SALP 9

INITIAL SALP REPORT

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

Inspection Reports No. 50-295/91001; 50-304/91001

Commonwealth Edison Company

Zion Station, Units 1 and 2

October 1, 1989 through October 31, 1990

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I. INTRODUCTION

The systematic assessment of licensee performance (SALP) program is an integrated Nuclear Regulatory Commission (NRC) staff effort to periodically collect available data and make observations to evaluate licensee performance. The program is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. It is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful feedback to the licensee's management regarding the NRC's assessment of the facility's performance in each functional area.

An NRC SALP Board met on December 19, 1990, to review the observations of and data on performance and to assess licensee performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." The Board's findings and recommendations were forwarded to the NRC Regional Administrator for approval and issuance.

This report is the NRC's assessment of the licensee's safety performance at Zion for the period October 1, 1989, through October 31, 1990. The SALP Board for Zion was composed of the following individuals:

Board Chairman

T. O. Martin, Director, Division of Reactor Safety (DRS), RIII

Board Members

H. J. Miller, Director, Division of Reactor Projects (DRP), RIII

R. Barrett, Director, Project Directorate III-2, NRR

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

W. D. Shafer, Chief, Projects Branch 1, DRP, RIII

R. Pulsifer, Project Manager, NRR

J. D. Smith, Senior Resident Inspector, Zion

Other Attendees at the SALP Board Meeting

C. J. Paperiello, Deputy Regional Administrator
W. L. Forney, Deputy Director, DRP
G. C. Wright, Chief, Operations Branch, DRS
L. R. Greger, Chief, Reactor Programs Branch, DRSS
M. J. Farber, Chief, Section 1A, DRP
M. P. Phillips, Chief, Operational Programs Section, DRS
J. R. Creed, Chief, Safeguards Section, DRSS
W. Snell, Chief, Emergency Preparedness Section, DRSS
R. J. Leemon, Resident Inspector

A. M. Bongiovanni, Resident Inspector
F. A. Maura, Reactor Inspector
Z. Falevits, Reactor Inspector
A. Walker, Reactor Inspector
A. W. Markley, Radiation Specialist
P. D. Rodrik, Reactor Engineer
H. Simons, Emergency Preparedness Analyst
C. F. Gill, Senior Reactor Program Specialist
M. L. Dapas, RIII Evaluator, Performance and Quality Evaluation Branch, NRR

II. SUMMARY OF RESULTS

Overview

The licensee's overall performance level during this assessment period was acceptable in all areas.

In the area of plant operations, the licensee's performance has declined. Weaknesses were noted in management oversight of plant activities, control room demeanor, staffing levels, control of overtime, and operator training. Although improvements have been noted in some of the above mentioned areas such as the reorganization of the control room, it is premature to assess effectiveness. The Board recommends that the licensee provide more senior operations management visibility and oversight in the control room and continue in the implementation of the improvement program.

The area of radiological controls was observed to have a declining trend in performance. Recurring problems with the maintenance and reliability of the radiation monitors as well as concerns in high radiation area access and contamination controls were observed. Increased occurrences of personnel contaminations indicated weaknesses in the implementation of the as-low-as-reasonably achievable (ALARA) program and management oversight.

Performance in the area of maintenance and surveillance declined during this assessment period. Although programs are planned, progress in maintenance improvement has been slow. Poor work practices, inadequate preventative maintenance, and personnel errors resulted in safety-related equipment failures causing plant trips or forced outages. Lack of control over motor operated valves (MOV) torque switch settings and administrative control over maintenance work requests were other areas of concern. The Board recommends that the licensee increase management attention to the overall maintenance program and implementation.

While the areas of Radiological Controls and Emergency Preparedness were both rated category 2, I note that declining performance trends were assigned to both areas. In Radiological Controls, weaknesses were noted in controls over high radiation areas, and in actions to reduce personnel contaminations and total person-rem exposure. In Emergency Preparedness, poor performance was identified in the 1990 emergency exercise; however, a remedial exercise conducted two months later showed significant improvements. Several other problems related to documentation, procedures, training, and maintenance of monitoring equipment indicate a lack of attention to detail.

The licensee's performance in the area of security has improved during this assessment period. Senior management support, increased staffing, and program development contributed to the improved performance.

In the area of Engineering and Technical Support, the licensee's performance has improved somewhat; however, it still remains a concern. Although improvements were noted in the technical staff responsiveness to plant activities and increased staffing, weaknesses in the control of critical MOV torque switch settings, licensed operator training and resolution of technical issues. The Board recommends that the licensee implement improvement programs that have been initiated including those that focus on root cause evaluations.

The licensee's performance rating in the area of Safety Assessment/Quality Verification remained constant. Weaknesses were noted in the implementation of corrective actions and management/supervisor involvement. However, the Board recognizes the licensee has initiated a variety of improvement programs which are intended to address their problems, and more broadly, improve overall performance.

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

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

III. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

Evaluation of this functional area was based on the results of routine inspections conducted by the resident inspectors, two special inspections, one emergency operating procedures team inspection, an overtime assessment inspection, and a Diagnostic Evaluation Team (DET) inspection.

The enforcement history reflected fewer violations than the previous assessment period and was considered good. One Severity Level IV violation identified during the previous period was issued during this assessment period. The violation resulted

from a nonconservative interpretation of the licensee's Technical Specifications (TS) and updated Final Safety Analysis Report (FSAR) that occurred late in the last assessment period. The licensee implemented a matrix of all FSAR support equipment as part of its comprehensive corrective actions for this violation.

Management involvement to ensure quality of routine operator activities was weak. The shift control room engineer was the only supervisor in the control room and was overburdened with paper work. The operators lacked confidence in supervision and did not feel accountable to shift management in part because senior management had overruled previous attempts at disciplinary actions by shift supervisors. The nuclear station operators (NSOs) knowledge of the current conditions and configuration of plant equipment was limited because they seldom worked outside the control room.

Senior and shift management did not provide strong daily oversight in the control room. Senior management tours of the control room were infrequent. Early in the assessment period, several examples of poor oversight were evidenced. An auxiliary feedwater (AFW) system misalignment resulted from a poor independent verification by a shift foreman. An inadequate procedure and ineffective management involvement during the surveillance of an AFW pump caused damage to the pump.

Generally, control room demeanor was not maintained in a professional manner. Examples were inattentiveness during shift briefings, too many nonessential personnel routinely in the control room, operators with their feet propped on desks, failure to communicate activities that could cause unexpected alarms and failure to communicate the status of out-of-service plant equipment. At times, operators did not adequately monitor instrumentation on their control panels. Many of these weaknesses were corrected or improved during the latter part of the assessment period.

The licensee conducted a plant standdown (in-depth meetings with all plant departments) in January 1990 because of a large number of human errors involving lack of attention to detail, management oversight, and procedural deficiencies. All departments reviewed and discussed past personnel errors, and senior corporate management met with each department during the plant standdown. This led to a reduction in the personnel error rate.

Additionally, a self-check training program to foster a questioning attitude before performing an evolution was attended by all departments. The DET identified additional significant weaknesses that prompted the licensee's reorganization of the control room toward the end of the assessment period. The reorganization appeared to have an overall positive effect by

strengthening control room supervision, teamwork, work accountability, and improving the NSO's familiarization with the plant.

Management involvement was evident in improving communication and cooperation between operations and other departments. The utilization of technical staff support by the operations staff has improved. Generally, the operations staff consulted with the technical staff on significant equipment malfunctions and received prompt callout support from the technical staff during backshifts and weekends. Cooperation with the maintenance personnel also had improved. In contrast, the control room operators did not always receive adequate feedback from shift and operations management on the status of out-of-service (OOS) equipment.

Management involvement to ensure quality was not always effective. One example was the controlling of OOS activities. Inadequate review to de-energize one of three residual heat removal (RHR) heat exchanger room fan coolers resulted in all three fan coolers being de-energized, rendering the RHR train inoperable. Failure to turn off the DC control power for modification work on the emergency diesel generator resulted in an inadvertent start. Problems with the OOS process also included improper independent verification and difficulty in locating equipment as a result of the licensed operator's lack of familiarity with equipment located outside the control room.

However, on the positive side, the licensee took strong measures to resolve weaknesses in the emergency off-normal operations. Documentation that established the basis of emergency operating procedures (EOPs) was very complete and easily retrievable. The licensee's extensive effort indicated a strong commitment to the quality of the EOPs.

The number of events attributed to plant operations that resulted in licensee event reports (LERs) showed a slight decline during this assessment period. Unit 1 tripped twice from power and Unit 2 tripped three times from power. Two of the trips resulted from operator errors. Although the total number of trips from power remained constant, the units were in outages most of the time. Fewer unplanned engineered safety feature (ESF) actuations occurred during this assessment period than in the previous period (9 versus 14). Only two of the ESF actuations were the result of operator error and were of minor safety significance.

The operating crew performed well during significant events, safety system actuations, and safety system failures. The operators reacted promptly to mitigate transients caused by the electrohydraulic control system malfunctions on several occasions for both units and responded immediately to a rod

control system failure on Unit 2. The operators also performed well during the 30 days of midloop operation on Unit 1 during a forced outage.

However, during a Unit 1 startup, the operators responded slowly to the shift engineer's instructions following the lifting of a main steam safety valve (MSSV), which resulted in a second lifting of a MSSV. In a separate event, when it was determined that a Unit 2 MSSV was lifting prematurely, management did not provide guidance to the operators to prevent the MSSV from lifting a second time.

Housekeeping efforts declined during the extended refueling and forced outages. Efforts in the model space program continued at a slower pace than in the last assessment period. Accelerated painting and decontamination efforts were observed near the end of the assessment period. The licensee took actions to reduce the excessive water and oil leaks that occurred. Late in the assessment period the licensee divided plant areas into zones and assigned plant personnel the responsibility of the material condition of a specific zone. Throughout the assessment period, senior management toured the plant weekly. Toward the end of the period 11 senior managers were touring plant-zones weekly with the assigned zone inspector. These tours increased the areas of plant coverage.

On-shift resources met the TS requirements but were inadequate to support the workload during outages. Limited resources coupled with poorly planned outages and the method of overtime allocation resulted in excessive overtime. Operations management frequently deviated from the overtime guidelines, routinely authorizing 84-hour work weeks in advance for both non-licensed and licensed operations personnel. In April 1990, the licensee implemented an "Overtime Guidelines" procedure to meet the intent of the NRC overtime guidelines. As of September 7, 1990, the licensee committed to not schedule overtime that would result in a deviation of NRC guidelines. Although the licensee accelerated the hiring and training of auxiliary operators to increase the licensed operator staff, this long-term goal was not expected to resolve the resource problem until March 1992.

Training of licensed and nonlicensed operators needed significant management attention to become effective and the EOP training and qualification program revealed some weaknesses. The qualifications of personnel preparing the EOPs was good; however, the performance of operators executing the EOPs required improvement. The licensed operators displayed a lack of coordination and communication while executing the EOPs on the simulator. Some problems with procedure transitions and executions were also identified. The nonlicensed operators displayed some difficulty in locating valves that had to be

operated locally; further, they lacked knowledge on how to locate valves when the location was not immediately known to them. The licensee adequately addressed these weaknesses.

In July 1990, NRC operator licensing replacement examinations were administered to six senior reactor operator (SRO) and five reactor operator (RO) candidates. Three SRO and three RO candidates passed the replacement examinations for a pass rate of 55 percent. In September 1990, 16 SRO and 12 RO requalification examinations were given. Thirteen SROs and 12 ROs passed the requalification examinations for a pass rate of 89 percent.

2. Performance Rating

Licensee performance is rated in Category 3 in this area. The licensee was rated a Category 2 during the previous assessment period.

3. Recommendations

The licensee should provide more senior operations management visibility and oversight in the control room and continue in the implementation of the improvement program.

The NRC will increase its inspection effort in this area.

B. Radiological Controls

1. Analysis

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

Enforcement history was poor and indicative of repetitive problems during this assessment period with one Severity Level III and five Severity Level IV violations issued. The Severity Level III violation for falsification of a second verification of a valve lineup that occurred during a liquid discharge in March 1987 resulted in an unmonitored effluent release. Two Severity Level IV violations for a radwaste shipment to a burial facility resulted from an inadequate process control program procedure and improper packaging. A lack of adequate procedures was identified in shipping violations during the previous assessment period. The remaining three Severity Level IV violations were issued for multiple violations of high-radiation areas, multiple failures in posting and barricading contaminated areas, and failure to obtain approval of temporary procedure changes.

Staffing levels and qualifications were adequate to implement the radiation protection (RP), radwaste management, and chemistry/

radiochemistry programs, and the radiological environmental monitoring program (REMP). The RP staff had a low turnover rate this assessment period, thus increasing the overall experience level. The licensee had added a health physicist and full-time contamination control, instrumentation, and training coordinators to the RP staff. The coordinator positions were established by the licensee to address weaknesses in several aspects of the RP program. The chemistry department had some staff turnover; a new chemistry supervisor was appointed, along with two chemists from the corporate chemistry group. A Quality Control (QC) chemist position was implemented. Newly-hired chemistry technicians (CTs) are now required to have at least an associates degree in a technical field. Only 13 of 22 CTs are qualified in accordance with the American Nuclear Standard Institute. The newly appointed REMP coordinator is well qualified and knowledgeable about the program.

The effectiveness of training and qualification programs was mixed. In general, the radiation and chemistry staffs appeared to have adequate training and were qualified to perform assigned duties. Proficiency and continuity had improved since the separation of the radiation protection and chemistry groups. The large number of personnel errors that were associated with high-radiation area access controls and missed surveillances (preceded by inoperable radiation monitors) indicate that weaknesses exist in this aspect of the licensee's training program. Two incidents of unapproved temporary changes to procedures (one violation issued) revealed an inadequate understanding on the part of some licensee personnel of plant-wide administrative controls regarding biennial procedure review and temporary procedure requirements. Examples of good performance were evidenced by the taping of weekly meetings for off-shift technicians, extensive training on the new standardized radiation work permit system, establishing radiological status boards, and sending radiation protection supervisors to other sites to broaden their experience.

Management's involvement and control in ensuring quality was mixed and declined during this assessment period. Concerns regarding the process and effluent radiation monitor system (RMS) had persisted for over 4 years. Although the RMS data collection and display capabilities were improving, the fundamental problems of unreliable and incompatible systems and equipment had not been adequately addressed. The unreliability of these monitors continued to place a significant burden on plant resources and staff and continued to contribute to missed surveillances. Management was not effective in implementing corrective actions as evidenced by recurrent access control violations in high radiation areas. In addition, management failed to recognize or respond to the sharp rise in personnel contamination events that began in February 1990. Although some of the rise in contamination events was attributed to the increased sensitivity of the contamination monitors, the causes

of the contaminations were not addressed by management until April 1990, after the number of events had gone from approximately 30 to over 300. Actions taken to reverse this trend did reduce the rate of contamination event occurrence; however, by the end of July 1990, the number of contamination events had risen to 475. Management supported procedure standardization and upgrades, improvements in the radiation occurrence program, and the addition of the contamination, instrument, and training coordinator positions. Management support of the chemistry/radiochemistry program was evidenced by a water QC program consistent with industry guidelines, including an extensive program of measurement of water chemistry parameters along with a computer-monitored digital in-line instrumentation and a quality assurance QA/QC program on this instrumentation. The licensee had emphasized control of lithium concentrations and the actual pH levels (at operating temperature) in the reactor coolant system (RCS) to better control radiation levels. The laboratories were well equipped with good instrumentation for low-level trace materials and analyses.

The licensee's approach to the identification and resolution of technical issues from a safety standpoint was mixed. Good performance was noted in the resolution of issues identified during an administrative overexposure that involved fuel transfer canal work. These included improvements in methods, procedures, and implementation of new technology. Gaseous and liquid effluents remained well within limits of the TS. The licensee had implemented the use of video equipment, more sensitive contamination monitors, and robotics and had some success with improved ALARA methods. However, the licensee performed poorly with regard to resolving the radiation monitor operability and reliability problem, and controlling contamination. The high number of contaminations were the result of "random" shoe buildup, contaminated materials found in clean areas, poor work practices by licensee and contractor personnel, and exposure to hot particles. Total contaminations for 1989 and 1990 to September 25, 1990, were 342 and 497, respectively. The licensee's ALARA program was significantly challenged due to a significant amount of high dose work during the extended outages. In addition to the scheduled refueling outage on Unit 2, the licensee experienced a forced outage during the spring of 1990 on Unit 1. This resulted in an additional unplanned 151 person-rem. The licensee's per reactor exposure for 1989 was 342 person-rem. The licensee's exposure for 1990 through September 1990, was approximately 667 person-rem. While the industry has experienced a downward trend in radiation exposure over the last 4 years, Zion Station remains above average in total exposure without any downward trend.

The licensee had made improvements in the chemistry QA/QC program, including the trending of the water chemistry and radiochemistry parameters. The laboratory QA/QC program developed slowly in the early part of this assessment period,

but had improved subsequently. The results of the nonradiological confirmatory measurements were good with 31 agreements, including 4 qualified agreements, in 33 initial analyses. The results of the radiological confirmatory measurements were good, with 85 agreements in 89 comparisons. The licensee agreed to correct deficiencies in the setup and operation of the air sampling stations; otherwise, the REMP was conducted satisfactorily.

2. Performance Rating

Licensee performance is rated a Category 2 declining in this area. The licensee was rated a Category 2 during the previous assessment period.

3. Recommendations

None.

C. Maintenance/Surveillance

1. Analysis

Evaluation of this functional area was based on the results of routine inspections performed by the resident inspectors, two routine inspections by regional inspectors, a followup maintenance team inspection (MTI), a DET inspection, and a followup DET inspection by regional inspectors.

The enforcement history was acceptable. No violations were issued during this assessment period; however, potential violations associated with the DET findings had not been issued by the end of this assessment period.

Management involvement to ensure quality was mixed. Although the licensee made work planning one of the top priority items of the Performance Improvement Plan (PIP), progress in this area was not always evident. Poor planning and scheduling contributed to extensions of the various outages and excessive overtime which strained the ability to perform maintenance. Some improvement was made late in the assessment period as evidenced by the coordination of the Unit 2 condenser boot repair that was accomplished in 3 days. The licensee also had implemented a 3 day rolling schedule for performance of planned maintenance to more efficiently manage the resources and work. Work that was not completed at the time it was scheduled was discussed with the responsible supervisor. However, it was too soon to assess the effectiveness of this program. Management control of the work request system was lacking. Station personnel were unable to locate documentation for 616 work requests during verification of

the nuclear work request (NWR) database. The licensee resolved the immediate concerns through walkdowns and evaluations to determine whether the stated work on the NWR was completed or required.

During the MTI in early 1989, management involvement and support of maintenance, post-maintenance testing, and technical support were identified as needing considerable improvement. A followup inspection conducted in April 1990, showed increased management involvement in upgrading the maintenance program, especially the efforts with the maintenance improvement programs. Some improvements were noted in programs to upgrade the area of post-maintenance testing and increase the level of involvement of system engineers. Additional problems were noted in implementation such as deficiencies in post-maintenance test instruction and criteria and in the lack of involvement of systems engineers in problem analysis data sheets, root-cause analysis, and the reliability centered maintenance process. Four sections of the licensee's conduct of maintenance program have been fully implemented while efforts in the other 12 sections were ongoing. The licensee implemented a program to improve the technical adequacy of maintenance procedures. Although only a few of the procedures have been revised, the changes made significantly improved the quality of each procedure. Because of the large number of procedures requiring revision, full implementation was expected to take considerable time; in the interim, the licensee emphasized the standardization of work packages and instructions. It was too soon to assess the effectiveness of the maintenance improvement programs.

During the last assessment period, the licensee established the reduction of missed surveillances as one of the top priority items of the PIP. Efforts in this area were very effective. The establishment of the firewatch section alleviated the burdens previously placed on security personnel and eliminated the problem of missed firewatch surveillances. The licensee created and filled the position of a surveillance coordinator dedicated to organize, track, and schedule all of the technical specification surveillances. The newly developed and implemented general surveillance program enhanced accountability and scheduling. Surveillances that were within their grace period were discussed at the plan-of-the-day meeting to ensure proper prioritization.

The licensee's approach to the identification and resolution of technical issues from a safety standpoint was mixed. Although the licensee had established programs to investigate root cause and improve preventative maintenance, implementation was not fully effective at the end of the assessment period. During the DET inspection, numerous discrepancies on the control of torque switch settings for the MOVs resulted in a confirmatory action letter (CAL) RIII-90-011 being issued to address operability concerns. Also, the licensee failed to take appropriate and

timely corrective actions to address discrepancies that were identified in self assessments in July 1989 and related to American Society of Mechanical Engineers (ASME) Code Section XI testing requirements. Recurrent service water MOV stroking problems resulting from silt buildup continued until late in the assessment period.

The majority of the events requiring LERs were directly attributable to maintenance and surveillance activities. Of these, over half were attributed to failure to perform surveillances required by the TS. These failures occurred early in the assessment period and were effectively corrected to prevent recurrence. The remaining LERs were caused by errors made by plant personnel during the execution of maintenance, modification, and troubleshooting activities. Personnel errors and poor maintenance practices contributed to one reactor trip, several ESF actuations, and one dual-unit shutdown. The dual-unit shutdown was the result of poor maintenance on the 0 emergency diesel generator (EDG) and improper root cause analysis of previous EDG starting failures.

However, the licensee adequately performed corrective actions for the primary water stress corrosion cracking of Steam Generator (SG) tube plugs, augmented inspection of SG tubes (eddy current) and ultrasonic/magnetic particle examinations of the SG shell transition girth weld. The augmented ultrasonic examinations of SG shell girth welds identified cracks in the inside diameter surface and embedded flaws. All crack indications were removed by grinding to sound metal and embedded flaws were evaluated in accordance with the requirements of ASME Code Section XI.

During most of this assessment period, the units were off line because of extended refueling outages and several forced outages. The unit's refueling outages were scheduled to be completed in 70 days; however, unanticipated maintenance rework and inefficiencies resulted in the outages lasting approximately 140 and 160 days for Units 1 and 2, respectively. A portion of the outage extensions can be attributed to a conscientious effort by the licensee to allow more time and ensure procedural adherence. Much of the extensions, however, can be attributed to poor planning and scheduling, equipment failures, and rework. The majority of the forced outages were caused by emergency diesel generator failures, unidentified reactor coolant leaks, and equipment failures. Several equipment failures were caused by personnel error, poor work practices, inadequate maintenance procedures, inadequate root cause analysis, and inadequate preventative maintenance.

Staffing in this area was increased and adequate for routine operation. Resources were strained by the dual-unit outage and the licensee was forced to augment its maintenance staff with personnel from other stations. The manageable size of the maintenance work request backlog indicated that the maintenance staff was capable of handling routine operation. The nonoutage

corrective maintenance work request backlog at the end of the assessment period was approximately 850, which met the station goal of 925 pending work requests. The licensee estimated that less than 6 weeks of work was needed to eliminate the backlog. The station also created and filled various positions including a surveillance coordinator, work planning scheduler, additional work analysts and foremen, MOV and check valve coordinators, and firewatch personnel. Also, an appropriate level of outside consultants were used with adequate oversight being provided.

The effectiveness of the training and qualification program was adequate although there were indications that increased management attention was needed to ensure timely training on new MOV testing methods. The inservice inspector (ISI), non-destructive evaluation and maintenance personnel were well-qualified and appeared to be knowledgeable.

Although some progress had been made in maintenance and surveillance programs, implementation of some programs has been slow. The station continued to experience equipment failures caused by improper or inadequate maintenance.

2. Performance Rating

Licensee performance is rated a Category 3 in this area. The licensee was rated a Category 2 during the previous assessment period.

3. Recommendations

The licensee should increase management attention to the overall maintenance program and implementation.

The NRC should increase its inspection effort in this area.

D. Emergency Preparedness

1. Analysis

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

Enforcement history was poor. Two Severity Level IV violations were identified near the end of this assessment period.

Management involvement in ensuring quality was weak. Several problems were identified that in aggregate indicated a lack of management attention to the program. One violation was issued based on twenty examples of routine inventories that had either not been completed or had not been properly documented. Another violation was issued for a failure to maintain controlled copies

of the emergency plan updated with current revisions. Additionally, several examples of inadequate revisions or reviews of emergency plan implementing procedures were identified.

The licensee's identification and resolution of technical issues from a safety standpoint was adequate and generally conservative. In response to emergency plan activations, the licensee conducted post-activation reviews for most events to identify areas that could be improved. Items identified through these reviews of real events, as well as critiques of drills and exercises, internal and external audits, and NRC inspections, were tracked and usually resolved in a timely manner. A new technical support center (TSC), which will be a dedicated facility, is under construction to replace the existing TSC. An ongoing problem with maintenance of the emergency operation facility ventilation system monitoring equipment has not been fully resolved.

The licensee's response to operational events was generally adequate although there were some instances of lack of attention to detail. Eleven events were classified and reported in accordance with NRC guidelines as emergency plan activations during this assessment period. Two of these events were classified at the alert level. Each event was correctly classified in a timely manner with appropriate notifications made within required times to the State, counties, and NRC. However, for one of the unusual events, the licensee failed to notify the NRC when the event classification was terminated. In addition, the forms documenting notifications to State officials had not been completely filled out in numerous cases.

Staffing of the emergency response organization (ERO) was adequate. A new emergency preparedness coordinator was appointed late in the assessment period to replace the previous coordinator who was promoted to a corporate position. Also, management of emergency preparedness (EP) responsibilities was transferred from the service director to the technical superintendent. This organizational structure is being standardized at all six of the licensee's nuclear power stations.

The emergency plan training program was adequate. ERO members had completed required training in accordance with an established training matrix. In some instances, courses of an equivalent nature were substituted for required courses. Lessons learned through drills, exercises, and real events were adequately incorporated into the training program.

Performance during the annual emergency preparedness exercise was minimally successful for both the TSC and the operational support center (OSC). The licensee failed to complete assembly and accountability in a timely manner. The TSC failed to acquire data from alternate sources in a timely manner when the

primary source failed. The TSC also failed to demonstrate the ability to calculate off-site dose projections. The OSC failed to coordinate and dispatch teams in a timely manner. Decontamination of personnel and followup bioassay considerations were not adequately demonstrated.

After taking prompt corrective actions, including additional training, the licensee showed a marked improvement in the TSC and OSC performance during a redemonstration mini-exercise conducted within 2 months of the annual exercise. Assembly and accountability were successfully demonstrated during the mini-exercise.

2. Performance Rating

Licensee performance is rated a Category 2 declining in this area. The licensee was rated a Category 2 during the previous assessment period.

3. Recommendations

None.

E. Security

1. Analysis

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

Enforcement history was adequate this assessment period with two Severity Level IV violations identified. These violations did not indicate programmatic weaknesses.

Management's role in assuring quality was good. Senior management actively supported the security program as evidenced by the allocations of both personnel and equipment resources and extensive management overview. As a result of the declining trend in performance and programmatic weaknesses relating to management oversight identified in the previous assessment period, the licensee took appropriate corrective action early in this assessment period. A special security assessment was performed by members of the corporate assessment group, which included site security administrators from other licensee sites. In addition to the audits and surveillances conducted under the licensee's Quality Program, the station security organization conducted self assessment audits. To improve management oversight of the security program, the station temporarily limited the services director's scope of responsibilities to ensure management attention to security items. The station had also implemented a monthly security report to address trending of critical security

parameters. The licensee established a site security exchange/visit program for supervisors with other licensee nuclear stations to obtain information on good practices that may help to improve the security program at Zion. During this assessment period, security management adequately communicated with the NRC on site security issues.

The licensee's approach to the identification and resolution of technical issues was adequate. The licensee demonstrated a clear understanding of the technical issues by implementing upgrades of specific equipment and installed certain state-of-the-art technology to enhance equipment performance. The licensee developed and implemented a program for installation of temporary security barriers that involved an innovative way to prevent the recurrence of problems and provide a cost efficient way of protecting the facility. A redundant access computer system was installed that provided a backup to the security system. Additionally, a video capture system was installed to enhance the licensee's assessment capabilities.

The licensee's performance in handling security events was mixed. During small electrical fires in the central alarm station on two separate occasions, security officers performed their response duties well and security functions were not lost. However, in two other non-related instances (involving a degradation of law enforcement radio communications capability and when a guard appeared to be inattentive to duty) site management did not act decisively or conduct adequate followups. The licensee took action and several security managers attended root-cause analyses training after these problems were identified by the NRC. The licensee took a conservative approach to enhance the ability to track and trend security system problems and personnel errors. The licensee conducted training regarding reporting of security events for the security organization, including both the security officers and managers. Licensee action for NRC-identified findings was comprehensive.

Staffing had been expanded during this assessment period and was ample. The firewatch responsibilities were transferred out of the security organization, and overtime was adequately monitored and controlled. The licensee increased its use of the contract security organization, dividing the organization into several elements that are each responsible for implementation of a specialized portion of the security program. This reorganization enabled the licensee to improve the effectiveness of the program. Staffing level increases were necessary to alleviate strained personnel resources.

The effectiveness of the training and qualification program had improved from the previous assessment period and was good. The training staff had been increased significantly. The training staff, with the assistance of a security consultant, developed a tactical training plan and conducted numerous tactical response

drills. The security force members attended a public relations training program and improvement in the on-duty professionalism of the guard force was evident.

2. Performance Rating

Licensee performance is rated a Category 2 in this area. The licensee was rated a Category 2 declining during the previous assessment period.

3. Recommendations

None.

F. Engineering/Technical Support

1. Analysis

Evaluation of this functional area was based on the results of two special inspections, one routine inspection, one EOP team inspection by regional inspectors, several inspections by resident inspectors, one team inspection by the Vendor Branch, one DET inspection, and interactions between the licensee and the staff of NRC Headquarters.

Enforcement history included one Severity Level III violation for failure to establish adequate controls over inactive SRO licenses and over the licensed operator requalification program. A Severity Level IV violation also was issued for an inadequate safety evaluation

Six LERs were attributed to this area. Of these, two events were personnel errors, one of which resulted in an ESF actuation; one event was a procedural deficiency that resulted in a manual Unit 2 shutdown; and two events were caused by original design deficiencies. The sixth event resulted from the Severity Level III violation discussed above.

Management involvement in ensuring quality continued to be mixed. Technical staff daily meetings improved communications, prioritization of work, and accountability within the department. The generation of system notebooks provided a ready reference for system status and a good training tool for replacement system engineers. Other positive actions included the continuing reduction of temporary modifications, the presence of technical staff personnel in the control room during major surveillances, and support to operations during abnormal occurrences. The good adaptation of the generic EOP guidelines to plant-specific differences and the engineering content of licensee submittals that generally demonstrated a clear understanding of the issues also were indicative of management involvement.

However, management involvement was lacking or ineffective in several areas, including areas where improvement had been noted.

For example, while the operator requalification program had shown considerable improvement over the previous assessment period, attendance at requalification training sessions continued to be a problem in spite of the CAL issued at the end of the last assessment period. The replacement operator training and qualification program did not ensure a high degree of success. The majority of the failures occurred during the simulator portion of the examination because there was limited access to a contractor-owned simulator. The licensee also exhibited lack of control over the reactivation of a fuel handling SRO licensee that contributed to a Severity Level III violation.

Weak management involvement led to delays in resolving technical issues such as the non-environmentally qualified reactor vessel level indication system (RVLIS) resistance temperature detectors (RTD) and to the slow completion of the modification required for the radiation monitoring display system.

Weaknesses also were noted in the procurement area with regard to the dedication of commercial grade items (CGIs) for safety-related applications and with interfaces between the licensee and its vendors. The licensee failed to perform documented technical evaluations to identify critical characteristics of a component to verify design, and manufacturing/material changes prior to installing CGIs in safety-related systems or components.

Although the licensee's approach to the identification and resolution of technical issues from a safety standpoint had improved, it was of mixed quality. The technical staff had become more involved in routine plant activities such as major surveillances, startups, and routine problems. The development and implementation of the operability matrix had helped the operations staff make more efficient operability decisions.

In addition, the licensee aggressively pursued the resolution of the E-31 penetration and the Unit 2 transformer explosions. In the case of the steam generator surface indications found during the ISI examination, the engineering staff demonstrated a good understanding of the issues and took the appropriate corrective action.

Although communications between operations and technical staff had improved during this assessment period, there were isolated incidents where the lack of communications either hampered the timely investigation of a problem or had an impact on the performance of safety equipment. For example, the electrical maintenance and operations staff changed the fuses for the Unit 1 annunciator panel several times before the technical staff was notified. On one occasion, the technical staff wrote a letter to the operations staff when it was determined that it was necessary to drain the main steam lines for the turbine-driven auxiliary feed pump before running the pump. However, information

was not given to the shift and the pump was tested and unexpectedly tripped. Also, the licensee's response to Bulletin 85-03 on MOVs and the related lack of control of MOV torque switches demonstrated poor communications, control, and documentation of the technical issues related to MOV operation.

The licensee had become more aggressive in its engineering analysis of problems; however, the analysis, corrective actions and immediate resolutions to problems were not always timely. As was mentioned earlier, the licensee did not implement the procedure to flush specific service water lines to prevent MOV stroking failures until late in the assessment period, although silt buildup which contributed to the failures had existed for some time. Numerous emergency diesel generator and diesel-driven containment spray pump failures occurred before the root-causes were identified and corrected. The environmental qualification of the RTDs for the reactor vessel level indication system was not properly evaluated for required action when environmental qualification issues were first discovered by the licensee.

Another weakness involved an instance where the licensee inadequately addressed the effect on safe plant operation caused by changing plant configuration. For example, the TS permitted the service water crosstie between units to be closed although this configuration was not described in the FSAR. The licensee relied on an NRC safety evaluation issued with the TS to justify closing the crosstie without determining what the plant configuration was at the time and whether this action was appropriate. Other valves also were required to be repositioned to avoid placing the plant in an unsafe condition and this fact was not addressed in the safety evaluation issued with the TS.

Onsite engineering and technical support groups increased their staffing during this assessment period. The licensee added 10 engineers to the technical staff and developed an onsite corporate engineering group. However, in other areas the staffing appeared strained. The training department, although competent, appeared to be excessively burdened with duties. Numerous training instructors and plant management personnel held reactor operator licenses but were unable to attend the scheduled operator requalification training sessions because of other duties. The licensee, in response to NRC concerns, proposed a more aggressive policy intended to ensure greater attendance and effective alternatives in cases of absence.

The licensee's requalification program was effective in preparing the operators for the NRC-administered examinations as noted by the 89 percent passing rate. This was an improvement from the previous assessment period when the licensees requalification program was rated unsatisfactory. Training related to Generic Letter 88-17, "Loss of Decay Heat Removal," was evident as

demonstrated by the operators' performance during the 30 days of midloop operation. However, the training program for replacement operators had not ensured a high degree of success as evidenced by a passing rate of 55 percent. The majority of the failures occurred during the simulator portion of the examination. A new facility-owned simulator is scheduled for delivery during the next assessment period. In response to previous concerns regarding engineering knowledge, the training of the technical staff included a course on the FSAR and TS which is intended to improve the quality of safety evaluations.

2. Performance Rating

Licensee performance is rated a Category 3 improving in this area. The licensee was rated a Category 3 during the previous assessment period.

3. Recommendations

The licensee should continue improvement programs that have been initiated including those that focus on root-cause evaluation.

The NRC will increase its inspection effort in this area.

G. Safety Assessment/Quality Verification

1. Analysis

Evaluation of this functional area was based on the results of routine inspections conducted by the resident inspectors, one special resident inspection, an EOP inspection, a NRC Vendor Branch inspection, and a DET inspection. The NRC Headquarters staff conducted substantial review of licensee submittals during this rating period. These submittals are related to license amendment applications, responses to generic letters and bulletins, revisions to licensee's commitments, and 10 CFR 50.59 evaluations.

One Severity Level III and two Severity Level IV violations were issued during this assessment period. The Severity Level III violation involved placing the control switch for the diesel generator room ventilation system fan in pull-to-lock position and subsequently justifying the condition with an inappropriate evaluation. This was discovered toward the end of the SALP 8 period and the violation was issued during this assessment period. One Severity Level IV violation involved failure to provide and implement written procedures. The other Severity Level IV violation involved the licensee's failure to submit a LER within 30 days. These two Severity Level IV violations were isolated and of minimal safety significance.

Management involvement to ensure quality was mixed. Weak management control of operator activities resulted in plant

personnel working excessive amounts of overtime. The licensee frequently exceeded the work-hour guidelines transmitted in GL 82-12, "Nuclear Power Plant Staff Working Hours," and deviated from its own directives and administrative procedures.

Management involvement in the handling of vendor information and NRC Information Notices (IN) was weak. The licensee failed to technically assess and document the effect on the EDGs of Cooper-Bessemer Services News Bulletins from 1966. The licensee failed to adequately review and evaluate the applicability of NRC INs 86-73 and 89-07, which alerted licensees to problems of fretting of small diameter fuel and lubricant tubing for the Cooper KSV-16-T EDGs. The licensee had experienced fretting at Zion as early as 1975, with three recent examples identified in 1989.

Toward the end of the assessment period, management involvement improved significantly. The licensee restructured the Zion control room organization in an attempt to provide a clearer chain of command for nonlicensed operators, raise control room work process efficiency, strengthen management control, make management more visible, and improve the strained relationship between operators and management.

Key management and department heads conducted scheduled tours of the facility in multidiscipline teams of two to identify safety issues in need of prompt management attention. This program served to enhance communications among departments. The licensee established a task force to develop policies to enhance the role of the first line supervisors because of weakness identified in this area. These policies stressed the importance of communication, resources utilization, accountability, and team work to achieve a high standard of performance.

The licensee has determined that a comprehensive evaluation of the Zion Station organization is necessary to support future performance improvements and has retained the services of two organizational consultants to assist in this evaluation. Management Analysis Company (MAC) is performing an independent cultural assessment and will examine teamwork, leadership, and motivation at Zion. Based on the results of their study, MAC will prepare a "needs analysis" indicating which aspects of the cultural environment at Zion do not meet accepted industry "norms" and will provide recommendations for improving the cultural condition. The second consultant, Advanced Resources Development, will assist station management in examining the decision making process, improving teamwork, and enhancing communications. The licensee is also planning to acquire in-house, organizational development expertise to allow for future self-assessments and continued organizational effectiveness improvements.

Through the majority of the assessment period, as noted in other sections of this report, recurrent root-cause analysis problems were identified . Management determined that the root-cause analysis process was splintered among several groups. To resolve this weakness, management integrated root-cause analysis into one program at the end of the assessment period. In addition, there is a daily meeting to determine if a root-cause analysis was required for events of the previous day.

The licensee shifted from compliance-based to performance-based quality assurance audits during this assessment period, and the audit and surveillance schedule for 1990 has been refocused toward more performance-based overview audits. Self-assessment reports appeared to be adequate in technical content and scope, and the audits effectively identified a significant number of equipment and organizational problems. For example, in preparation for the Region III inspection of EOPs, the licensee initiated a quality assurance audit of procedural control, identified deficiencies, and performed corrective actions. However, management resolution of these findings often was untimely, inadequate, and lacked the assignment of necessary resources for satisfactory implementation. For example, the DET inspection performed during the second half of this assessment period identified inadequate or untimely corrective actions in the inservice testing and the MOV switch setting programs.

The licensee's identification and resolution of technical issues was mixed. Although the licensee initially reported the containment ventilation event, the licensee subsequently erroneously retracted the notification which resulted in a required LER not being submitted. The licensee's approach to resolving the issues identified in Bulletin 85-03 was deficient with regard to the setting and control of torque switches and the installation of limiter plates in MOVs. A confirmatory action letter was subsequently issued for determining the operability and correct torque switch settings of these MOVs.

The onsite review committee was staffed with qualified and experienced personnel capable of performing the required technical reviews. The licensee formalized the onsite reviews by establishing working and signoff meetings to discuss pertinent issues and outstanding questions. These meetings are an improvement over the past practice of routing the reviews to the individual personnel. Generally, the onsite reviews were technically adequate and thorough. However, in one example, the onsite review for the environmental qualification for the RVLIS RTDs was inadequate.

LER quality was adequate. The technical approaches used by the licensee were usually sound and sufficiently conservative with regard to safety and regulation.

During the assessment period, the NRC reviewed several amendment packages for both units. In the beginning of the assessment period the quality and the content of the submittals were poor. In response to NRC concerns, the licensee initiated corrective actions, including some personnel changes, and withdrew some of the requests for amendments. Since the beginning of 1990 the quality of the submittals improved significantly.

The licensee's response to bulletins, GLs and other non-obligatory inquiries was generally adequate. However, the licensee's response to open issues regarding Regulatory Guide 1.97 was over a year late. Another example was the licensee's response to GL 83-28 Item 2.2 (Part 1). Repeated requests for additional information via conference calls were required to fully resolve the staff's concerns. Also, the licensee's response to GL 90-04 on Generic Safety Issues was inaccurate and required immediate revision to the response.

In the beginning of the SALP period, the licensee acknowledged some deficiencies in their 10 CFR 50.59 review process. The staff identified one case, as discussed in the enforcement history paragraph, in which the licensee did not perform an appropriate safety evaluation. Following this incident, the licensee made changes in its 10 CFR 50.59 review procedures which appeared to be effective in improving the 50.59 process.

Management's efforts to reduce overall operational events included a plant standdown and developing a new self-check campaign in April 1990. As a result of events involving personnel errors and lack of attention to details, the licensee's management organized a plant standdown to emphasize the need to reduce personnel errors. The purpose of the new "self-check" campaign was to increase the awareness of personnel errors and to support error-free performance by encouraging employees to take the necessary time to reverify their work.

Five waivers of compliance were granted during the assessment period. At the beginning of the period the licensee's requests were made at the last possible moment and were not technically adequate. Over the course of the assessment period, licensee submittals improved consistently in both timeliness and quality. The improvements were such that the last licensee request for a waiver of compliance was used, at a licensee information conference, as a model for other utilities.

Staffing, training, and qualification had improved during the assessment period. QA, QC, and regulatory assurance organizations were staffed with knowledgeable and experienced personnel. The QC department added six personnel to conduct inspections, which was a 50 percent increase in the QC staff. In addition QC inspectors were more proactive by providing onsite presence

during job preparation and ensuring proper hold points were established before work activities commenced. The regulatory assurance staff was well organized, and maintained close contact with a large corporate regulatory assurance organization.

To support accelerated improvements in station performance, the licensee determined that the PIP needed revision. To accomplish this, the licensee is developing the Zion Management Action Plan (MAP). The licensee views the MAP as a comprehensive management system to develop, implement, and monitor action plans aimed at improving performance at Zion and considers the MAP a significant upgrade to its predecessor, the PIP.

2. Performance Rating

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

3. Recommendations

None.

IV. SUPPORT DATA AND SUMMARIES

A. Licensee Activities

1. Unit 1

Zion Unit 1 began the assessment period in cold shutdown for a scheduled 70 day refueling outage that commenced on September 7, 1989. During the fourth quarter 1989, the Unit 1 outage was extended because of leaks on the reactor head incore instrumentation conoceals. During the first and second quarters 1990, Unit 1 was in forced outages for approximately three quarters of the time as a result of excessive equipment problems. A high steam generator level resulted in a unit trip on January 27. The unit operated routinely for the remainder of assessment period with the exception of an inadvertent reactor trip that occurred on August 13 as a result of a Turbine Trip.

Unit 1 experienced four ESF actuations and two reactor trips during the assessment period. Both reactor trips occurred at greater than 15 percent power and were caused by operator error.

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

a. From September 14, 1989, through January 25, 1990, Unit 1 was in an extended 141 day outage to replace auxiliary feedwater check valves and to repair leaking reactor head incore instrumentation conoseals and a RHR hot leg suction valve.

b. On January 27, 1990, Unit 1 tripped on high-high 1D steam generator level resulting from operator error. The unit was returned to service the same day.

c. From March 1 through 29, 1990, the unit went into a forced outage. On March 1, the unit was placed in hot shutdown as stipulated by a 1980 Confirmatory Order that resulted from the inoperability of the 0 EDG. On March 7, 1990, the unit was placed in cold shutdown after the licensee failed to meet the Regional Temporary Waiver of Compliance, which was granted on March 2, 1990, to extend the allowable time in hot shutdown by an additional 40 hours for both units to complete repairs to the 0 EDG. During this forced outage, repairs also were made to the recirculation and discharge check valves for the 1A main feedwater pump. In addition, Type C leak rate testing was performed. The unit remained in cold shutdown until March 29, 1990, when the unit was taken critical.

e. From March 29 through April 2, 1990, the unit was in a forced outage as a result of excessive stroke times on the 1A and 1C main steam isolation valves (MSIVs). Repairs were performed and the unit was taken critical on April 3, 1990.

f. From April 3 through June 13, 1990, the unit was again placed in cold shutdown as a result of MSIV stroke time failures and RCS loop D hot leg stop valve leakage. The repairs to the loop D stop valve required 31 days of mid-loop operations.

g. From August 13 through 17, 1990, Unit 1 experienced an inadvertent turbine trip/reactor trip as a result of an operator error.

Unit 2

Zion Unit 2 began the assessment period at full power operation. During the fourth quarter 1989, Unit 2 operated routinely. The unit was manually shut down on January 7 as a result of problems with the electro-hydraulic control (EHC) system. The unit was in coastdown for the remaining time before its March 1990 refueling outage, which began a few days earlier than planned because of the inoperability of the 0 EDG. After the 11th cycle refueling outage was completed on August 30, 1990, Unit 2 operated routinely until September 7, 1990, when a reactor trip resulted from a condenser boot failure. The unit was returned to service on September 22, but tripped again the same day when a transformer exploded. The unit ended the assessment period in a forced outage.

Unit 2 experienced five ESF actuations and three reactor trips. All three reactor trips occurred above 15 percent power.

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

a. On October 27, 1989, a Temporary Waiver of Compliance from Technical Specification 3.17.2, Aircraft Crash Damper Fire Detection, was issued.

b. On November 22, 1989, enforcement discretion was granted to extend the 4 hour time allowed for a limiting condition for operation to hot shutdown because the O EDG failed and the 2B service water pump was inoperable.

c. From December 1 through 4, 1989, the unit was in a forced outage while repairing a leak on the loop D cold leg RCS sample valve.

d. From January 18 through 19, 1990, the unit was manually shut down as a result of problems with the EHC system. The plant was returned to service following repairs to the EHC system.

e. From March 1 through 20, 1990, the unit was shut down. On March 1, the unit was placed in hot shutdown as required by the 1980 Confirmatory Order that resulted from the inoperability of the O EDG. On March 2, a Temporary Waiver of Compliance was granted to allow the unit to stay in hot shutdown during further testing of the O EDG. On March 6, an extension to the waiver of 144 hours was granted to allow the licensee to perform the required testing on the unit before entering a refueling outage.

f. From March 21 through August 30, 1990, a 70 day scheduled refueling outage began. A catastrophic failure of an electrical penetration, problems with the 2C containment spray pump, and leakage of the main turbine hydrogen side seal oil cooler resulted in a 162 day outage.

g. From September 7 through 22, 1990, a turbine trip/reactor trip occurred as a result of the catastrophic failure of the condenser boot.

h. On September 22, 1990, a reactor trip occurred when one of the main transformers exploded and caused a fire. Unit 2 ended the assessment period in an outage to replace the transformer.

B. Inspection Activities

Thirty-nine inspection reports are discussed in this SALP report (October 1, 1989, through October 31, 1990). These are listed below. Table 1 lists the violations by severity levels in each functional area followed by a list of significant inspection activities.

1. Inspection Data

Facility: Zion Nuclear Power Station

Unit 1 Docket No.: 050-295

Inspection Report Nos.: 89028, 89033 through 89041, 90002 through 90023, and 90025 through 90027.

Unit 2 Docket No.: 050-304

Inspection Report Nos.: 89029, 89031 through 89037, 90002 through 90011, 90013 through 90025, and 90027 through 90029.

In addition, three inspections by NRC headquarter personnel were conducted in the areas of diagnostic evaluation, procurement, and overtime.

TABLE 1

Number of Violations in Each Severity Level

	Unit 1			Unit 2			Common		
Functional Areas	III	IV	V	III	IV	V	III	IV	V
Plant Operations	-	1*	-	-	-	-	-	-	-
Radiological Controls	-	-	-	-	-	-	1	5	-
Maintenance/Surveillance	-	-	-	-	-	-	-	-	-
Emergency Preparedness	-	2	-	-	-	-	-	-	-
Security	-	-	-	-	-	-	-	2	-
Engineering/Technical Support	-	-	-	-	-	-	1	1	-
Safety Assessment/Quality Verification	-	-	-	-	-	-	1	2	-
Totals	-	3	-	-	-	-	3	10	-

*This violation was identified during SALP 8 but not issued until SALP 9. It is included in the total for this SALP period.

2. Special Inspection Summary

Significant inspections conducted during the Zion SALP 9 assessment period are listed below.

a. From November 30 through December 8, 1989, an inspection of the licensee's procurement program was conducted by NRC headquarters personnel (Inspection Report No.: 89-201).

b. From February 26 through March 9, 1990, an EOP team inspection was conducted (Inspection Report No.: 295/90004; 304/90004).

c. During April 30 - May 14, 1990, a followup MTI was conducted (Inspection Report No.: 295/90009; 304/90010).

d. From June 4 through August 14, 1990, a DET inspection was conducted by NRC headquarters personnel.

e. From September 10 through 14, 1990, a human factors inspection on overtime was conducted by NRC headquarters personnel.

f. From July 17 through 19, 1990, the annual EP exercise was conducted (Inspection Report No.: 295/90012; 304/90014).

C. Escalated Enforcement Actions

1. On March 2, 1990, the licensee paid a civil penalty in the amount of $100,000. This action was proposed on the basis of the licensee's failure to properly consider the role of the EDG ventilation support system when making EDG operability determinations (Enforcement Case No. EA 89-218, Enforcement Notice No. EN-90-010, Inspection Report No. 295/89036; 304/89032).

2. A Severity Level III violation and civil penalty in the amount of $50,000 was issued on March 14, 1990. This action was proposed on the basis of managements lack of oversight for the licensed operator training program (Enforcement Case No. EA-89-275, Enforcement Notice No. EN-90-37, Inspection Report No. 295/89040; 304/89036).

D. Confirmatory Action Letter

A CAL (No. RIII-90-011) was issued on June 22, 1990, regarding the operability of MOVs as a result of the torque switch settings.

E. Review of Licensee Event Reports

Collectively, 48 LERs were issued during this assessment period, in accordance with NRC guidelines. These are addressed in the SALP 9 Report.

Unit 1 LERs Nos.: 89014 through 89027, 90001 through 90021

Unit 2 LERs Nos.: 89009, 89010, 90001 through 90011

Table 2 shows the number of LERs issued for each cause area by unit.

TABLE 2

Number of LERs by Cause

Cause Area	Unit 1	Unit 2
Personnel Errors	22	8
Design Deficiencies	1	2
External	0	0
Procedure Inadequacies	4	2
Equipment/Component	4	1
Other/Unkown	4	0
Totals	35	13

Table 3 shows an LER cause code comparison for the SALP 8 and SALP 9 assessment periods.

TABLE 3

Cause Comparison

Cause Area	SALP 8 (16 Mo.) No.	(Percent)	SALP 9 (13 mo.) No.	(Percent)
Personnel Errors	25	(51.0)	30	(62.5)
Design Problems	3	(6.1)	3	(6.3)
External Causes	1	(2.0)	0	(0)
Procedure Inadequacies	6	(12.3)	6	(12.5)
Equipment/Component	11	(22.5)	5	(10.4)
Other/Unknown	3	(6.1)	4	(8.3)
Totals	49	(100)	48	(100)
Frequency LERs/MO		3.06		3.69

Note: The above LER information was derived from the review of LERs performed by the NRC staff and may not completely coincide with the licensee's cause code assignments.