INITIAL SALP REPORT

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

50-461/89001
Inspection Report No.

Illinois Power Company
Name of Licensee

Clinton Power Station
Name of Facility

September 1, 1988, through October 31, 1989
Assessment Period

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ACRONYMS

ALARA	as low as reasonably achievable
BL	bulletin
BOP	balance-of-plant
BWR	boiling water reactor
CCTV	closed circuit television
CAL	confirmatory action letter
CFR	Code of Federal Regulations
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
DRSS	Division of Radiation Safety and Safeguards
EOF	Emergency Operations Facility
EOP	emergency operating procedure
EPRI	Electric Power Research Institute
EQ	environmental qualification
EP	emergency preparedness
ESF	engineered safety feature
E/TS	engineering/technical support
FRV	feedwater regulating valve
FFD	Fitness-for-Duty
GE	General Electric
GL	generic letter
HP	health physics
HVAC	heating, ventilation, and air-conditioning
IN	information notice
INPO	Institute of Nuclear Power Operations
IP	Illinois Power Company
ISI	inservice inspection
IST	inservice testing
LCO	Limiting Condition for Operation
LER	licensee event report
MOV	motor-operated valve
MOVATs	motor-operated valve analysis and test system
MSIV	main steam isolation valve
MSSV	main steam safety valve
MTI	maintenance team inspection
MWR	maintenance work request
NDE	non-destructive examination
NOUE	notification of unusual event
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NSED	Nuclear Station Engineering Department
OSTI	operational safety team inspection
PCE	personnel contamination event
PM	preventive maintenance
QA	quality assurance
QA/QC	quality assurance/quality control
QC	quality control

RCA	radiological controlled area
RCIC	reactor core isolation cooling
RCM	reliability centered maintenance
RCS	reactor coolant system
RF1	refueling outage 1
RHR	residual heat removal
RO	reactor operator
RP	radiation protection
RPS	reactor protection system
RWCU	reactor water cleanup system
RWP	radiation work permit
S&L	Sargent & Lundy
SALP	Systematic Assessment of Licensee Performance
SA/QV	Safety Assessment/Quality Verification
SER	Safety Evaluation Report
SSA	safety system actuation
SRO	senior reactor operator
TLD	thermoluminescent dosimeter
TS	Technical Specifications
TSC	Technical Support Center
UE	Unusual Event
US	United States
USAR	Updated Safety Analysis Report
vac	volts-alternating current
vdc	volts-direct current

I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate licensee performance on the basis of this information. The program is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. 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 their facility's performance in each functional area.

An NRC SALP Board, composed of the staff members listed below, met on December 13, 1989, to review the observations and data on performance, and to assess licensee performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." The guidance and evaluation criteria are summarized in Section III of this report. The Board's findings and recommendations were forwarded to the NRC Regional Administrator for approval and issuance.

This report is the NRC's assessment of the licensee's safety performance at Clinton for the period September 1, 1988, through October 31, 1989.

SALP Board for Clinton was composed of the following individuals:

Board Chairman

C. E. Norelius, Director, Division of Radiation Safety and Safeguards (DRSS)

Board Members

E. E. Greenman, Director, Division of Reactor Projects (DRP)
J. W. Craig, Project Directorate III-2, Office of Nuclear Reactor Regulation (NRR)
T. O. Martin, Deputy Director, Division of Reactor Safety (DRS)
R. C. Knop, Chief, Reactor Projects Branch 3, DRP
J. B. Hickman, Project Manager, NRR
P. G. Brochman, Senior Resident Inspector

Other Attendees at the SALP Board Meeting

A. B. Davis, Regional Administrator
C. J. Paperiello, Deputy Regional Administrator
*H. J. Miller, Director, Division of Reactor Safety
**R. W. Cooper, Chief, Engineering Branch, DRS
***G. C. Wright, Chief, Operations Branch, DRS
#L. R. Greger, Chief, Reactor Programs Branch, DRSS

##W. G. Snell, Chief, Radiological Controls and Emergency Preparedness Section, DRSS
###M. A. Ring, Chief, Reactor Projects Section 3B, DRP
J. W. Clifford, Regional Coordinator, Executive Director for Operations (OEDO)
M. P. Phillips, Chief, Operations Program Section, DRS
R. N. Gardner, Chief, Plant Systems Section, DRS

J. R. Creed, Chief, Safeguards Section, DRSS
G. L. Pirtle, Security Inspector, DRSS
P. R. Pelke, Project Engineer, DRP
B. S. Drouin, Reactor Engineer, DRP
T. E. Ploski, Emergency Preparedness Specialist, DRSS
S. P. Ray, Resident Inspector
M. Schumacher, Chief, Radiological Controls and Chemistry Section, DRSS
J. E. Foster, Senior Emergency Preparedness Specialist, DRSS
T. E. Vandel, Reactor Inspector, DRS
P. R. Rescheske, Reactor Inspector, DRS
Z. Falevits, Reactor Inspector, DRS
T. H. Essig, Acting Deputy Director, DRSS (NRR)
R. Paul, Radiation Specialist, DRSS

*Voted on Engineering/Technical Support for DRS Branch Chief
**Voted on Maintenance/Surveillance as DRS Branch Chief
***Voted on Outages as DRS Branch Chief
#Voted on Radiological Controls and Security as DRSS Branch Chief
##Voted on Emergency Preparedness for DRSS Branch Chief
###Voted on Radiological Controls, Engineering/Technical Support, Safety Assessment/Quality Verification and Outages for DRP Branch Chief

II. SUMMARY OF RESULTS

A. Overview

Management involvement in all aspects of plant operations was evident, although of mixed effectiveness. Root cause determination weaknesses led to slow licensee identification of problems and/or inadequate corrective actions. Once the appropriate root cause was identified, the licensee took aggressive action to correct the deficiencies. In certain instances, however, inadequate management followup led to inadequate implementation i.e., corrective action for previous EQ deficiencies and valve line-up procedures problems.

Operator plant knowledge of routine operations and use of off normal procedures was a strength, although operator unfamiliarity with Technical Specification surveillances required by mode changes was a weakness. Licensee initiatives subsequent to the first refueling outage appeared effective in correcting the weakness although continued management vigilance is warranted.

The problems encountered during the first refueling outage involving control of contractors, procedural compliance and personnel errors and the length of time in which the plant experienced outage conditions resulted in an assessment of a special Outages functional area. The poor performance noted in the first refueling outage resulted in a Category 3 rating.

Maintenance of the plant was adequate. The maintenance of emergency core cooling systems was good while the maintenance of balance of plant and some important to safety equipment was poor. The corrective maintenance backlog required implementation of numerous compensatory measures which unduly burdened operators. Maintenance staffing was increased at the end of the assessment period to reduce the backlog. It is too early to assess the effectiveness of this action.

Engineering support to corrective maintenance, root cause analysis, and equipment reliability required improvement. The system engineer concept was in its infancy and not fully implemented during the assessment period. The mixed effectiveness of engineering support and environmental qualification (EQ) problems resulted in a Category 3 rating which is a decline from the Category 2 rating in the previous assessment period.

Management involvement in the Emergency Preparedness program was good as evidenced by program upgrades, participation in drills and training, and good facilities.

Radiological Controls was a strength with program improvements throughout the assessment period.

The security force strike placed considerable demands on management, and the management actions to compensate for this strike were generally handled well. Although a reduction in spurious alarms was achieved, the existing security equipment deficiencies and some inadequate controls involving background screening precluded the sustained high performance achieved in the previous assessment period. Consequently, security was rated a Category 2 this assessment period.

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

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

NR - Not Rated

B. Other Areas of Interest

None.

III. CRITERIA

Licensee performance is assessed in selected functional areas. Functional areas normally represent areas significant to nuclear safety and the environment. Some functional areas may not be assessed because of little or no licensee activities or lack of meaningful observations. Special areas may be added to highlight significant observations.

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

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

2. Approach to the identification and resolution of technical issues from a safety standpoint;

3. Responsiveness to NRC initiatives;

4. Enforcement history;

5. Operational events (including response to, analyses of, reporting of, and corrective actions for);

6. Staffing (including management); and

7. Effectiveness of training and qualification program.

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

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

Category 1: Licensee management attention and involvement are readily evident and place emphasis on superior performance of nuclear safety or safeguards activities, with the resulting performance substantially exceeding regulatory requirements. Licensee resources are ample and effectively used so that a high level of plant and personnel performance is being achieved. Reduced NRC attention may be appropriate.

Category 2: Licensee management attention to and involvement in the performance of nuclear safety or safeguards activities are good. The licensee has attained a level of performance above that needed to meet regulatory requirements. Licensee resources are adequate and reasonably allocated so that good plant and personnel performance is being achieved. NRC attention may be maintained at normal levels.

Category 3: Licensee management attention to and involvement in the performance of nuclear safety or safeguards activities are not sufficient. The licensee's performance does not significantly exceed that needed to meet minimal regulatory requirements. Licensee resources appear to be strained or not effectively used. NRC attention should be increased above normal levels.

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

The trend, if used, is defined as:

Improving: Licensee performance was determined to be improving during the assessment period.

Declining: Licensee performance was determined to be declining during the assessment period, and the licensee had not taken meaningful steps to address this pattern.

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

Evaluation of this functional area was based on the results of ten routine inspections by regional and resident inspectors, two special inspections in response to events, and an Operational Safety Team Inspection (OSTI).

Enforcement history in this area remained constant. Three Severity Level IV violations were issued during the assessment period compared to three Severity Level IV violations and one Severity Level V violation during the previous period. In addition, two issues were identified for which the NRC exercised its discretion and did not issue Notices of Violation. All of the violations and issues involved operations that failed to comply with Technical Specifications (TS). These matters included nine separate instances of the licensee failing to meet TS requirements during changes in operational modes or other specified conditions. Inadequate performance by the operating staff also contributed to six violations and three other issues that are discussed in the Outages functional area. None of the events were considered safety significant individually, but collectively indicated significant deficiencies in the operators' ability to control the plant during transition periods. The root-causes of these events were a combination of inadequate operating procedures and a lack of understanding and attention to the details of the TS by licensed utility operators. Licensee management took actions to correct the adverse trend late in the assessment period, and no similar events occurred during the last three months. One shutdown and startup occurred during that period and two shutdowns and startups have occurred subsequent to the SALP period which indicated that the corrective actions were effective as of the SALP Board.

The licensee's control of the plant while in operation and responses to off-normal events were considered excellent. Of the six reactor trips from power (5 > 15% power) during the assessment period, two were instantaneous automatic trips that occurred with no prior warning. Operators quickly assessed the situation and stabilized plant conditions. Both trips were due to failed equipment. The other four trips were all manually initiated by the operators as plant conditions degraded due to equipment malfunctions. In one of those cases, an operator error necessitated the manual trip. The manual scrams were indicative of prudent and conservative judgment by the plant operators. The operators also responded well to three situations that required tripping one of the two reactor recirculation pumps and several

transients in the feedwater heating system while continuing safe plant operation. The operators were also required to respond to twelve actuations of Engineered Safety Features (ESF) and several spurious actuations of the seismic monitoring system. Only one of the ESF actuations was due to a personnel error by plant operators. In all cases, proper procedures were used, timely notifications were made, and operating crew actions focused on safety.

During all operational events, the licensed staff demonstrated a conservative operating philosophy and positive control of the plant. Knowledge and use of off-normal and emergency procedures in actual plant events were excellent. Examples of good responses to difficult plant conditions included responses to a loss of all non-vital electrical loads due to a problem with switchyard equipment and a catastrophic failure of reactor recirculation pump seals complicated by a loss of drywell cooling and feedwater control. Control room decorum was generally good and a professional and businesslike atmosphere was exhibited.

Besides the licensee event reports (LERs) issued for the operational events already discussed, only one LER was attributed to plant operations. That event concerned damage to new fuel bundles due to a personnel error while the bundles were being uncrated.

Operations staffing remained good. The number of licensed reactor (RO) and senior reactor operators (SRO) was more than adequate, allowing licensed individuals to be used in other support positions. The licensee maintained six operating shifts, each with more than the minimum number of personnel required by TS. Some shortages in the number of non-licensed plant operators existed. The licensee was training additional personnel to fill those positions and in the interim was filling in with licensed operators. Demands on the operating crews were escalated by the relatively large number of problems with balance-of-plant equipment and main control room instrumentation. In many cases these problems required operators to take compensatory measures to monitor and control plant conditions. Overtime for the plant operating staff was high, but still within NRC guidelines. Overtime averaged about 25 percent during the refueling outage and about 15 percent at other times.

The line organization above the supervisor of plant operations level underwent a complete reorganization during the assessment period. A new director of plant operations and a new plant manager were selected, and the assistant plant manager position was eliminated. In addition, an assistant vice president position with oversight of operations, training, and scheduling and outage management was created. All of the positions were filled from within the licensee's organization with experienced

personnel. The reorganization appeared to have a positive effect and management involvement in the day-to-day plant operations improved. Efforts were also successful in reducing the administrative burden on the Shift Supervisor so that he could focus on management and oversight of plant operations.

The licensee's fire protection organization was adequately staffed with well-qualified personnel. Three full-time individuals were assigned the responsibility of the fire protection area. In addition, an individual with extensive fire-fighting experience conducted the fire protection training of plant personnel. During observations of fire drills, good fire brigade leadership and direction were exhibited. Appropriate fire-fighting techniques were used, appropriate protective clothing was donned, and radiation protection personnel took an active role.

The effectiveness of the licensee's training program remained high during this assessment period. Thirteen of fourteen candidates passed their replacement examinations (5 of 6 SROs and 8 of 8 ROs) for an overall pass rate of 93%, which was similar to the previous assessment period. The NRC also administered sixteen requalification examinations. Twelve operators passed (6 of 9 SROs and 6 of 7 ROs) for a pass rate of 75%. The Clinton requalification program was given a satisfactory rating. No previous requalification examinations had been administered. Recent non-licensed operator training was identified as a strength by the OSTI.

The licensee's response to NRC initiatives was good, with the exception related to the recirculation pump seal commitments which is discussed in the maintenance/surveillance functional area. Resident inspectors generally met with plant operations management at least weekly to discuss current concerns and issues. Management was receptive to NRC comments and responded in a timely manner. When NRC inspectors brought safety concerns to the attention of the operating shift, rapid action was taken to resolve the issues.

The licensee's approach to the identification and resolution of technical issues was mixed. A significant concern identified in the NRC requalification examination of September 1989 was a tolerance of procedural inconsistencies by operating personnel who were tested. This conclusion was based on approximately 25 procedural corrections noted during the development and administration of the examination. The licensee's resolution of technical issues in the operations area was generally good. After the identification of a technical issue, the operations staff would issue a condition report to have the issue resolved by engineering. While awaiting the resolution, operators generally took a conservative approach to dealing with the issue.

Housekeeping was lacking in the first half of the SALP period, but steady improvements were observed in the latter half of the assessment period. A painting program was instituted, and improved types of paint and floor coatings were being evaluated. Lack of cleanup and repair of oil leaks continued to be a problem, but improvements were noted.

2. Performance Rating

The licensee's performance is rated Category 2 in this area. The licensee's performance was rated Category 2 with an improving trend during the previous assessment period. The performance trend noted did not continue sufficiently to result in a Category 1 rating this assessment period.

3. Recommendations

None.

B. Radiological Controls

1. Analysis

Evaluation of this functional area was based on the results of six inspections, including a special Maintenance Team Inspection (MTI), performed during this assessment period by regional inspectors and observations by resident inspectors.

Enforcement history in this area declined. Two Severity Level IV violations were identified during the current 14 month period compared to no violations during the previous 12 month period. Neither of the violations were of major safety significance.

Staffing was generally adequate in both the radiation protection (RP) and chemistry areas. The average commercial and plant-specific operational experience of the RP staff increased. Radiation protection staff turnover was relatively low, with well-qualified replacements. However, for the chemistry staff, the lack of one assistant chemistry supervisor during a portion of the assessment period appeared to slow development of the laboratory Quality Assurance/Quality Control (QA/QC) program. The licensee's augmentation of the as low as reasonably achievable (ALARA) staff by four contracted radiological engineers fulfilled outage needs. For non-outage ALARA implementation, the group consisted of an ALARA coordinator and an ALARA planning engineer.

Management support of radiation protection/chemistry programs was good with resultant improvement in several areas. The performance of the RP staff exhibited improvement during this

assessment period. Radiological support of maintenance and operations was good. A formal ALARA committee had been formed. An ALARA emphasis program, including an ALARA improvement recommendation system was established. A procedure for detailed task analysis of maintenance work requests that require radiation work permits was initiated by the ALARA maintenance planner, which improved the maintenance/radiological control interface.

Water control programs were good and conformed to Electric Power Research Institute (EPRI) BWR Owners Guidelines. The laboratory had good trend charts of chemistry parameters and a good QA/QC program to ensure reliability and accuracy. Laboratory and counting room work spaces were above the norm and equipped with state-of-the-art instrumentation.

Responsiveness to NRC initiatives was generally good. Allegations submitted for licensee followup were reviewed and dispositioned in a timely and appropriate manner. Previous NRC concerns that the licensee addressed included: improvements in controls of the radwaste building/machine shop; increased health physics (HP) coverage of the Radiological Controlled Area (RCA) exit; and development of a procedure and implementation of training concerning the radiological hazards associated with working in the drywell during spent fuel movement. The licensee corrected a deficient test procedure for the environmental air samplers and improved the chemistry QA/QC program. However, the licensee was somewhat slow in resolving a dosimetry vendor's thermoluminescent dosimetry (TLD) beta/gamma energy discrimination problem. In addition, assessment of QC charts and development of chemistry technician testing programs have progressed slowly. Radiation protection response to events has been good. Personnel responded rapidly to several contamination incidents and took aggressive actions to minimize the spread of contamination and to prevent releases.

The licensee's approach to resolution of technical issues was generally good. Examples of good performance included: implementation of several initiatives to minimize skin contaminations when an increasing trend was noted; use of anti-coincidence circuit of the PCM-1B whole body frisker to reduce the number of radon progeny contamination alarms; upgrading of the solid radioactive waste processing and shipping programs; and increased involvement of RP personnel in outage planning. An example of poor performance was the continuing problem of reliability of Technical Specification required radiological monitoring equipment. Personnel contamination events (PCEs) were low during the assessment period (104 PCEs). Most of the PCEs occurred during the first part of the refueling outage. The RP initiatives discussed earlier were implemented and only seven skin contaminations occurred in the last seven

months of the period. Personnel radiation dose for the assessment period was about 390 person-rem which was considered low for a large US BWR.

No significant problems were noted with the liquid or gaseous releases or with the solid radwaste system. One transportation incident occurred during this assessment period, which resulted in the State of Washington issuing a Notice of Violation of Department of Transportation requirements. The results of the confirmatory measurements comparisons were very good, overall, with 21 agreements in 24 initial analyses in the nonradiological measurements and all agreements in the 48 radiological analyses. The causes of the disagreements were satisfactorily resolved. The results of the licensee's interlaboratory comparisons for both the radiological and nonradiological programs were good.

2. Performance Rating

The licensee's performance is rated Category 2 in this area with an improving trend. The licensee's performance was rated Category 2 in the previous assessment period.

3. Recommendation

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, the OSTI and a Maintenance Team Inspection (MTI). Areas evaluated included maintenance and surveillance practices and inservice inspection (ISI) activities.

With respect to enforcement, licensee performance was essentially unchanged since the last assessment period. The licensee received six Severity Level IV violations during this period compared to six Severity Level IV and two Severity Level V violations in the previous period. All the violations issued involved inadequate procedures or failure to follow procedures. Additional issues for which the NRC exercised its discretion and did not issue Notices of Violation also involved inadequacies in, or failure to follow maintenance or surveillance procedures.

Events resulting in licensee event reports (LERs) attributable to maintenance or surveillance activities decreased significantly during this assessment period. Of noteworthy significance was that there were no LERs assigned to this functional area in the

last four and one half months of the assessment period. Procedure problems or inadvertent actions by maintenance and surveillance technicians caused four Engineered Safety Feature (ESF) actuations and two Reactor Protection System (RPS) actuations. However, the RPS actuations occurred while shutdown and did not involve a challenge to safety systems or rod motion. No automatic scrams from power operation were due to improper or inadequate maintenance or surveillance performance. While the number of LERs was not excessive given the plant evolutions, the cause was of concern. An analysis of the causes of the LERs indicated that inadequate procedures or failure to follow procedures were the only recurring root causes.

Management and supervisory involvement to assure quality in maintenance and surveillance activities was mixed. Supervisory tours of the plant increased and communication improved between Operations, Maintenance, and Engineering. Plant availability leading to first refueling outage (RF1) was good and none of the forced outages subsequent to RF1 were directly attributable to inadequate maintenance with the possible exception of the recirculation pump seal failures.

In the first half of the assessment period, the scope of the preventive maintenance (PM) program was incomplete as discussed in the Engineering/Technical Support functional area of this report. However, aggressive management involvement resulted in considerable improvement in PM during the latter half of the assessment period, as well as the maintenance associated with motor operated valves, the use of reliability centered maintenance studies, configuration control, and trending of equipment failures. While the control of PM backlog was effective, control of corrective maintenance was not effective. The net result was the MWR backlog was about 7 months worth at the time of the OSTI inspection. In addition, Control & Instrumentation maintenance and supervision appeared to be above average. The condition of safety equipment was generally good but often at the expense of balance of plant (BOP) equipment. The material condition of BOP equipment was observed to be poor. Planned improvements in some areas such as main control room deficiencies and process instrumentation did not occur due to reassignment of technicians to higher priority work. A contributing factor appeared to be the licensee's tendency towards interim rather than long term fixes, which aggravated the maintenance backlog. The licensee took actions to resolve this problem late in the SALP period. In general, safety-related maintenance was accomplished, effective, and self-assessed. However, weaknesses that required management attention included the failure to follow procedures during the performance of maintenance, which resulted, for example, in portions of post maintenance tests not being performed and poor management communications. Failure of management to communicate to on-shift

personnel the significant commitments associated with the restart of the reactor recirculation pumps after the seal failure event resulted in some commitments receiving inadequate attention.

Licensee management involvement was evident by the identification of component failure generic trends and through the performance based audits and surveillances in the maintenance area. However, the licensee's inability to reduce the maintenance backlog for BOP and some safety-related equipment was of concern. For example, Operations personnel were unduly burdened by the compensatory measures required by out-of-service BOP/safety-related equipment (temperature regulating valves, Hydrogen/Oxygen analyzer, etc.) The licensee initiated actions to reduce the maintenance backlog towards the end of the assessment period by hiring contractors to plan and perform maintenance. The effectiveness of this licensee action has not yet been determined.

The ISI activities were found to be adequately planned. Appropriate priorities were assigned and all activities were controlled by well stated and well defined procedures. Records were found to be complete and well maintained. Management involvement in the ISI was evident.

Staffing in the maintenance area was adequate. Approximately half way through the assessment period, the director of maintenance was replaced. A new director was promoted from within the maintenance organization with minimal disruption to the organization. The licensee developed a comprehensive plan for personnel control and integrated it into the maintenance process.

The maintenance training and qualification program for station maintenance staff was considered effective. The use of mockups contributed to this effectiveness. The emphasis management placed on maintenance training was evidenced by the decision to seek INPO accreditation in Maintenance before Operations. The ISI personnel had adequate expertise to perform their functions. Personnel performing nondestructive examination were well qualified, appeared to be very knowledgeable, and conscientious in their work. Outside consultants were utilized when appropriate and maintenance personnel generally appeared to be knowledgeable and conscientious in their work.

Responsiveness to NRC initiatives was adequate during the assessment period. Licensee response to correct the deficient scope of emergency diesel generator PM requirements was good. However, the licensee was slow to implement recommended actions resulting from a licensee study of PM requirements which was in response to a 1987 NRC concern.

2. Performance Rating

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

3. Recommendations

None.

D. Emergency Preparedness

1. Analysis

Evaluation of this functional area was based on three inspections conducted by regional inspectors, including the annual emergency preparedness exercise evaluation, observations of drills and actual events by the resident inspectors, and a special inspection for the recirculation pump seal failure event during this assessment period.

Enforcement history continued to be good during this assessment period, with no violations identified. No violations were identified during the previous assessment period. Two concerns were identified as open items during the exercise evaluation, but these were not considered representative of any overall program degradation. No additional concerns resulted from routine or allegation review inspections.

The 1989 emergency exercise was considered challenging, with multiple equipment failures, a fire and an injured/contaminated man. While many aspects of the Emergency Plan were adequately exercised, the exercise was terminated before completion in order to allow licensee personnel to respond to an actual reactor scram. Overall licensee exercise performance during the abbreviated exercise was considered good. No weaknesses were identified during the exercise, but two open items were identified related to interpretations of Emergency Action Levels and failure to advise State and NRC personnel of a (scenario) vehicle accident.

Management involvement in assuring quality was evident throughout the assessment period, as illustrated by management involvement in EP training and drills and the adequacy with which NRC-identified concerns were addressed. The resident inspectors' observations of emergency drills indicated professional attitudes by drill participants.

The licensee's approach to the resolution of technical issues has been good. A licensee self assessment was conducted to identify EP weaknesses, which resulted in numerous planned

short and long term improvements. Corrective actions have been completed on open items and improvements made in various areas of emergency preparedness, as needed. Items identified during the NRC Emergency Response Facility appraisal have been adequately addressed.

The licensee has been responsive to NRC concerns, and when resolving weaknesses from a safety standpoint, the licensee has demonstrated understanding of the issues involved. Once problems were identified, the licensee has resolved the issues. After being notified by the resident inspectors concerning the shortcomings of a critique on the recirculation pump seal event (notifications, personnel response), the licensee immediately conducted a more thorough event critique and initiated appropriate corrective actions.

Staffing of emergency response positions has been good, with the authorities and responsibilities of personnel well-defined. A special allegation inspection reviewed Emergency Response Organization staffing, with no problems identified. Knowledge and capability of personnel to carry out their emergency response duties and responsibilities were demonstrated during the annual emergency preparedness exercise, as well as in walkthroughs during a routine inspection. This indicated that the licensee's training program had adequately prepared personnel for their assignments. The position of Director, Emergency Response was filled by an individual with considerable EP experience.

During the assessment period, the licensee implemented its emergency plan on four occasions. Three of the events were Notification of Unusual Events (NOUE) of short duration and were not of major safety significance. The fourth event started with a NOUE and involved excessive reactor coolant system leakage. The event was upgraded to an Alert when the leakage rate exceeded 50 gpm. The event was terminated three and one half hours after it began. The licensee classified all the events properly and notifications were made correctly.

Licensee facilities were considered very good, with a large, dedicated Emergency Operations Facility (EOF) and a very good backup EOF. The Operations Support Center was large and well organized.

2. Performance Rating

The licensee performance is rated Category 1 in this area. The licensee's performance was rated Category 2 in the previous assessment period.

3. Recommendations

None.

E. Security

1. Analysis

Evaluation of this functional area was based on the results of three routine security inspections conducted by regional security inspectors and on the routine observations of security activities by the resident inspectors. A special inspection was conducted to review a fitness-for-duty allegation.

Enforcement history remained about the same during this and the previous reporting period. Two Severity Level IV violations were identified, compared to one Severity Level III violation for the previous assessment period which was an isolated occurrence. However, the violations identified some limited management weaknesses not evident in the previous assessment period. One of the violations involved inadequate training for some newly hired security force members because of a misunderstanding of the training requirements. A contributing factor for the other violation was management's failure to continue to implement one of several corrective actions identified for a previous violation.

Management involvement in assuring quality was good. One exception involved inadequate management controls to identify in a timely manner serious deficiencies in personnel screening. A less significant exception was management's contributions to the violations noted above. A security force strike began in February 1989. The continuing strike placed extraordinary demands on security force members and supervisors in reference to working hours, supervisory oversight, recruitment, and training. The security staff was extremely effective in assuring that the level of plant protection remained consistent, and newly hired personnel were adequately recruited, screened, trained, and supervised during the staff realignment. Critical self critiques, which have been effective in identifying root causes for problems, also contributed to the assurance of quality. Management was aware of significant security issues, and was supportive of initiatives and projects that affected the quality of the security program.

The licensee's responsiveness to NRC initiatives continued to be a strength of the security program. The security staff was responsive to all issues that could improve the security program. They were aggressive in addressing inspection and audit observations and findings. The resident inspectors were routinely advised of appropriate security concerns in a timely manner. The licensing and safety staff provided efficient liaison coordination during inspections and have maintained timely and effective communications with the NRC Regional staff on security issues.

The licensee's approach to the identification and resolution of technical issues has been mixed. Personnel errors were closely monitored and responded to effectively. Frequent and coordinated meetings were held with technical staff members who support the security system. Effective trend identification and analysis was evident and a conservative, proactive perspective was common in addressing security issues. The continuation of some equipment related problems warrants further management support. One intrusion alarm system zone required compensatory measures during most of the last outage due to operational problems and spurious alarms. Also, although significant reductions in some spurious alarms continued to be achieved, as noted in the previous SALP Report, the interior spurious alarm rate continued to be three to four times higher than exterior alarm points that were exposed to environmental extremes. The high rate was atypical for an interior system. Portions of the closed circuit television system have also experienced periodic distortion, clarity and resolution problems. Recent system modifications have improved performance and several modifications are planned for completion during the next assessment period. An extensive study has been approved and funded to address comprehensive upgrading of the entire perimeter alarm system.

An effective and conservative security event reporting program continued during this assessment period. The number of security related Licensee Event Reports (LERs) has not been excessive. Two events resulted from personnel error and the remaining LERs pertained to licensee identified contractor personnel screening deficiencies. All reported and logged security events were reviewed by the licensee for trend analysis and potential root cause. Training and procedure revisions were initiated when necessary.

Within the last two months of the assessment period, staffing levels for the security organization were adequate but approximately 50 percent of the security force had three months or less experience in nuclear security operations. The supervisory cadre in contrast was experienced, competent, and adequate to control day-to-day operations. The licensee's Security Liaison positions continued to be a valuable asset in providing consistently effective supervision. The Supervisor of Security and the Director of Plant Support Services positions had been recently filled by new personnel. Both individuals were experienced in their respective fields of expertise.

The training and qualification program was effective in preparing newly-hired security officers for shift assignment duties. The strike activities placed increased demands on the training department and involved extended periods of overtime for several categories of security personnel. Followup shift training for new personnel was also effective. After the security force

members gain more experience, increased contingency event training and exercises will be required to assure continued capability to fulfill security contingency event requirements.

2. Performance Rating

The licensee's performance is rated Category 2 in this area. The licensee's performance was rated Category 1 in the previous assessment period. The decline in this area from the previous assessment period was due to inadequate management controls of quality verification of background records, and equipment related problems.

3. Recommendations

None.

F. Engineering/Technical Support

1. Analysis

Evaluation of this functional area was based on the results of four inspections conducted by regional inspectors, two licensed operator examinations conducted by operator licensing examiners, a maintenance team inspection and an engineering team inspection, the OSTI, routine inspections by the resident inspectors, and evaluations of licensee technical reviews.

Enforcement history was comparable to the previous assessment period and remained weak. Environmental Qualification (EQ) concerns identified during the previous SALP period continued into this period with one Severity Level III violation issued for unqualified equipment and a related but separate Severity Level III violation for inadequate EQ corrective action which is discussed in the SA/QV functional area of this report. Three Severity Level IV violations were also cited during this SALP period; one concerned failure to include 23 valves in the licensee's IST program and the other two involved improper translation of design bases into specifications. The three Severity Level IV violations occurred during a previous assessment period but were identified during this assessment period.

Management involvement to assure quality was mixed. Engineering evaluations supporting the offsite dose calculation manual and responses to generic letters and bulletins demonstrated an understanding of the issues, used acceptable approaches, and met established standards. Engineering involvements in design reviews and 10 CFR 50.59 safety evaluations were of good quality

and work requests developed for installation of modifications were adequate for performance of work. Moreover, overview activities were effective in identifying and addressing problems. In addition, management established a Material Condition Management Program to address plant material condition that was being implemented by the reliability engineering department. The licensee devoted resources to ensure an adequate inservice testing program responsive to applicable codes and standards, and developed a program to periodically contact vendor/suppliers to ensure that the technical manuals were accurate.

In contrast, there were instances of inadequate management involvement. In the EQ area, the extent and significance of concerns was illustrated by the Severity Level III violations that were issued, one in the last SALP period and one during this period. In addition, discussions regarding acceptability of testing conducted on control and instrumentation penetration assemblies indicated a lack of understanding of the environmental qualification issue in general. The licensee staff did not ensure that installed EQ configurations were the same as tested configurations, did not disposition a nonconforming material report correctly, did not classify certain equipment as EQ, and did not properly review certain test data. Unqualified hydrogen igniters, instrument racks, safety relief valve solenoids, a standby gas treatment damper assembly and Conax electrical penetration enclosures inside containment were all identified during this assessment period and had been installed since the beginning of plant operations. These examples represented significant equipment problems that could have led to equipment failures and loss of system function during postulated accident conditions in numerous systems important to safety. Engineering support for post maintenance testing was weak. Management involvement to ensure quality in operator licensing examinations was marginally effective in that extensive revisions were required of the facility requalification examination and scenario bank to produce an exam which conformed to the standards of NUREG-1021; the scope of the reference material provided to the NRC for replacement exam preparation was insufficient; and comments made by the facility during a post-examination review for three written examination questions were technically inadequate. The NRC identified a problem concerning the method used by the licensee to correct procedural inadequacies in a timely manner. Staffing of the procedures group was increased by the licensee late in the assessment period to improve performance in this area.

The licensee's approach to the resolution of technical issues from a safety standpoint was mixed. Reliability engineers adequately performed maintenance related functions of trending analysis and reliability centered maintenance (RCM) activities.

The licensee was proactive in the improvement of the commercial grade equipment dedication program, which had been weak in the explicit identification and verification of critical characteristics. On the other hand, the licensee appeared to be slow in identifying and resolving programmatic problems. This was exemplified by the length of time taken to recognize the extent and significance of missing weep holes in electrical enclosures and to implement adequate corrective action. Another example involved the licensee's inability to improve the reliability of the Hydrogen/Oxygen analyzers which were frequently out of service. A third concerned an inadequately designed motor-driven feedwater pump regulating valve that contributed to two manual plant scrams and required considerable effort before the root-cause of the problem was identified and technical resolution was implemented.

Licensee responsiveness to NRC-identified initiatives was mixed. For licensed operator requalification activities the licensee was responsive to initiatives although not totally successful in implementation. Guidance provided in September 1988 relative to inappropriate requalification static simulator questions (questions could be answered without use of the simulator) had to be reiterated again more emphatically in the October 1989 requalification examination report. In the maintenance area, the scope of the PM program was incomplete as evidenced by the lack of vendor recommended PMs for diesel generators and 345Kv breakers; management initiated a review program which was still in progress at the end of the assessment period. Information was available regarding EQ concerns that should have prompted the licensee to identify and initiate more timely corrective action for such deficiencies. Nevertheless, significant NRC management involvement was required before the licensee recognized the seriousness of the EQ deficiencies. The licensee then initiated extensive corrective action and the plant remained shutdown until the actions were completed.

Staffing levels were generally adequate. However, the EQ staff lacked the technical expertise required to identify and resolve issues raised by the NRC during this assessment period. The licensee has committed to supplement the current EQ staff. A system engineer program had been developed and appeared to contain the appropriate attributes of a strong program. Program implementation and integration has not been completed thereby reducing the intended effectiveness of the initiative.

Training and qualification effectiveness was considered to be adequate. Candidate readiness for both the NRC replacement and the NRC requalification examinations administered in September 1988 and in September 1989 was good. Problems with the format and usability of emergency operating procedures

discussed in the previous SALP Report were not effectively corrected. However, the licensee was in the process of rewriting the procedures in a flow chart format and was incorporating Revision 4 of the BWR Owners Group Emergency Procedure Guidelines.

2. Performance Rating

The licensee's performance is rated Category 3 in this area. The licensee's performance was rated Category 2 in the previous assessment period.

3. Recommendations

The board noted that substantial corrective actions in the EQ area were initiated during the SALP period; however, continued management attention in the general area of engineering is warranted.

G. Safety Assessment/Quality Verification

1. Analysis

Evaluation of this functional area was based on the results of six routine and three special or team inspections performed by regional and resident inspectors. In addition, NRC reviews of licensee submittals and requests for amendments to the Clinton operating license were considered.

Enforcement history in this area declined. One Severity Level III and six Severity Level IV violations were identified. During the previous assessment period, six Severity Level IV violations were identified. The Severity Level III violation involved the failure of the licensee to ensure that significant environmental qualification (EQ) deficiencies were corrected from a previous NRC inspection. A related Severity Level III violation for failure to environmentally qualify equipment is discussed in the Engineering/Technical Support functional area of this report. Inadequate corrective action cited in the Severity Level III violation was indicative of a licensee trend of inadequate followup of corrective action plans.

Management involvement in assuring quality was mixed throughout the assessment period. Management was involved in evaluating events, determining their root causes, and developing corrective actions. However, management's involvement in identifying actual root cause and adequate corrective action was frequently ineffective. Management was aggressively involved in correcting weaknesses in the preventative maintenance program. Management implemented self-improvement initiatives, such as the Material

Control Management Program and the Reliability Engineering Section in Nuclear Station Engineering Department (NSED).

However, management involvement weaknesses were noted in implementing corrective actions and verifying that these actions were preventing the recurrence of conditions adverse to quality. Numerous examples were documented in inspection reports of corrective actions which had failed to prevent recurrence of conditions adverse to quality. These examples ranged from responses to NRC olations and licensee event reports, licensee critiques, and licensee condition reports. These problems were not confined to a single functional area, but affected most of the functional areas discussed in this SALP Report. The most significant of these examples involved deficiencies in the environmental qualification of safety related equipment (this issue is also discussed in the Engineering/Technical Support area). Weaknesses in the licensee's implementation of corrective action were previously identified in the SALP 8 Report. Actions taken by the licensee to address this problem were not successful and performance declined.

The approach to resolution of technical issues from a safety standpoint was generally acceptable. Decisions were generally conservative and sound. Licensee event reports were usually thorough and identified the root cause.

The NRC has conducted substantial reviews of licensee submittals related to license amendment applications, responses to generic letters and bulletins, revisions to license commitments, and 10 CFR 50.59 evaluations. The licensee's performance was usually good. The licensee was responsive to NRC concerns and requests for additional information. The licensee conducted technically sound evaluations, giving each submittal thorough consideration and support, resulting in high quality technical work. However, documentation of this work was occasionally weak and the submittal of additional information was required. Licensee submittals to the NRC have principally been prepared by onsite contract engineering services.

Licensee QA representatives routinely met with the resident inspectors to discuss quality matters. The licensee was receptive to NRC initiatives and was generally responsive with the exception of untimely responses to refueling outage Notice of Violations and refueling outage related LER submittals.

QA audits and surveillances were generally thorough and effective at identifying problems. Audits and surveillances appeared to be performance based. Resolution of these audit findings was generally effective; however, occasional examples of less than rigorous reviews of management's response to QA audit findings occurred. QA has increased the scope of its

audits to include areas beyond regulatory requirements. QA was proactive in initiating additional audits of the security force following the replacement of significant numbers of personnel (discussed further in the Security functional area) which resulted in the identification of the need for additional training in certain areas.

The performance of independent review groups was generally effective. These groups identified several unresolved safety issues. Management attention to the resolution of problems increased from the previous assessment period.

Five of the Licensee Event Reports (LERs) attributable to this area (83%), were due to personnel error, represented an increase from the previous SALP and also involved repeat events. The licensee has implemented various initiatives to reduce personnel errors.

Licensee programs for handling internal allegations remained effective. The licensee was typically responsive and effective in handling allegations received by the NRC and given to the licensee for evaluation. Investigations were conducted in a thorough manner and the licensee was responsive to NRC concerns.

Staffing in this area was adequate. The training, qualification, and expertise of QA personnel were usually sufficient to perform thorough audits. However, expertise of QA personnel in the refueling and EQ areas was weak. These are areas in which the station's performance was also weak. Additional individuals with active SRO licenses have been assigned to the QA organization to augment operational experience. Management has hired a consultant to increase the QA level of experience in the EQ area. Consultants were also retained to present training on root cause analysis.

2. Performance Rating

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

3. Recommendations

None.

H. Outages

1. Analysis

The plant was in outages for almost half of the assessment period including its first refueling outage and five additional

forced outages. For that reason, and the fact that dichotomies were noted between the licensee's performance during operating and outage periods, a special functional area is being used in this SALP to assess the licensee's performance during outages. Evaluation of this functional area was based on the results of four routine and special inspections by regional inspectors, a maintenance team inspection, a special team inspection in response to an event, and routine observations by resident inspectors.

The outages during the assessment period consisted of a 14 day forced outage to replace a failed main power transformer, a 140 day refueling outage, the last 58 days of which were considered to be a forced outage to correct environmental qualification deficiencies, a 20 day forced outage to replace failed reactor recirculation pump seals, a 2 day forced outage to replace a failed main power transformer sudden pressure relay, a 12 day forced outage to replace a failed condenser boot seal, and an 8 day forced outage to repair several problems in the feedwater heating system.

Enforcement history in this functional area was poor. Seven Severity Level IV violations were related to outage activities. Since this area was not used in the last assessment period, no comparison was available. Five of the violations were related to refueling activities. The NRC also issued a Confirmatory Action Letter (CAL-RIII-89-005) as a result of poor control of refueling activities. In addition to the violations, three other matters were identified for which the NRC exercised its discretion and did not issue Notices of Violation. The causes of the individual problems involved one or more of the following: ineffective and/or lack of training, inadequate communications, lack of attention to detail, and inadequate involvement of supervisory personnel in the outage activities. The post-event corrective actions were adequate to prevent recurrence of each of the specific events; however, it was evident that a lack of effective administrative/management controls was common throughout the events.

An analysis of events resulting in LERs associated with outage activities indicated that 77% were caused by personnel errors. Several involved problems caused by a lack of familiarity with procedures and inadequate planning for evolutions being performed for the first time. One example of an LER which involved a challenge to safety systems occurred when scram time testing was conducted during solid plant conditions. The injection of the water from the scram accumulators into the reactor vessel caused an uncontrolled pressure transient which resulted in a containment isolation and the lifting of safety relief valves.

Management involvement in pre-refueling outage preparations, such as planning, scheduling, and resource allocations, was evident. However, during the refueling outage, administrative and management controls appeared to be ineffective, especially in oversight of contractor activities. For example, the licensee did not define the responsibilities and authority of contractors who would be implementing the refueling contract, nor the licensee-contractor interface process. In general, supervisory involvement in controlling the complex evolutions involved in refueling, mode changes, and testing was inadequate.

For the refueling outage, more aggressive and thorough review and investigation on the part of management early in the outage might have reduced the number of significant refueling incidents. Management involvement increased proportionally with the increase in problems. Initially, a weakness in communicating progress and deficiencies to management existed. Further, decisions were made without adequate supervisory review (e.g., overriding safety interlocks). Once management became aware of the problems, immediate actions were taken. However, post-event corrective action appeared to address the symptoms rather than the root causes. Following the issuance of the CAL, management involvement in assuring quality was evident. The licensee was conservative and cautious in the preparations for the retrieval of the dropped neutron source. Subsequent completion of refueling activities was conducted without incident.

The licensee's performance during the forced outages was generally better than during the refueling outage. Work activities were more closely controlled and management involvement was more evident. The main transformer outage demonstrated the licensee's ability to diagnose problems, resolve the safety issue, and restart the plant while demonstrating a conservative safety attitude.

The Quality Assurance (QA) organization was involved in the refueling activities providing coverage and analyzing problems. However, in an instance where the NRC identified a material control issue, which management assigned to QA, QA failed to perform adequate followup. Further, when ALARA considerations were identified on the refueling floor, QA was one of the first groups evacuated, thereby hampering QA oversight. QA personnel involved in monitoring refueling activities lacked sufficient knowledge of administrative and refueling procedures/practices and the QA surveillances were too limited to facilitate identification of refueling problems.

The licensee's resolution of technical issues involving Technical Specifications (e.g., interlocks, system operability) was generally conservative. A lack of or insufficient knowledge of

the existence, design, or system interface for some interlocks resulted in three of the violations. Resolution of those violations appeared to be thorough, adequate, and timely. However, the licensee's resolution of technical problems associated with a feedwater regulating valve (FRV) were incomplete and did not address the root cause, resulting in the need to perform two manual scrams.

The licensee was generally responsive to NRC concerns during the refueling and forced outages. Actions taken were generally adequate, however, responses to several issues (e.g., LERs, Notices of Violation) did not meet timeliness requirements.

Staffing of the refueling outage was adequate. The licensee contracted an experienced refueling staff of fuel handlers and management. The contracted staff was augmented with IP operations and management personnel. The licensee generally assigned the most junior licensed operators to the fuel handling positions which may have also contributed to the problems experienced during refueling. Staffing in other outage related areas was adequate. The licensee used contracted maintenance and radiological protection personnel to supplement their regular staff during outage periods.

The contractor training and indoctrination program was completed prior to the outage, with required reading being a large part of the training. The refueling staff contracted by the licensee was experienced to perform general refueling activities. However, ineffective and/or lack of training on Clinton specific requirements, and inadequate understanding of the training provided, were contributing factors and at times the root cause of many of the problems encountered by both the refueling and operations staff during the outage. Supervisory personnel were involved in several personnel errors due to lack of attention to detail. An example was a Severity Level IV violation for the removal from service, at Shift Supervisory direction, of service air to the containment without proper evaluation of the impact on other equipment. As a result, air was lost to the steam dryer storage pool gate seals and approximately 40,000 gallons of water was drained into the drywell.

2. Performance Rating

The licensee's performance is rated Category 3 in this area. The licensee's performance was not rated in this Category during the previous period.

3. Recommendations

Increased licensee management attention to outage-related activities, particularly those involving control of contractor activities, is warranted.

V. SUPPORTING DATA AND SUMMARIES

A. Licensee Activities

Clinton Nuclear Power Station began the assessment period operating at full power, and continued to operate at power levels up to 100% through the first four months. A forced outage and routine power reductions to perform maintenance activities and equipment repairs occurred during this portion of the assessment period. The plant was shutdown on January 2, 1989, for its first refueling outage; and was tied to the grid on May 28, 1989. During the last portion of the assessment period four forced outages occurred (between June 1 and July 31, 1989) with the plant returning on line on August 8, 1989. After which, Clinton operated routinely at power levels up to 100% through the remainder of the SALP assessment period.

Clinton experienced twelve engineered safety feature (ESF) actuations and two automatic reactor scrams from power during the assessment period. Three scram signals while shutdown occurred with no rod movement. Both of the automatic scrams were the result of equipment failures.

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

Significant Outages and Events

1. During November 11-25, 1988, the plant was shutdown due to an electrical malfunction and fire in the '1C' main power transformer. The forced outage was complicated on November 14, 1989, when a circuit switcher failure caused the loss of the reserve auxiliary transformer and all non-vital electrical loads. The '1C' main power transformer was replaced and the plant was made critical on November 23, and was tied to the grid November 25, 1989.

2. On December 18, 1988, the plant was placed in single loop operation due to degradation of the 'B' reactor recirculation pump seals. It remained in this mode and operated at a reduced power level until its scheduled maintenance and refueling outage.

3. During January 2 through May 28, 1989, the plant was shut down for its first refueling outage. Major activities included replacement of fuel bundles, emergency diesel generator work, replacement of safety relief valves, installation of reactor recirculation pump seal upgrades, in-vessel visual inspections, inservice inspections, repairs to MSIVs, and corrective actions for new and previously identified environmental qualification (EQ) deficiencies.

4. On May 26, 1989, the plant was manually scrammed during power ascension due to feedwater control valve failures.

5. On June 1, 1989, the plant was manually scrammed as a result of failed 'B' reactor recirculation pump seals. The plant remained shut down until June 21, 1989, to perform repairs and replacement of pump seals.

6. On June 28, 1989, the plant was shut down due to an electrical problem with the '1A' main power transformer sudden pressure relay. The plant remained shut down until June 30, 1989, to perform repairs.

7. On July 14, 1989, the plant was manually scrammed due to a failure of a boot seal on the low pressure turbine. The plant remained shut down until July 26, 1989, to perform repairs.

8. On July 31, 1989, the plant was manually scrammed due to complications in controlling reactor water level while attempting to conduct a shutdown due to the loss of condenser vacuum. The plant remained shut down until August 8, 1989, to perform repairs on the feedwater relief valves.

B. Inspection Activities

Thirty-nine inspection reports are discussed in this SALP Report (September 1, 1988 through October 31, 1989) and are listed in Paragraph 1 of this section, Inspection Data. Table 1 lists the violations by functional areas and severity levels. Significant inspection activities are listed in Paragraph 2 of this section, Special Inspection Summary.

1. Inspection Data

Facility: Clinton
Docket No: 50-461
Inspection Reports No: 88020, 88023 through 88030, 89002 through 89009, and 89012 through 89033.

TABLE 1

Number of Violations in Each Severity Level

	FUNCTIONAL AREAS	I	II	III	IV	V
a.	Plant Operations	-	-	-	3	-
b.	Radiological Controls	-	-	-	2	-
c.	Maintenance/Surveillance	-	-	-	6	-
d.	Emergency Preparedness	-	-	-	0	-
e.	Security	-	-	-	2	-
f.	Engineering/Technical Support	-	-	1	3	-
g.	Safety Assessment/Quality Verification	-	-	1	6	-
h.	Outages	-	-	-	7	-
	TOTALS	0	0	2	29	0

2. Special Inspection Summary

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

a. During November 14-17, 1988, a special safety inspection was conducted in response to the loss of the reserve auxiliary transformer and all non-vital electrical loads (Inspection Report No. 461/88028).

b. During January 23 through April 7, 1989, a special maintenance team inspection was conducted (Inspection Report No. 461/89003).

c. During April 3-27, 1989, a safety team inspection was conducted to assess the licensee field alteration and modification program (Inspection Report No. 461/89017).

d. During June 1-23, 1989, a special safety inspection was conducted in response to the failure of the 'B' reactor recirculation pump seals and other equipment problems (Inspection Report No. 461/89021).

e. During June 27-29, 1989, the annual emergency preparedness exercise was conducted (Inspection Report No. 461/89020).

f. During September 25 through October 3, 1989, an Operational Safety Team Inspection (OSTI) was conducted (Inspection Report No. 461/89030).

C. Escalated Enforcement Actions

1. On October 20, 1989, the licensee paid a civil penalty in the amount of $75,000 based on violations relating to environmentally qualified electrical equipment. This item was identified during the SALP 7 assessment period, and discussed in detail in that report. (Enforcement Notice No. EN-88-041, Enforcement Case No. EA-88-090, Inspection Reports No. 461/88010, 461/87001).

2. Two Severity Level III violations and proposed imposition of civil penalties in the amount of $75,000 were issued to the licensee on July 20, 1989. This action was based on violations relating to the licensee's failure to assure that electrical equipment important to safety was environmentally qualified, ($50,000), and failure of the licensee to take adequate corrective actions ($25,000) following qualification deficiencies identified in the 1988 Severity Level III violation with civil penalty. On August 8, 1989, the licensee paid the civil penalties (Enforcement Notices No. EN-88-041A, No. EN-89-70, Enforcement Case No. EA-89-059, and Inspection Reports No. 461/89006, 461/89014, 461/89015).

D. Confirmatory Action Letters

1. A Confirmatory Action Letter (CAL-RIII-89-005) was issued on February 1, 1989, relating to problems occurring during the first refueling outage (control of contractors, procedural adherence, personnel errors).

2. A Confirmatory Action Letter (CAL-RIII-89-016) was issued June 1, 1989, relating to the 'B' reactor recirculation pump seal failures and other equipment problems.

E. Review of Licensee Event Reports

Forty-five LERs were issued in accordance with NUREG-1022 guidelines during the assessment period. Table 2 shows the cause code comparison of the SALP 8 and SALP 9 cycles.

LER Nos: 88022 through 88032
89001 through 89034

TABLE 2

CAUSE AREAS	SALP 8 (12 Mo.) NO.	SALP 8 (12 Mo.) PERCENT	SALP 9 (14 Mo.) NO.	SALP 9 (14 Mo.) PERCENT
Personnel Errors	23	(57.5%)	26	(57.8%)
Design Problems	3	(7.5%)	4	(8.9%)
External Causes	0	(0.0%)	0	(0.0%)
Procedure Inadequacies	2	(5.0%)	7	(15.6%)
Equipment/Component	12	(30.0%)	6	(13.3%)
Other/Unknown	0	(0.0%)	2	(4.4%)
TOTALS	40		45	
FREQUENCY (LERs/Mo)		3.3		3.2

NOTE: The above LER information was derived from reviews of LERs performed by the NRC staff, and may not completely coincide with the licensee's actual cause assignments.