major revisions to the EOPs are required to achieve consistency current with industry standards. Licensee response to these issues was appropriate and included short-term actions of correcting identified weaknesses in the existing EOPs, conducting training to address EOP changes, placing an additional nonlicensed operator on shift, and committing to a long-term revision project for EOPs and abnormal operating procedures (AOP).

Routine operational activities have been improved and are conducted in a professional manner. Control room access has been improved, is rigidly controlled, and any activity not directly related to facility operation is prohibited, which is particularly important at AND due to the relatively small existing control room space. This issue is currently under evaluation by the licensee. Shift turnovers are conducted in a comprehensive manner, routinely including members of support functions, such as health physics and chemistry. Preshift and pre-evolution briefings are generally thorough and detailed, and management is routinely present in the control rooms.

In summary, a licensee management commitment to high quality operation has been evident throughout the assessment period. Operations department involvement and accountability in plant day-to-day activities has increased. Management involvement in operational issues was timely and reflects a strong safety conscience. Management decisions to reduce power to affect repairs when plant conditions did not strictly mandate a shutdown occurred on both units and is indicative of a conservative approach to operations. The licensee's response to the previous SALP and the DET inspection was comprehensive. Following problems noted early in the SALP period, management emphasis and licensee initiatives in this functional area have been effective with a continued emphasis on implementation needed.

2. Performance Rating

The licensee is considered to be in performance Category 2 in this functional area with an improving trend.

3. Recommendations

a. NRC Actions

Inspection effort in this functional area should be consistent with the fundamental inspection program.

b. Licensee Actions

None

B. Radiological Controls (429 Inspection Hours, 6 Percent Total Inspection Effort)1. Analysis

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

During the previous assessment period, a performance decline was observed in the radiation protection program reflecting the results of increased radiation protection workload activities from extended outages.

The previous SALP assessment recommended that the licensee consider the following actions to improve performance in this functional area: (1) continue ongoing efforts to improve the radiological controls area and stress improvement in procedural compliance and self-identification of problems; (2) reduce radiation area access restrictions for areas that require routine operations personnel access; (3) continue efforts to reduce overall exposure and the number of skin contaminations.

Several matters appeared to contribute to the decline during the previous assessment, including the lack of upper level management support, lack of aggressive supervision, lack of support provided to the radiation protection department by other departments, and the lack of delegated responsibilities and support for personnel at the radiation protection technician level.

The licensee's performance remained at about the same level early in the current assessment period. The licensee had an adequate number of well-qualified, permanent personnel in the radiation protection department along with a large number of contractor technicians. With minor exceptions, the department had adequate supplies, equipment, instrumentation, and administrative support to implement a high-quality program.

Several personnel changes were made near the end of this assessment period at the radiation protection manager and first-line supervisor levels in order to strengthen management oversight and controls. Additionally, the licensee implemented a policy that specified that radiation protection department supervisors and technicians had the authority and responsibility to take the steps necessary to ensure the implementation of a

high-quality radiation protection program. Upper management also became more actively involved in the day-to-day activities to ensure that sufficient attention was given to radiation protection matters.

Numerous improvements were made in the as low as reasonably achievable (ALARA) program, including increased staffing, a job tracking system, installation of remote TV cameras, and remote audio communications with on-duty radiation protection technicians. In contrast to those initiatives, the total man-rem exposure increased, reflecting increased job scopes and outage productivity problems. In some cases, the engineering department did not submit timely proposed design change packages to the ALARA coordinator to ensure adequate ALARA reviews were completed before the start of the outage. Some high source term items were addressed during the 1990 Unit 1 refueling outage, such as replacement of the letdown line in containment. The 1990 ALARA person-rem totals were above projections. Continued ALARA evaluation is necessary to evaluate the current person-rem values and achieve licensee goals.

Management oversight in the radiation protection program area was evident by the performance of comprehensive quality assurance audits in the areas of program improvement items and included at least one audit team member with extensive expertise in health physics. The radiation protection department provided timely responses to the audit findings. However, in contrast, problems identified by the licensee's radiological safety infraction/condition report (RSI/CR) system were not always resolved in a thorough and timely manner. The RSI/CR system is separate from the condition reporting system used for all other areas and does not appear to have the same level of effectiveness.

The licensee had maintained a stable, well-qualified staff in the radiation protection area. The annual personnel turnover rate has been less than 10 percent and vacant positions are filled in a timely manner. The permanent plant staff was supplemented with contractor radiation protection technicians during the 1990 refueling outages. Following the April 1990 Unit 2 outage, a large number of contractor personnel were held over to provide coverage during routine operations. Recently, however, the licensee discontinued the use of contractors during routine operations and intends to rely on the permanent plant staff. Routine radiological work practices by plant staff, including the identification of weaknesses and worker accountability, need enhancement and management reinforcement.

A well-defined radiation technician training program had been established, however, the present course agenda should be reviewed to ensure that identified problem areas are properly addressed during training sessions. Supervisors and

professionals in the radiation protection department attend periodic training, but a well-defined program that includes scheduled technical training courses had not been established. An effective program was in place for the evaluation, screening, and training of contractor radiation protection technicians that were brought on site for outage support in the past.

In the areas of radioactive waste management and radioactive effluent controls and monitoring programs, comprehensive quality assurance audits were performed which resulted in two licensee event reports (LERs) concerning inadequate effluent monitor alarm setpoints and failure to calibrate a liquid effluent monitor. Unplanned releases were properly documented in the semiannual effluent reports. Radioactive effluents sampling analyses and controls were adequately defined in plant procedures. An effective liquid and gaseous waste release permit program was in place to assure that planned continuous and batch radioactive effluent releases to the environment received proper review and approval. No problems were identified concerning staffing, training, and qualification of personnel responsible for operating the radwaste systems. The licensee had implemented a radwaste management program that demonstrated compliance with the radiological effluent Technical Specifications and the Offsite Dose Calculation Manual. Testings and surveillances of engineered safeguard feature (ESF) plant air cleaning systems were performed as required.

The radiological environmental monitoring program was inspected during the assessment period with no significant problems identified. Regulatory requirements were met regarding sample collection and analyses. Personnel assigned to implement the environmental program were qualified and well trained. Management oversight was evident by the performance of comprehensive audits, which included a team member with technical expertise in the environmental radiological area.

The transportation of radioactive materials and solid waste processing was inspected during the assessment period. Procedures had been established that addressed such areas as waste classification and characterization, procurement and selection of packages, preparation of packages for shipment, and delivery of the completed packages to the carrier. An adequate number of well-trained personnel had been assigned to handle transportation and solid radwaste activities.

In summary, most of the weaknesses identified in the functional area of radiological controls were in radiological protection and control program implementation at a day-to-day level and personnel accountability. The effectiveness of the ALARA program should be reviewed in light of the current trend and

the inability to achieve a reduction in person-rem totals. Several recent initiatives were implemented, including staff changes within the radiation protection department, and licensee upper management has expressed a commitment that the necessary support will be provided to ensure that program improvements are accomplished.

2. Performance Rating

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

3. Recommendations

a. NRC Actions

Inspection effort in this functional area should be consistent with the fundamental inspection program and include regional initiatives in the areas of maintaining exposures ALARA, contamination controls and surveys, and outage activities.

b. Licensee Actions

Management should review the radiation protection program to ensure the appropriate performance level is achieved. A meeting to discuss licensee program goals and implementation should be conducted.

C. Maintenance/Surveillance (1697 Inspection Hours, 22 Percent Total Inspection Effort)

1. Analysis

This functional area consists of activities associated with maintenance of plant structures, systems, and components; procurement, including qualification controls; installation of plant modifications, and maintenance of the plant physical condition. It includes conduct of surveillance testing and inservice inspection activities.

The previous SALP report (NRC Inspection Report 50-313/89-34; 50-368/89-34) recommended that the licensee: (1) establish effective corrective actions for a declining trend in TS surveillance performance, which should significantly reduce the numbers of missed surveillances, as well as ensuring that procedures and personnel are sufficient for adequately implementing surveillance requirements; (2) improve interface between maintenance and other departments, particularly with the engineering department; (3) implement effective equipment failure trending and improve equipment failure analysis

capabilities; (4) improve the material control program; (5) reduce the backlog of maintenance work; (6) complete the maintenance organizational restructuring; and (7) complete the preventive maintenance improvement program (PMIP).

This area was inspected on a routine basis by the resident inspectors, periodically by regional inspectors, once by the Region I nondestructive examination (NDE) team, and by an OSTI. Some of these activities were performed as followup inspections for the DET and maintenance team inspections performed during the previous assessment period.

Management's involvement and oversight of maintenance has shown improvement, particularly in problem identification and correction. The surveillance test program has been strengthened. The instances of missed or inadequate surveillances have been significantly reduced. Performance in planning and execution of high visibility, high impact maintenance activities has been very good; however, performance during some routine activities has not been consistent. Management attention is also needed to improve the consistency of performance in the planning and execution of routine maintenance activities.

The licensee has continued efforts to implement an improved preventive maintenance (PM) program. Although the majority of the implementation process is complete, a number of new PM procedures have yet to be performed. The system engineering group has been providing input to improve the PM procedures as problems arise. Examples of these include additional PMs to instrument air system components as well as the development of improved PM's on the Emergency Feedwater Pump 2P7A governor control oil system. System engineering took the lead in determining the root cause determination of Pump 2P7A overspeed trips and in developing new procedures to address weaknesses in preventive maintenance.

The restructuring of the AND organization to establish separate maintenance departments for each unit was one of the licensee's major goals to provide increased management involvement and dedicated maintenance personnel with specialized unit knowledge. The licensee completed this planned reorganization during this SALP period and has shown positive results in management involvement, prioritization of work, and accountability for results. Other areas of improvement are interfaces between maintenance and other departments, particularly engineering and operations. The maintenance backlog of work is showing a slow but steady improvement. The effects of failure trending and analysis initiatives require more time for evaluation. Performance indicators were developed during this assessment period with specific goals in most maintenance areas. Weekly updates are used by management personnel in both units to

measure maintenance performance. The preventive maintenance improvement program was implemented late in the SALP cycle and has not been evaluated.

Maintenance scheduling improved for both units and long-term initiatives are being developed and implemented. Scheduling efforts have been effective, particularly with the development of forced outage maintenance schedules. This has resulted in successful performance of numerous high impact maintenance activities during forced outages.

The material condition of the plant has been significantly improved as a result of increased attention in this area. The DET and the OSTI inspections identified weaknesses that still remain in areas of maintenance procedures and documents, maintenance planning, and postmaintenance testing.

The licensee instituted a number of changes in the material management area during this assessment period. Management and organizational changes were completed, and development of long-term plans to upgrade this function are being developed and tracked as line items in the licensee's business plan. Weaknesses previously identified in this area (inventory control and a lack of correct spare parts) have continued during this assessment period. Recently however, there is evidence that the licensee's efforts in the areas of inventory analysis and warehouse upgrading are reducing the number of problems.

Both units underwent refueling outages during this assessment period. In both cases the work conducted was well planned and licensee technician performance was generally good. Coordination and interface among all affected organizations was generally good, and communications were usually effective, however some significant general contractor productivity and quality problems occurred.

The licensee's current staffing in this area was adequate. The organization changes and new programs implemented have resulted in some growth. Training continues to be a definite strength in this area.

Centralization of the surveillance scheduling, tracking, review and implementation to one work group for all surveillances has been effective in improving the implementation of the surveillance program. The group has significantly reduced the number of surveillances missed resulting from scheduling errors and has identified and corrected deficiencies in existing surveillance procedures during procedure reviews. The group has also ensured that procedure changes required by license changes, design changes, or identified deficiencies have been implemented expeditiously. Management visibility in the

resolution of previously identified surveillance program weaknesses has been high. Technical performance in the conduct of surveillances has generally been good with only a few instances of knowledge weaknesses noted. Weaknesses in the technical content of some surveillance procedures continue to be identified.

2. Performance Rating

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

3. Recommendations

a. NRC Actions

Inspection effort should be consistent with the fundamental inspection program.

b. Licensee Actions

None

D. Emergency Preparedness (189 Inspection Hours, 2 Percent Total Inspection Effort)

1. Analysis

This functional area includes activities related to the establishment and implementation of the emergency plan and implementing procedures and interactions with onsite and offsite emergency response organizations during exercises and actual events.

During the previous SALP period, this functional area was rated as Category 1.

During the assessment period, region-based and NRC inspectors conducted two emergency preparedness inspections. The first inspection consisted of the observation and evaluation of the March 21, 1990, annual emergency response exercise. During the exercise, the inspectors identified a number of exercise weaknesses. These weaknesses involved the failure to promptly detect and classify some emergency events, instances of deficient information flow and technical analysis and operational response, failure to assign task priorities, and personnel proficiency and training. At the end of the exercise, the licensee was able to properly identify and characterize the weaknesses, determine the root causes, and establish a schedule for taking corrective measures. Most of the weaknesses identified were related to training or appeared to result from the recent reorganization changes.

Although the number of weaknesses identified during the 1990 exercise was larger than that identified in previous years, the exercise scenario was considered to be more challenging and demanding. The 1990 exercise was conducted in the early hours of the morning in such a manner that the time of the simulated accident could not be anticipated by the responders. This added a substantial amount of realism to the exercise and resulted in imposing greater stress upon the emergency response organization. During the exercise, the licensee responded quickly by staffing and activating emergency facilities, established adequate protective actions to protect emergency workers, promptly notified offsite authorities of emergency events, recommended adequate protective actions, and pursued effective mitigating actions.

As a followup to the 1990 exercise, the licensee met with Region IV representatives on July 18, 1990, to review planned actions to strengthen their emergency preparedness program. The licensee made specific commitments to make program improvements in the areas of drills, technical support, information flow, notifications, and training. These improvements are scheduled for completion in early 1991.

An inspection of the operational status of emergency preparedness was conducted May 21-25, 1990, which included walkthroughs and interviews with emergency responders. No negative findings were identified during this inspection. The inspector concluded that the licensee had adequately processed changes to the emergency plan (EP) and emergency plan implementing procedures (EPIPs). The licensee had maintained an adequate, well trained staff to implement the emergency preparedness program; trained emergency responders; updated emergency facilities, equipment, and supplies; and performed quality assurance audits of the emergency preparedness program.

During this period, the licensee activated portions of their emergency response organization twice when unusual events were declared for a gaseous chlorine leak and a turbine lube oil leak to the lake. Licensee personnel performance during these activations was good.

In summary, aggressive and effective management involvement was demonstrated by prompt and thorough response to the exercise weaknesses. An adequate staff was maintained for administering and implementing the emergency plan. The licensee's accurate and thorough self-critique, their subsequent identification of root causes, and detailed schedule for corrective measures after the exercise showed an effective approach to resolving programmatic weaknesses. In addition, the efforts undertaken by the licensee to develop and conduct a realistic scenario to

challenge the emergency responders is noteworthy, and further demonstrates the maturity of this licensee's emergency preparedness program.

2. Performance Rating

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

3. Recommendations

a. NRC Actions

Inspection effort in this functional area should be consistent with the fundamental inspection program.

b. Licensee Actions

None

E. Security (64 Inspection Hours, 1 Percent Total Inspection Effort)

1. Analysis

This functional area consists of activities associated with the security of the plant including all aspects of access control, security background checks, safeguards information protection, and fitness-for-duty activities and controls.

The previous SALP report (NRC Inspection Report 50-313/89-34; 50-368/89-34) recommended that licensee management consider the following actions to improve performance in this functional area: (1) provide strong support to the reconstituted security program; (2) review the overall security force staffing to ensure that current staffing is adequate for implementing additional requirements such as the new fitness for duty rule; and (3) ensure that a strong maintenance program is developed to support the new physical security systems.

During the assessment period, region-based physical security inspectors conducted three security inspections, including the core program and five regional initiatives. This functional area is also inspected on a continual basis by the resident inspectors.

The previous SALP period analysis referenced a violation for an inadequate assessment aids system. The licensee has developed an upgrade of the current lighting system that should resolve the problems being encountered by the assessment aids system. The lighting system upgrade is scheduled to be completed by August 1991.

A vital area detection weakness was identified involving a longstanding condition with numerous balanced magnetic switches that were not adequately tamper alarmed. In conjunction with the security computer multiplexer system upgrade scheduled for August 1992, the licensee has committed to a long-term upgrade of the tamper alarm system.

The licensee's immediate corrective actions were comprehensive and adequate to ensure that degradation of the two systems was adequately compensated until completion of corrective actions. During the assessment period, the licensee completed a major protected area perimeter upgrade that has resulted in significant improvement to the perimeter detection aids and barriers systems. Also, the licensee has improved the human factors functions of the central and secondary alarm stations.

The licensee appears to be making a smooth transition through an extensive staff reorganization. A new security director has been selected and has been in place since September 24, 1990, and the security organization is undergoing internal reorganization. The licensee has also selected a permanent investigator who reports to the corporate organization.

The security force has maintained adequate staffing whose performance has been assessed as well trained and dedicated to performing their security function in an outstanding manner. Also, the contingency plan has been exercised with the Arkansas State Police, and an effective liaison and training program for contingencies has been developed.

The licensee conducted a comprehensive audit of the security program during the current SALP period, and all findings requiring action have been promptly corrected.

In summary, licensee management has demonstrated a commitment to the implementation of a strong security program. The security management staff has been professional, knowledgeable, and fully capable of providing maximum support to the security force. All NRC issues have been promptly addressed, and appropriate corrective action has been taken.

2. Performance Rating

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

3. Recommendations

a. NRC Actions

Inspection effort in this functional area should be consistent with the fundamental inspection program and

include regional initiative inspections to follow licensee actions with regard to ongoing hardware initiatives and the transition to a new security force contractor.

b. Licensee Actions

None

F. Engineering/Technical Support (437 Inspection Hours, 6 Percent Total Inspection Effort)

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, training, procurement of safety-related and commercial-grade items, and vendor interface activities; training; and fire protection/prevention.

The previous SALP report (NRC Inspection Report 50-313/89-34; 50-368/89-34) recommended that licensee management consider the following actions to improve performance in this area: (1) prioritize efforts to ensure that improvement programs that will make the greatest contribution to safety will be implemented first; (2) establish realistic schedules for improvement programs; (3) assess the adequacy of engineering department resources to perform the routine workload as well as support the various plant improvement programs; (4) continue to improve engineering department interface; and (5) fully implement the system engineer program during the next SALP period.

This functional area was inspected on an ongoing basis by the resident inspectors and periodically by region-based and headquarters personnel.

The licensee addressed items of weakness identified in the DET and previous SALP reports as well as self-identified areas of poor performance by developing a long-term planning and priority document. The ANO Business Plan adequately captured areas of concern and assigned achievable goals for completion dates. Tracking of items until completion and subsequent reviews for implementation effectiveness were also accomplished through the use of the business plan.

During this SALP period, the relocation of the corporate engineering/technical support staff from Little Rock to the site occurred. Coordination and communications between engineering and the historical onsite organizations has been improved. The site has fostered a better "hands-on" approach to engineering

activities. Additionally a system engineer program was implemented during this SALP period. Each unit has its own system engineering group consisting of a manager, one clerical aide, 28 engineers, and two shared technical assistants. Training requirements have been established to ensure that selected engineers are qualified for the position. The program is designed to strengthen the engineering support function to operations through the accountability and ownership by an engineer of a limited number of systems. Inspections conducted throughout the period revealed that the system engineer program was being satisfactorily implemented and functioning well.

Over recent years, a significant backlog of engineering work has developed at ANO. The licensee has established a program to reduce the engineering backlog by systematically dispositioning items with respect to their safety significance. The program appeared to be well conceived, and review of the dispositioning of items was appropriate.

During the assessment period, there were several indications of poor coordination between engineering and other site organizations. These were evidenced mainly by ineffective implementation of recommendations from engineering to operations regarding procedure revisions, regulatory commitments, and component testing. An example of this problem was a deviation cited against Regulatory Guide 1.97, in which the licensee had failed to identify specific postaccident monitoring instruments and train reactor operators to recognize them. The relocation of engineers to the site has improved interdepartmental coordination and, coupled with system engineer involvement, has improved the performance in this area.

Inspections conducted during the SALP period generally indicated that modifications and design changes were thorough in scope, well-planned, and completely implemented. An exception to this general observation was a design change that removed the safety injection activation signal (SIAS) block of the emergency diesel generator failure-to-start circuitry. This change appeared to negate prior commitments and created inconsistencies between the Technical Specification and Final Safety Analysis Report (FSAR). The licensee agreed to restore the SIAS bypass on the failure-to-start trip and to pursue a formal licensing change.

An OSTI also identified problems in the control of modifications resulting from a lack of procedural controls and instances in which required information was not included in modification packages.

In contrast, Generic Letter 89-06, "SPDS Implementation Verification," required that each licensee certify to the NRC that its safety parameter display system (SPDS) meet the

requirements of NUREG-0737, Supplement 1, and NUREG-1342. The staff's audit determined that the licensee's staff had developed and implemented an SPDS which fully met all requirements of NUREG-0737 and was an exemplary system in design and function.

A potential weakness was noted concerning the timeliness and technical adequacy of the licensee's program to respond to vendor identified problems under 10 CFR Part 21. Vendor-identified problems with the epoxy-anhydride compound used to encapsulate electrical components had prompted the licensee to initiate two preventive maintenance inspection programs. However, an effort was not made to assess the current in-plant status of the reported condition completely.

The licensee's snubber surveillance program appeared well organized and was identified as a strength. The licensee's 15-year tendon surveillance report was another example of high quality technical support. In contrast, it was found that the licensee's overall inservice inspection (ISI) and inservice testing (IST) programs required additional management attention. In order to execute this program successfully, the responsibility for these was recently transferred from a licensee contractor to the licensee.

In the areas of document control, licensee programs were functioning well, and the licensee was actively involved in the implementation of further enhancements.

The licensee's program for containment leak rate testing and local leak rate testing was well documented and controlled. Licensee efforts in this area appeared to exceed the industry norm significantly. In a like manner, the fire protection and prevention program was considered a strength, especially the program for fire barrier penetration control. During an alternate shutdown walk-through inspection, some weaknesses were noted in the area of the alternate safe shutdown procedure and emergency lighting. The licensee's response to correct these weaknesses was timely and comprehensive.

During this assessment period, inspection of the overall plant training process indicated that the licensee had made significant improvements. The training staff appeared to have a good understanding of the training needs of the plant staff. Training procedures, lesson plans, and course materials were very good and easy to follow. Minor weaknesses were identified in the lack of effective root cause analysis for audit findings and in the failure to train operations personnel on design changes installed in the plant. The training staff demonstrated a good attitude and had initiated plans to begin self-assessments of the training process through internal audits.

In summary, the licensee has initiated a number of actions to address weaknesses previously identified in this functional area. Major initiatives include formation of the system engineering groups and movement of design engineering to the site, which has improved communications and increased technical support to the plant staff. Long-term programs to reduce engineering work backlogs have been implemented. The licensee's initiatives have resulted in improved engineering and planning.

2. Performance Rating

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

3. Recommendations

a. NRC Actions

NRC inspection effort should be consistent with the fundamental inspection program with regional initiative inspections, including an electrical distribution safety functional inspection (EDSFI).

b. Licensee Actions

(one)

G. Safety Assessment/Quality Verification (1618 Inspection Hours, 21 Percent Total Inspection Effort)

1. Analysis

This functional area was assessed on an continual basis by the resident staff as well as during team inspections performed during the period.

Licensee performance in this functional area was rated as Category 3 during the previous SALP period, and the poor performance was attributed primarily to weak self-assessment capabilities and a lack of effective management involvement and oversight. Recommendations to licensee management to improve performance included: (1) reduce the condition report backlog while making improvements to the condition reporting system, with emphasis on thorough root cause determination and thorough corrective actions for significant events; (2) improve site departmental interfaces; (3) improve the ability to track and meet commitments; (4) continue to improve the review of industry events and provide timely implementation of lessons learned; (5) prioritize plant improvement programs, including the establishment of realistic schedules; (6) improve the quality of (technical content, scope and accuracy) submittals to the NRC.

During this assessment period, the licensee has taken aggressive actions to reduce the backlog of outstanding condition reports (CRs) and to improve the quality and timeliness of the associated root cause analysis and proposed corrective actions. Backlog reduction efforts have been successful despite the continuing high initiation level of CRs, and the average age of open reports in the system has been reduced. The licensee's "In House Events Analysis" (IHEA) group has established a real-time system for tracking open CRs, and the database allows keyword searching for trend analysis. Training in root cause analysis techniques, specific guidelines listing requirements, and formation of the Corrective Action Review Board (CARB) for significant CRs have all contributed to improve the quality of root cause analysis and proposed corrective actions. Although timeliness of corrective action implementation was a noted weakness during parts of this assessment period, it appears that this issue is directly related to periods of high workload (i.e., outage preparation and implementation). Licensee management was aware that workload leveling efforts are needed to reduce cyclic increases in overdue corrective actions in almost all departments. An additional function being performed by the IHEA group is the screening of CRs for trend detection. Timeliness in the recognition of trends has shown improvement, and the trends identified have been conservatively resolved by licensee management.

The Plant Assessment Department, Safety Assessment Section, Industry Events Analysis Section, and In-House Events Analysis Section have become more refined during this assessment period. Lines of responsibility, as well as management expectations, have been clearly delineated, and the plant assessment department has been successful in meeting management goals in numerous areas. The licensee's decision to keep the three functions intact as one department during recent organization changes enabled the sections to maintain a degree of independence from the plant staff and provide for additional independent performance assessment of licensee management.

The Quality Control/Quality Engineering Department (QC/QE) initiated a number of program enhancements that have had a positive effect. One new initiative set criteria for required QC holdpoints in work packages and set up a review program by QC personnel to ensure that proper holdpoints are specified in work packages. In addition to the increased field presence of QC inspectors that this program requires, the additional review of work packages by an independent auditor has been beneficial in improving work package quality. The licensee has also increased the infield inspection for balance-of-plant maintenance by QC personnel. These additional resource requirements have been met by increasing the QC staff and by reducing documentation requirements for inspectors. The performance of surveillances by QC personnel continues at a high rate.

Audits and surveillances performed by the Quality Assurance (QA) Department have continued to trend toward performance-based audits. Review of completed audits throughout the assessment period found them generally to be comprehensive and of high quality. One significant exception to this trend was the past audits performed on EOPs and AOPs, which were narrow in scope and did not identify significant failings in these areas. Licensee requirements on auditor experience have led to the development of a highly qualified staff, and the recent trend of using auditors from outside the organization has added new insight to the audit program.

A number of factors have played a role in improving interdepartmental interfaces at all levels of the organization. Movement of all engineering resources to the site has had the greatest effect on improving the interfaces between engineering and the plant staff. Occasional breakdowns in information flow have occurred, one was identified in this assessment period and resulted in escalated enforcement. The OSTI identified that the licensee's response to Generic Letter 88-14, "Instrument Air Supply System Problems Effecting Safety Related Equipment," was inaccurate, in part, because of a lack of interdepartmental coordination.

The response to the needs of the operating staff has been significantly improved. Unitization of the maintenance, outage management, and system engineering functions has also improved interfaces between departments on each unit. The largest factor in the improvement in interdepartmental interfaces resulted from a renewed management commitment. Management insistence that a larger audience attend shift turnovers, morning meetings, CARB meetings and others has forced lines of communication to develop among departments.

The licensee has completed Phase 1 implementation of a new system to address the tracking of external commitments. Tracking of internal commitments is currently fragmented among departments and failures may continue to occur until a central system is completely established.

The licensee's implementation of a formal, detailed business plan for the facility provided for licensee management review and prioritization of all ongoing and developing improvement programs. The implementation and closure of business plan items was reviewed by the staff as part of the quarterly performance review meetings conducted on site. The impact of business plan activities has been observed daily by the resident inspectors and during team inspections. The business plan, as it is currently being used, is a strong working tool for licensee management to focus site initiatives and measure progress in their improvement programs.

Management involvement and oversight has been significantly increased during this assessment period. Senior management involvement in the review and classification of condition reports occurs daily and, although it places an additional burden on management, the process is working well. Proposed corrective actions to significant condition reports are approved by the affected plant manager prior to implementation, and the licensee has begun assessments of corrective action effectiveness.

A clear example of the increase in management involvement in routine activities is the presence of each operations manager in their respective operators requalification program. The operations managers have both been actively involved in the simulator training and evaluation process. They also conduct presentations to every crew during each requalification cycle. The involvement of the Unit 2 operations manager in the recent requalification evaluation and the EOP inspection were noteworthy examples of the level of involvement of licensee management.

During the evaluation period, numerous license amendments were issued for each unit. In addition to the license amendments, the NRC staff evaluated the licensee's responses regarding numerous other subjects. One of the most significant submittals from the licensee was the combined response to the DET report and the last SALP report. The licensee responded to each of the specific findings delineated in Section 2 of the DET report and to all findings of the SALP. This product, which included the licensee's business plan, was well organized and prioritized and indicated extensive management involvement and attention.

For Unit 1, the license application to provide for a return to 100 percent power was an extremely challenging and complex effort on the part of the licensee. It included a significant redesign of the high pressure injection (HPI) system and other related issues, such as the net positive suction head for the low pressure injection (LPI) system and reactor building spray (RBS) pumps, the small and large break loss of cooling accident (LOCA) analysis for the plant, containment temperature and pressure profiles, and the impact on equipment qualification, post-LOCA operator actions, and offsite doses. Overall, the licensee provided a well-documented package which was found to be acceptable by six NRC technical review branches. The licensee's technical personnel clearly understood the issues involved and their interrelationships. The licensee's performance on this major task was excellent.

The licensee submitted numerous license amendment applications intended to clarify the Technical Specifications for both units. These changes resulted in improvements in the understanding,

interpretation, and application of the TS areas affected. Although the majority of the licensee amendment applications were provided in a timely manner, there have been a few applications regarding modifications and outage-related activities, that could have affected Unit 1 restart because of late submittal.

Review of LERs was conducted throughout the assessment period. LER technical content and timeliness have been good with improvement noted in the area of root cause determination and corrective actions. This trend can be directly attributed to the overall improvement of the corrective action process.

In summary, licensee management has placed emphasis throughout the assessment period on the development of programs and work ethics that stress safety and quality as primary attributes. Improvements to program documents have been instrumental in upgrading the condition reporting and root cause analysis programs. Management has played a key role in improving communications within the organization and with outside agencies. Development of the ANO Business Plan as a long-range planning tool required the licensee to prioritize the multiple, ongoing improvement plans. Although many of the improvement initiatives are not completely implemented, a clear pattern of improved performance is evident.

2. Performance Rating

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

3. Recommendations

a. NRC Actions

NRC inspection effort should be consistent with the fundamental inspection program. An assessment of the effectiveness of licensee's implementation of the items contained in the ANO Business Plan should be performed.

b. Licensee Actions

None

V. SUPPORTING DATA AND SUMMARIES

A. Major Licensee Activities

1. Major Outages

- o The seventh refueling outage for Unit 2 was conducted September 25 through November 20, 1989.

- The midcycle maintenance outage for Unit 1 was conducted November 28 through December 19, 1989.
- The ninth refueling outage for Unit 1 started on October 7, 1990, and was ongoing at the end of the assessment period.

2. License Amendments

During this assessment period, 12 license amendments were issued for each unit.

3. Significant Modifications

A number of modifications were made to Unit 1 during the midcycle outage (1M89) and refueling outage (1R9). The most significant of these included modifications to the high pressure injection system, replacement of both diesel generator air start systems, and addition of motor-operated isolation valves in the secondary plant.

Major modifications to Unit 2 during the refueling outage (2R7) included replacement of the core protection calculators with more advanced models and upgrades of the annunciators.

B. Major Direct Inspection and Review Activities

NRC inspection activity during this SALP cycle included 55 inspections performed with approximately 7692 direct inspection hours expended.