SALP BOARD REPORT

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

50-341/88001
Inspection Report No.

Detroit Edison Company
Name of Licensee

Fermi 2
Name of Facility

April 1, 1987 through March 31, 1988
Assessment Period

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I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate licensee performance based upon this information. The SALP program is supplemental to normal regulatory processes used to ensure compliance with NRC rules and regulations. SALP is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful guidance to the licensee's management to promote quality and safety of plant construction and operation.

An NRC SALP Board, composed of the staff members listed below, met on June 14, 1988, to review the collection of performance observations and data to assess licensee performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." A summary of the guidance and evaluation criteria is provided in Section II of this report.

This report is the SALP Board's assessment of the licensee's safety performance at Fermi 2 for the period April 1, 1987 through March 31, 1988.

SALP Board for Fermi 2 Station SALP 9 assessment:

NAME	TITLE
C. E. Norelius*	SALP Board Chairman, Director, Division of Radiation Safety and Safeguards
H. J. Miller*	Director, Division of Reactor Safety
E. G. Greenman*	Director, Division of Reactor Projects
D. R. Muller*	Director, Project Directorate III-1, NRR
T. P. Quay*	Project Manager, NRR
R. C. Knop*	Chief, Projects Branch 3
W. G. Rogers*	Senior Resident Inspector
M. J. Virgilio	Acting Deputy Director, DRP
J. J. Stefano	Project Manager, NRR
L. Kelly	Project Manager, NRR
P. R. Pelke	Project Inspector
B. S. Mallett	Chief, Nuclear Materials and Safeguards Branch
M. P. Phillips	Chief, Operational Programs Section
G. C. Wright	Chief, Operations Branch
R. L. Hague	Acting Chief, Technical Support Staff
M. Schumacher	Chief, Radiological Effluents and Chemistry Section
L. R. Greger	Chief, Facilities Radiation Protection Section

NAME	TITLE
R. A. Paul	Inspector, Facilities Radiation Protection Section
G. L. Pirtle	Physical Security Inspector
W. Snell	Chief, Emergency Preparedness Section
J. E. Foster	Inspector, Emergency Preparedness Section
H. A. Walker	Reactor Inspector, Maintenance and Outages Section
S. A. Reynolds	Reactor Inspector, Maintenance and Outages Section
J. M. Ulie	Reactor Inspector, Plant Systems Section
A. Dunlop	Reactor Engineer, Technical Support Staff

*Voting Members

II. CRITERIA

The licensee performance is assessed in selected functional areas, depending on whether the facility is in a construction, preoperational, or operating phase. Each functional area represents an area significant to nuclear safety and the environment and corresponds to a normal programmatic area. Some functional areas may not be assessed because of little or no licensee activities or lack of meaningful observations in that area. Special areas may be added to highlight significant observations.

The following evaluation criteria were used in assessing each functional area:

A. Management involvement in ensuring quality.

B. Approach to resolution of technical issues from a safety standpoint.

C. Responsiveness to NRC initiatives.

D. Enforcement history.

E. Operational and construction events (including response to, analysis of, and corrective actions for).

F. Staffing (including management).

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

Based upon the SALP Board assessment, each functional area evaluated is classified into one of three performance categories. The definitions of these performance categories are:

Category 1: Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used so that a high level of performance with respect to operational safety and/or construction quality is being achieved.

Category 2: NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and are reasonably effective so that satisfactory performance, with respect to operational safety and/or construction quality, is being achieved.

Category 3: Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appear to be strained or not effectively used, so that minimally satisfactory performance, with respect to operational safety or construction, is being achieved.

Trend: The SALP Board may choose to include an assessment of the performance trend of a functional area. Normally, this performance trend is only used where both a definite trend of performance is discernible to the Board and the Board believes that continuation of the trend may result in a change of performance level.

The trend, if used, is defined as:

A. Improving

Licensee performance was determined to be improving near the close of the assessment period.

B. Declining

Licensee performance was determined to be declining near the close of the assessment period.

III. SUMMARY OF RESULTS

	Functional Area	Rating Last Period (SALP 8)	Rating This Period (SALP 9)
A.	Plant Operations	3	3
B.	Radiological Controls	2	2
C.	Maintenance	2	3
D.	Surveillance	3	3
E.	Fire Protection	NR	2
F.	Emergency Preparedness	1	1
G.	Security	2	1
H.	Outages	2	2
I.	Quality Programs and Administrative Controls Affecting Quality	2	3
J.	Licensing Activities	2	2
K.	Training and Qualification Effectiveness	3	2
L.	Startup Testing	1	1
M.	Engineering/Technical Support	NR	3

NR = Not Rated

IV. PERFORMANCE ANALYSIS

A. Plant Operations

1. Analysis

Evaluation of this functional area was based on the results of routine resident, region-based, NRC Restart Team, and Operational Safety Team (OSTI) inspections.

Enforcement history consisted of nine violations. One Severity Level III, four Severity Level IV and four Severity Level V violations were associated with the operations area. A civil penalty of $75,000 was issued for the Severity Level III violation concerning a shift complement's inability to maintain cognizance of plant parameters. This resulted in an unplanned mode change. The other violations were not as significant. However, when viewed collectively they indicate a negative trend showing a lack of attention to detail and poor understanding of Technical Specification actions by operations personnel. Almost all the violations were program implementation errors. Most of the errors occurred during the performance of Technical Specification mandated actions and activities associated with valve lineups. The enforcement history indicated a decrease in licensee performance from the previous assessment period.

Four issues remained outstanding at the end of the assessment period. The first two issues are potential escalated enforcement matters that involved a lack of organizational understanding of a Technical Specification support system, and the adequacy of corrective actions associated with a previous escalated enforcement violation. The third issue arose late in the assessment period and involves the scope of the valves in the locked valve program. The final issue also occurred late in the assessment period and involves instrument valve lineup controls. The one outstanding issue from the previous assessment period related to 50.59 was resolved by the issuance of a notice of violation.

The reactor was critical for 4633.1 hours of the assessment period and the scram frequency was 1.29 scrams per 1000 critical hours. This is an improvement from the previous assessment period. Notwithstanding, nine unplanned shutdowns occurred; six of which were reactor scrams. The majority of these shutdowns occurred during the first half of the assessment period, resulting in sporadic plant operations. Most of the shutdowns were caused by design and personnel errors, and half of the scrams were caused by personnel errors. Approximately 23% of the total LERs for this assessment period were associated with this functional area, with the majority of these involving personnel errors. The frequency of events increased during plant outages.

Three central areas were identified in the previous assessment period as needing additional management attention. The areas were placing equipment in service or out of service, taking the appropriate actions mandated by the license for given equipment conditions, and understanding the necessary Technical Specification support systems. To varying extents, all three of these weaknesses were manifested again during this assessment period.

Management involvement to assure quality was ineffective in the first half of the assessment period. Numerous instances of personnel circumventing procedures and operator proficiency deficiencies occurred. Equipment was not placed or properly maintained in service as evidenced by damage to the south reactor feedpump turbine, steam binding of a heater feedwater pump, and the High Pressure Coolant Injection (HPCI) test return valve not being deenergized in the closed position during system restoration activities. Finally, an unplanned mode change occurred through operator inattention.

Short range improvement was noted following management changes at the beginning of the second half of the assessment period. Personnel circumventing procedures was significantly reduced and an overall improvement in attention to detail was noted due to management involvement. However, an improper valve lineup resulted in a draindown via RHR to the torus. No major equipment failures occurred while placing equipment in service or out of service. Extended plant operation was achieved for the first time and permission was granted to ascend to 100% power.

However, similar problems to those in the previous assessment period appeared late in this assessment period. Personnel did not take the required Technical Specification actions as reflected by HPCI not being placed in service at the correct time during a plant startup and core spray header differential pressure not being verified at the proper time interval. A Technical Specification support system, Non-interruptible Control Air Division I, became inoperable and a mix of inadequate training and procedures did not alert operators that a limiting condition of operation (LCO) was in effect. Subsequently, the LCO was not met.

Licensee reviews have indicated a need for improvement in the area of shift log keeping. Reports to the NRC via the Emergency Notification System (ENS) telephone were generally appropriate and timely. Shift turnovers were consistently thorough except for short term reliefs which were significantly upgraded after the unplanned mode change.

Technical resolution of issues from a safety standpoint varied. Management exhibited a strong understanding of the issues but their response to those issues was not always adequate. Long term actions to improve operating procedures, procedural compliance, and provide better insight and understanding of Technical Specifications were slow in development and implementation. No actions were taken to ensure a more complete mix of procedures/training of plant operators in the area of support systems. In contrast, corrective actions to the mode change incident appeared thorough and timely. Late in the assessment period, management initiatives resulted in more thorough evaluations of personnel errors to determine cause and corrective action.

One of the most significant technical issues that arose during the assessment period concerned deficiencies in the Technical Specifications. Present actions to review and assure proper content of the Technical Specifications appear to be receiving appropriate management attention. However, a final conclusion can not be drawn until the Technical Specification Improvement Program is concluded.

On-shift operations staffing was adequate with the licensee continuing to staff six full shifts. All key positions were filled. However, there was an identified weakness in the experience level of the operations personnel with respect to commercial Boiling Water Reactor (BWR) experience. This weakness was counterbalanced somewhat by more experienced BWR individuals being brought into senior operational management positions. Control room decorum and professionalism was evident. Shift personnel understanding of their duties and responsibilities was not always evident. This was recognized as a deficiency and operational standards were developed to provide the necessary direction. The development of the operational standards is considered to be a positive licensee initiative.

Licensee responsiveness to NRC initiatives was generally adequate. A letter midway through the assessment period from the regional administrator requested the development of a program to conduct training evolutions at power levels less than 50% due to the minimal licensee performance observed by the Operational Safety Team Inspection (OSTI). The licensee initiated a program that exceeded the NRC request. The operator evolution evaluation program was established and provided a baseline on which to judge operator performance. Licensee management worked closely with all operating shifts to develop support for this program and to critique overall performance on selected plant evolutions. The program has been in effect since November and will continue until at least completion of the startup test program. Also, the operations engineer duty

station was changed to be closer to the control room. Actions taken dealing with operator rounds sheets and emergency operator response to a loss of feedwater were other examples of appropriate, timely action.

2. Conclusion

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

3. Board Recommendations

The SALP Board notes that while licensee performance has generally improved during the assessment period, it appears to be somewhat cyclical as highlighted by the standby liquid control event which occurred subsequent to the assessment period. This indicates a need for improved team work, attention to detail, and procedural adherence.

B. Radiological Controls

1. Analysis

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

Enforcement history in this area was good; one Severity Level V violation was identified during this period. Enforcement history in the previous assessment period was similar with two Severity Level V violations identified. One LER was reported in this area regarding personnel errors and inadequate procedures which resulted in excess sodium pentaborate concentrations in the Standby Liquid Control storage tank.

Staffing levels were ample and qualifications appeared adequate to implement the operational radiation protection and chemistry programs. Operating radiation protection experience levels are understandably low due to plant newness. Observation of chemistry and radiation protection technicians and professional staff performance during inspections indicated satisfactory performance. The radiological engineering staff continued to provide assistance to the radiological control staff in identification and resolution of technical issues. Only minimal staff turnover was experienced; however, staff experience was weakened by the losses of the Radiation Protection Manager (RPM) and the chemistry supervisor. NRC review determined that the licensee's proposed replacement for the RPM did not meet the required experience qualifications; subsequently, another staff health physicist was appointed who met the qualifications.

Management attention towards ensuring quality in this area was evident and generally good. Indications of corporate and station management support for the radiological control program included provisions for ample staff additions (contractors) during the first major maintenance outage, acquisition of improved contamination monitoring equipment, and continued support for the plant decontamination and tygon tubing removal program. In-line instrumentation appeared to be adequate for monitoring the essential chemistry parameters, and improvements were being considered; the laboratory was equipped with state-of-the-art instrumentation. The licensee expended great effort to improve reactor coolant water quality, which had been degraded by demineralizer resin ingress. These efforts greatly reduced out-of-specification (OOS) time for conductivity, and kept the cumulative OOS well within the limits allowed by the technical specifications. While the licensee had not committed to the BWR Owners Group Guidelines, the water chemistry control program appears to be generally consistent with the guidelines as evidenced by licensee actions to reduce reactor power when high sulfate levels were present during the last part of the assessment period.

Licensee responsiveness to NRC initiatives was good. The hot machine shop and tool crib contamination controls were upgraded, including facility modifications. The licensee continued to improve the decontamination control program, the incident report system, and egress controls. The chemistry group's QA/QC program for the control of analytical measurements appears to be adequate and has progressed satisfactorily since the last assessment period. This program includes control charts of instrument performance checks, interlaboratory comparisons, and technician testing programs. However, improvement is needed to reduce the high biases observed in interlaboratory comparisons of sodium, low level boron, and copper.

The licensee's approach to resolution of technical issues has generally been sound and timely with appropriate consideration of radiological safety. The licensee is implementing a program for "hot particle" training, identification, and control, and has strengthened the surveillance/calibration program for effluent monitoring. ALARA program initiatives were evident during the two outages during this period. Personnel contaminations and cumulative doses (person-rems) were very low during the assessment period due to a combination of good licensee performance and limited operating history. Radiological effluents were also very low, reflective of the limited plant operating history. One minor transportation problem was identified.

Radiological confirmatory measurements showed weaknesses, with only 76 agreements in 104 comparisons. The discrepancies occurred mainly in the backup detectors and appeared to be related to improper calibration, software problems, and lack of intercomparison of the various detectors in the licensee's interlaboratory comparison program. The results of the nonradiological confirmatory measurements program were generally good, with only two disagreements with the NRC values in 27 comparisons. However, some of the results had significant biases, and the analyst had difficulties in obtaining reliable boron values. These appeared to be due to deficiencies in the use of performance check control charts, which are still under development.

2. Conclusion

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

3. Board Recommendations

None.

C. Maintenance

1. Analysis

Evaluation of this functional area was based on routine inspections conducted by resident inspectors and two inspections conducted by region-based inspectors. Areas examined included corrective and preventive maintenance.

Enforcement history consisted of four violations and a deviation from Updated Final Safety Analysis Report (UFSAR) commitments. The violations were categorized as three Severity Level IV and one Severity Level V, which is an increase in violations from the previous assessment period. Two violations were programmatic in nature and had potential safety implications. These violations reflected a lack of implementation of a preventive maintenance program and numerous examples where personnel failed to follow procedures. The other violations were isolated personnel errors of minimal safety significance. The deviation was also programmatic and further emphasized the lack of implementation of preventive maintenance in the area of electrical circuit breakers and protective relays. Corrective actions were initiated; however, the effectiveness of all these actions has not yet been assessed.

Management involvement and control in assuring quality in the preventive maintenance area was lacking during the first part of the assessment period. A preventive maintenance program was established but there was insufficient management oversight and direction in its implementation. This resulted in a significant percentage of preventive maintenance activities not being accomplished. Also a reactor shutdown was caused by inadequate preventive maintenance scheduling for the reactor recirculation M-G set brushes. Once identified as a problem appropriate resources were applied resulting in considerable improvement in this area by the end of the assessment period.

Management involvement in the corrective maintenance area was mixed. During the assessment period the material condition of the facility improved primarily due to a maintenance outage midway through the period which reduced the corrective maintenance backlog from approximately 750 to 500. At the end of the assessment period, the licensee had a 6 to 7 week backlog. Nuisance annunciators continued to be reduced from the previous assessment period. However, one reactor scram was caused by personnel not adhering to procedures. Administrative controls associated with lifted leads/jumpers were not always adhered to. There was little evidence of effective and efficient pre-planning of the Local Leak Rate Test (LLRT) outage from a maintenance perspective. For example, a number of electrical and mechanical maintenance procedures were poorly written and often confused workers because of the numerous changes that were required. There was no evidence that the procedures were validated prior to use. This contributed to the failure to effectively accomplish maintenance activities. No discernible decrease in the number of lifted leads and jumpers was noted during the assessment period. This particular area was identified in the previous assessment as needing additional management attention. Although some improvement was noted in the utilization of equipment history, management involvement was lacking as evidenced by the lack of complete and accurate equipment history information for deferrals of preventive maintenance activities.

There was one major positive management decision during the this time frame. The work package closure process was changed to mandate a maintenance staff and quality assurance review prior to submittal to the shift supervisor. This one action has provided an incremental increase in assuring safety at the facility. The backlog of work packages needing final review after work completion, which had significantly increased in size three fourths of the way through the assessment period, should be virtually eliminated due to a change in the allocation of resources for closing these packages.

The licensee approach to resolution of technical issues in the area of preventive maintenance was weak. Technical justification for deferral or rescheduling of preventive maintenance activities lacked thoroughness and depth, and in some cases, was marginal if not unacceptable. Effects on system operability, availability or reliability were not evaluated by engineering; instead emphasis appeared to be on scheduling and availability of personnel.

The status and portrayal of backlogged preventive maintenance activities was not clear and understandable making management overview of preventive maintenance corrective actions difficult. Some improvement was noted in this area during the end of the assessment period; however, resolution of the preventive maintenance issue is a continuing process, and significant NRC management attention was required to affect changes initially.

Resolution of corrective maintenance issues was better. The licensee suspended all maintenance activities when an NRC inspection identified that personnel were not following procedures. This stop work stayed in effect until all personnel were briefed on the necessity to follow procedures. Changes to the deficiency notice tag system were comprehensive and positive. While the stop work order was commendable, previous management involvement had not been effective in instilling procedural adherence.

Responsiveness to NRC issues was considered ineffective during the first part of the assessment period. The preventive maintenance issue was considered as an unresolved item during an inspection in 1985 but the same problems still existed in mid-1987. At the end of the assessment period there was considerable improvement in this area; however, in some cases, action by the licensee was still slow. For example, when problems were noted in following maintenance procedures, work was stopped and the problem addressed immediately; however, response was slow to a question about possible overpressurization of an emergency diesel engine water jacket.

All key positions were filled during the assessment period. The one vacant position from the previous assessment period, Instrumentation and Control (I&C) Supervisor, was filled three fourths of the way through the assessment period.

2. Conclusion

The licensee's performance was rated Category 3 with an improving trend in this area. The licensee was rated Category 2 in the previous assessment period.

3. Board Recommendations

The SALP Board notes that the Category 3 rating is not reflective of a decline in performance from the previous assessment period, but indicates that the increased NRC inspection activity during this period identified significant concerns which previously went undetected.

D. Surveillance

1. Analysis

Evaluation of this functional area was based on routine inspections conducted by resident, NRC contract and region-based inspectors and observations by the OSTI members.

Enforcement history consisted of eleven violations and a portion of another violation. Only one of these violations was a Severity Level V and rest of the violations were Severity Level IV. Six of the violations reflected inadequate technical procedure content of which three were programmatic in nature. Two violations were programmatic deficiencies associated with the control of surveillance activities. Three violations and a portion of another were implementation breakdowns. Five violations were identified in the previous assessment period.

The previous assessment reflected the need for improvement in management's involvement to assure quality. The same occasional procedural quality inadequacies and proficiency deficiencies were apparent in this assessment period. Examples of inadequate procedure quality were improper Reactor Core Isolation Cooling (RCIC) and HPCI logic circuitry overlap testing, inaccurate sodium pentaborate concentration acceptance testing criteria, improper switch verification for offsite power sources, and incomplete testing of the remote shutdown panel transfer logic. Examples of proficiency deficiencies were failure to perform shiftly instrument checks and failure to document the periodic reactor coolant leakage.

Regarding the licensee's approach to resolution of technical issues, during the first part of the assessment period, the licensee performed a line by line verification that each Technical Specification surveillance requirement was encompassed in a surveillance procedure, began rewriting all the I&C surveillance procedures including the addition of loop sketches, and revised the scheduling process for partially completed surveillance procedures. Retraining and consulting was administered to reduce personnel errors.

All these actions were to address deficiencies from the previous assessment period and were generally insufficient to prevent reoccurrence. After completion of the Technical

Specification line by line verification, similar deficiencies in the surveillance program were identified reflecting inadequate implementation of the Technical Specification verification. The partial surveillance procedure scheduling effort was not broad enough to prevent other scheduling errors. Personnel errors did not appear to decrease even with the corrective actions taken as reflected by the operational events and the enforcement history. Certain personnel errors had the potential for safety significance involving ESF actuations and reactor scrams. Personnel errors often involved disregard of procedural guidance, or occurred as a result of technicians following deficient procedures. The one positive area was the I&C rewrite effort which appeared to be coordinated and comprehensive. Potential escalated enforcement was identified regarding the inadequate corrective actions to the surveillance problems.

In the second half of the assessment period the licensee established the Technical Specification Improvement Program. This program is comprehensive and adequate for the problems identified in this area. In conclusion, the licensee's approach to resolution of technical issues was lacking in the first part of the assessment period and showed improvement in the second half with additional emphasis still needed on the personnel error aspect.

The licensee was generally responsive to NRC initiatives with the establishment of the Technical Specification Improvement Program in response to the October 9, 1987, letter from the regional administrator on numerous problems including the surveillance area. This program has all the necessary elements to significantly upgrade the quality of this functional area. Subsequent to the assessment period, the licensee enhanced the program to include surveillances of essential support systems.

Completion of the Technical Specification verification and the I&C procedure rewrite effort were not consistent with the time frame committed to by the licensee. Additionally, the schedular commitments made by the licensee regarding the Technical Specification Improvement Program reflect shortsightedness by licensee management and a lack of understanding of the complexity and scope of the effort. This has necessitated a request by the licensee to extend the completion date for the program by six months beyond the originally scheduled completion date.

Staffing to support the surveillance effort was adequate with no problems noted in the implementation of the in service test pump and valve performance area which was a concern from the last assessment period. Previous assessment problems with clearly defining duties and responsibilities appeared corrected except in the scheduling and tracking areas which continued to

exhibit occasional deficiencies. Examples of this problem were in improper test interval established for a Standby Gas Treatment System fire protection test, an improper test interval established for containment integrity valve position verifications and not performing a Control Center HVAC chiller pump performance test on schedule.

2. Conclusion

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

3. Board Recommendations

The SALP Board notes that senior licensee management involvement is required to maintain adequate resources to keep the Technical Specification Improvement Program on schedule.

E. Fire Protection

1. Analysis

The licensee's performance in the functional area of fire protection was evaluated based on the results of one fire protection programmatic inspection (which included a review of previous inspection findings, the fire protection organization, administrative controls, fire protection system inspection, maintenance and test programs, quality assurance, technical specification review, deviation event report review, and other fire protection requirements review) during this assessment period.

Two violations regarding the fire protection area (one Severity Level IV and one Severity Level V) were identified during this assessment period. One violation was for failure to conduct quarterly fire brigade classroom instruction meetings (the licensee was conducting these meetings once every two years). The other violation was for failure to maintain a critical diesel fire pump discharge valve locked. No violations were identified in the previous assessment period.

Management involvement in assuring quality in the decision making process was adequate as demonstrated by the prompt resolution of inspector concerns as discussed below.

The licensee's approach to the resolution of technical issues from a safety standpoint was technically sound and thorough. For example, the licensee took the initiative in a timely manner to re-emphasize to control room operators the

requirement to follow the "Plant Fires" procedure for immediately activating (assembling) the fire brigade following receipt of an unplanned fire alarm.

The licensee's responses to NRC initiatives were generally completed in a timely manner and an effort was made during this assessment period to resolve outstanding fire protection issues. Two minor issues from 1984 regarding the installation of gauges in the Reactor Building and a revision to an emergency lighting surveillance procedure were not completed as scheduled; however, both were planned to be completed within 30 days following startup from the local leak rate testing outage.

The licensee has submitted two event reports regarding fire protection program deficiencies. Both of these event reports were promptly reported although minor information was lacking for one of the reports which required a revision.

The licensee's fire protection program is staffed with a qualified fire protection engineer and a qualified fire protection specialist whose responsibilities are well defined and include the engineering aspects as well as the day-to-day implementation of the fire protection program.

The licensee's fire brigade training and effectiveness were evaluated during the programmatic review. As previously mentioned, a violation and both event reports related to fire brigade training inadequacies. However, an unannounced fire drill was witnessed that demonstrated that adequate fire brigade response, manning and donning of the proper fire protective clothing (including breathing apparatus) was performed in a timely manner.

Fire detection and suppression equipment was generally well maintained with hose stations properly staged, fire extinguishers routinely inspected, fire detectors in service and fire doors closed. In the area of control of combustibles, NRC plant tours and licensee inspection records reviewed during the assessment period generally showed adherence by the licensee to the fire protection administrative procedures. However, small amounts of combustibles were observed in the Reactor Building during the plant shutdown due to ongoing painting activities. These were properly controlled.

General housekeeping was above average with only extraneous items such as tools or portable equipment, occasionally found in the Reactor Building.

2 Conclusion

The licensee's performance is rated Category 2 in this area. The licensee was not rated in the previous assessment period.

3. Board Recommendations

None.

F. Emergency Preparedness

1. Analysis

Evaluation of this functional area was based on two routine inspections and one annual exercise inspection conducted by regional-based inspectors during this assessment period.

No violations were identified during this or the previous assessment period. Four exercise weaknesses and six open items were identified during the August 1987 annual exercise inspection, indicating that exercise performance needed improvement. The weaknesses related to information flow to the Technical Support Center, an unacceptable demonstration of Assembly and Accountability, unapproved changes to the Post Accident Sampling System procedure, and an unacceptable medical drill. A management meeting with licensee personnel was held in November 1987, to discuss the corrective actions intended for the exercise weaknesses and other actions for overall program improvement. A subsequent inspection confirmed that aggressive correction actions were being taken regarding identified weaknesses, and other program improvements were actively being pursued.

Management involvement in assuring quality in this area was good. Some initial weaknesses were evident as indicated by the four exercise weaknesses which were identified in the annual exercise inspection, but corrective actions were promptly initiated for problem areas, and subsequent program enhancements were made. Overall, the program continues to improve.

In all cases, the licensee had been responsive to NRC initiatives and concerns by providing viable, sound and thorough responses in a timely manner. The licensee's approach to resolution of technical issues from a safety standpoint has remained consistently good. There were no long-standing regulatory issues attributable to the licensee.

Staffing at the management level was unchanged. In addition, staff training and qualification effectiveness was good as demonstrated by the lack of violations or significant issues during the assessment period, and performance during routine inspection walkthroughs.

Subsequent to the assessment period, a successful emergency exercise was held, demonstrating the effectiveness of corrective actions made during the assessment period.

2. Conclusion

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

3. Board Recommendations

None.

G. Security

1. Analysis

Evaluation of this functional area was based on the results of five inspections (three onsite, two in-office) conducted by region-based physical security inspectors and inspections conducted by the resident inspectors to routinely observe security activities. One onsite inspection was conducted to support plant startup evaluation, and the other two onsite inspections were routine in nature. The in-office inspections pertained to a review of the licensee's investigation of allegations, and support to the Senior Resident Inspector on a security issue.

Enforcement history has significantly improved during this assessment period. Three violations (two Severity Level IV and one Severity Level V) were identified compared to eleven violations during the previous assessment period. Although, two of the violations were identified by the licensee and did not represent a major safety concern, an Enforcement Conference conducted on April 13, 1988, emphasized the need for increased evaluation and oversight of the personnel access control program to correct programmatic weaknesses.

Staffing for the security section has also improved. Permanent assignments for the five department heads within the section have been made and department responsibilities have been clearly defined. Key supervisory assignments for security shift operations have also been made. The primary staff is one of the largest in the region, and sustained improved staff functions have been noted in reference to responsiveness to NRC concerns, timely review and submittal of security plan changes, and response to allegations. The security training department has also upgraded facilities during this assessment period.

Management involvement in assuring quality has improved during this assessment period. Self-audits by the security compliance department have improved; root cause analysis is performed for audit findings and security events; the Performance Indicator

Program continues to be upgraded; and followup action on inspection and audit findings is well documented. Equipment available to the security section is well maintained. Senior plant management personnel take aggressive corrective actions for personnel who cause security violations and exit meetings are routinely attended by senior managers, up to the Group Vice President level. Senior managers are aware of significant security issues and trends.

Technical issues are resolved in a timely and technically correct manner. Security plan submittals are detailed in nature and complete. Effective communication pertaining to security issues exist between the licensee and NRC Region III staff.

The security department is very responsive to NRC concerns. Twelve of 13 inspection findings noted during the Regulatory Effectiveness Review (RER) inspection, conducted in June 1987, have been closed by the NRC, and licensee actions for the remaining issue are adequate. Some of the findings were corrected during the RER inspection period. Licensee investigations pertaining to allegations have been thorough, well documented, and timely. Inspection concerns receive the same level of management attention and action as violations. Security management is responsive to noted observations even if they do not involve enforcement issues.

Procedural guidance for Security Event Reports (SERs) is detailed and generally conforms to the guidance in the appropriate regulatory guide. Thirteen SERs have been reported during this assessment period, compared to nine in the previous assessment period. SER criteria changed in October 1987 and the licensee has established a conservative approach to security event reporting. Eight of the thirteen SERs were caused by personnel error, three were equipment-related, and the remaining two SERs were beyond the licensee's control (bomb threat and contraband found during vehicle search). The total number of reported SERs is not considered excessive. Two of the SERs resulted in violations being cited.

Some security computer-related problems identified in inspection reports still need to be fully resolved. Personnel security screening and procedural deficiencies were noted during an inspection conducted in March 1988 and require further action action to resolve.

In summary, the improved trend in security performance can be attributed to greater operational experience, an aggressive self-audit program, effective root cause analysis for identified problems, and a more stabilized management cadre within the section.

2. Conclusion

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

3. Board Recommendations

None.

H. Outages

1. Analysis

Evaluation of this functional area was based on routine inspections conducted by resident inspectors. Areas examined included steam line instrument tap repairs, Raychem heat shrink inspections and repairs, block wall repairs, and moisture separator reheater repairs.

Enforcement history in this area continued to represent regulatory conformance. No violations or deviations were identified during this assessment period.

During the assessment period three outages in excess of two weeks occurred. The first outage, early in the assessment period, was to repair numerous steam line instrument taps that were failing from vibration. The second outage, midway through the assessment period, was to improve overall material condition of the plant. However, problems were identified in a number of areas requiring modification/repair prior to plant restart. These areas included modification of the 72CF swing bus, examination and repair of heat shrink installations, repair of emergency drain lines to the condenser, and installation of additional bracing to select block walls. The third outage, in progress at the end of the assessment period, was to perform local leak rate testing, eliminate backlogged preventative maintenance activities, perform 18 month surveillances, and complete select plant modifications. Equipment damage was identified after the shutdown involving major repair of the moisture separator reheater and a condensate pump. No refueling activities occurred during the assessment period.

Management involvement in assuring quality was generally adequate. All repair/modification activities were accomplished satisfactorily. Instructions for performing the modifications were satisfactory for work performance. Documentation was occasionally lacking. Some modification work packages required significant resources to assure the work was satisfactorily accomplished after the equipment was in service. The 72CF package was an example of this weakness. Planning and scheduling of testing was generally adequate as evidenced by coordination for local leak rate tests. In the last outage of the assessment period, appropriate management planning was not exhibited with regards to operating shift work dynamics.

Approach to resolution of technical issues from a safety standpoint was evident. Comprehensive actions were established and implemented to resolve the Raychem splice, masonry block wall, moisture separator reheater, and instrument tap problems. Good corrective actions to work package documentation problems were implemented with the establishment of quality reviews prior to submittal to the shift supervisor.

Eleven of the thirty five unplanned engineering safety features (ESF) actuations occurred during outages. Four of the ESF actuations were personnel error related. This is an improvement from the previous assessment period in terms of personnel caused ESFs during outages. However, the licensee continues to demonstrate a laxness in attention to detail that manifests itself in an increase in events during plant outages. Continued effort in this area is warranted.

2. Conclusion

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

3. Board Recommendations

None.

I. Quality Programs and Administrative Controls Affecting Quality

1. Analysis

The evaluation of this functional area addresses two related but separate functions. First, this assessment addresses the licensee's internal independent oversight activities performed by the quality control/quality assurance (QC/QA) organizations. Secondly, this assessment addresses the effectiveness of management's activities to achieve a high level of performance with respect to nuclear safety.

With respect to the evaluation of the licensee's internal and independent quality oversight activities, results of routine inspections conducted by resident, operational safety team and region-based inspectors were considered. Areas examined included quality verification methods, audit content, documentation and frequency. Also cursory reviews of committee activities and safety evaluations were performed by the operational safety team.

Enforcement history consisted of one Severity Level IV and one Severity Level V violation. Due to the inclusion of the new Technical Support functional area a meaningful parallel between the previous assessment period can not be drawn. The Severity Level IV violation was for failure to verify compliance with and determine the effectiveness of implementing the quality

program, including failure to identify a significant condition adverse to quality in an audited area. The Level V violation included multiple examples of a failure to perform audits within the periods specified by the Technical Specifications and a procedural deficiency that allowed some of the noted conditions to occur. Corrective actions to all violations were verified as acceptable. One outstanding issue associated with this area occurred late in the assessment period. The matter dealt with the onsite review committee approval of draft procedures. Due to this process, modifications were made to some procedures changing their intent.

Regarding the licensee's internal and independent quality oversight activities, management involvement and controls in assuring quality appeared to be minimal during the first part of the assessment period. There was little evidence of management reviews or efforts to ensure that audits were complete and adequate, nor that noted problems were resolved in a timely manner. In some cases, audits appeared to be conducted merely to fulfill audit requirements rather than to verify adequate performance in functional areas. In many cases, substantial numbers of audit checklist items were not audited and no evaluation was performed to determine the impact on the audited area. With little or no justification, there were multiple extensions granted to dates established for implementation of corrective action. Safety evaluations appeared weak and not properly supportive of their conclusions.

During the second half of the assessment period, substantial improvements were noted; for example, a new QA manager had been assigned and QA personnel were relocated inside the controlled area, which provides improved access for verification of plant activities. Management appeared to be concerned and actively involved with the improvement of quality verification methods and results. Stricter controls were established on who could review safety evaluations and additional training was given on performing safety evaluations. One area where a weakness was noted was QC inspectors. The inspectors were not always aware of procedural and acceptance criteria for maintenance activities in progress; however, no problems were noted for inspection of specific "hold" and "witness" points.

The approach to the resolution of technical issues was weak during the first half of the assessment period. Audits were concerned with compliance to procedures rather than with technical aspects of the activities. In several instances, problems documented as observations, which required no corrective action, were actually valid audit findings.

Considerable improvement was noted in this area during the second half of the assessment period. However, in some cases, conclusions were reached by the licensee in the evaluation of audited conditions that did not appear to be substantiated by the details included in the audit records. Methods of preparing audit checklists had changed which appeared to make the audits more performance-oriented. Additional management reviews were evident, both before and after the audit.

Responsiveness to NRC initiatives was generally good. Corrective actions to the problems in the audit area were started immediately upon identification. The proposed resolutions were acceptable and accomplished in a timely manner.

Staffing to perform required verification activities appeared to be adequate. Based upon a region-based inspection early in the assessment period there was a sufficient number of auditors and certified lead auditors. During an inspection late in the assessment period, the licensee stated that 15 QC inspectors, including some contract inspectors, were available to provide QC coverage during the LLRT outage. This appeared to be adequate based on a cursory review of the work to be performed.

With respect to the effectiveness of management's activities to achieve a high level of performance, certain areas assessed during this period, specifically emergency preparedness, security and startup testing, the licensee achieved and sustained a high level of performance with respect to nuclear safety. Management response was prompt and effective when problems occurred or deficiencies were identified.

In certain other program areas such as plant operations, maintenance, surveillance and engineering/technical support, the licensee demonstrated minimally satisfactory performance with respect to nuclear safety. Management was ineffective in its attempts to recognize and/or achieve sustained resolution of deficiencies, many of which can be traced back through several years of poor performance. At the onset of this evaluation period, NRC and the licensee identified and discussed weaknesses in each of these critical areas. Operations and surveillance received a Category 3 rating in SALP 8. Maintenance and engineering/technical support were the subject of NRC/licensee management meetings following inspections early in the assessment period, that identified significant deficiencies.

From July 26, 1987 through August 7, 1987, NRC conducted a special team inspection at Fermi, an Operational Safety Team Inspection (OSTI). The OSTI findings were discussed with the licensee at the exit meeting. The team found no single root cause. Problems encompassed a broad range of activities including operating practices, administrative controls,

surveillances, training and the corrective action process. In general these findings supported previous assessments performed by INPO, the Independent Overview Committee, NRC's restart team, and the licensee.

A majority of these problems and deficiencies were evident throughout the remainder of the assessment period. Due to a lack of attention to detail, personnel errors continued to occur including the failure to comply with procedures. Improvements in administrative controls, specifically the Technical Specification Verification program and the I&C procedure rewrite effort, suffered schedule slippages. Deficiencies in the implementation of the surveillance program continued throughout the assessment period. Design changes to correct deficiencies that have caused repeated ESF actuations during testing remain to be accomplished. Closeout of LER actions and assurance that actions taken in response to Information Notices were not always performed in a timely manner. The deficiencies that resulted in the issuance of $375,000 in civil penalties in July 1986 and a $100,000 civil penalty in May 1987 were present throughout most of this assessment period.

Early in the assessment period the licensee relied heavily on improvement programs that were an outgrowth of lessons-learned from events that occurred in 1985, at the time the full power license was issued. The Nuclear Operations Improvement Program, Reactor Operations Improvement Program and Business Plans were the licensee's road map to improved performance. However, during this portion of the assessment period, while a general improvement was noted, problems continued to occur intermittently in areas specifically addressed by these programs which showed demonstrated difficulty in achieving sustained improving performance.

A number of changes occurred part way through the assessment period that are beginning to have an overall positive impact on performance. Changes were made in the plant manager, QA manager and licensing supervisor positions to increase the quality and experience levels. Additionally, the Vice President of Engineering assumed an active operational role, and the I&C Supervisor position was filled. Using new techniques, the licensee performed more rigorous assessments of events and identified problems to determine causes and appropriate corrective actions. The threshold to situations requiring corrective action was lowered and management visibility of the problem and corrective actions status has been enhanced. In addition, with regard to personnel performance problems, accountability meetings and disciplinary actions were tools utilized to underscore management expectations. In parallel with these activities, in response to NRC initiatives,

the licensee developed methods to better monitor performance of operating crews, maintenance status, technical specification improvement program progress and the status of implementation of commitments to the NRC.

In summary, management has not been effective in its ability to sustain improved performance above that considered minimally acceptable to the NRC. Extensive NRC oversight and involvement was required to overcome licensee shortcomings and reactive response to problems. Although less significant and frequent, deficiencies were evident in personnel performance, administrative controls and plant hardware at the end of the evaluation period.

2. Conclusion

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

3. Board Recommendations

The SALP Board recognizes a positive improving trend in performance due in part to the new management team's efforts and the acquisition of new management talent in key areas.

J. Licensing Activities

1. Analysis

Evaluation of this functional area was based on the licensee's performance in support of licensing actions. The items evaluated were 10 Technical Specifications changes, two relief requests, one exemption request and followup activities associated with a Detailed Control Room Design Review/Safety Parameter Display System (DCRDR/SPDS) audit from the last assessment period. The project managers and applicable NRR technical reviewers performed the evaluation.

One Severity Level V violation was identified for failure to submit a Technical Specification change request to reflect changes in offsite and unit organizations. No violations were identified in the previous assessment period.

The licensee management's role in assuring quality in licensing related activities continued to improve during the period. Licensee submittal quality during the initial portion of the period was less than desired until the hiring of a new licensing supervisor. This supervisor worked closely with NRR to promote a better working relationship and improvements continued. Recent submittals have been generally clear and of higher quality. Licensee submittals however, have generally been

untimely, resulting in the need for the staff to expedite several reviews. This is due in part to some lack of planning by the licensee as well as some problems identified during operation. However, toward the end of the period, the licensee has demonstrated a willingness to meet with NRR on short notice to better coordinate the scheduling of licensing activities.

Many of the licensing activities during this period have been related to startup issues and the Technical Specification improvement program. Because of this program, the volume of Technical Specification change requests during this period has been unusually high and is expected to remain high until the end of the program which is scheduled for completion in December 1988.

Management appears to be taking a more direct role in licensing activities; however, there is still a need for improvement in the planning and timeliness of licensing submittals.

The licensee's approach to resolution of technical issues has shown some improvement in that the licensee has usually demonstrated an understanding of the technical issues involved in licensing activities and proposed acceptable resolutions. During the period, significant progress was made on the DCRDR and SPDS and the licensee's submittals on these subjects are currently under staff review.

The quality of licensee submittals has also improved during the period as has the licensee's approach toward resolution of technical issues. The licensee is demonstrating far greater interest in resolving technical issues and has taken the initiative in contacting NRC. Licensee submittal quality can still be improved.

The licensee's responsiveness to NRC initiatives improved during the period. In response to concerns identified by the NRC, the licensee made submittals to correct deficiencies in the SPDS and DCRDR that were identified during an audit at the very end of the previous period. Licensee efforts during this period have these issues on the path toward resolution. During the latter portion of the period, the licensee has responded promptly and accurately to information requested by the staff.

The licensee has provided appropriate members of their organization at meetings with the staff. In addition, the licensee has hired a new plant manager and licensing supervisor. The licensing supervisor has extensive background and experience in licensing. These individuals have improved the licensee's performance in licensing activities. The licensing staff is located in the Nuclear Operations Center (NOC). The NOC is located on the Fermi-2 site and consequently, the proximity of the licensing staff to the plant appears to be a significant advantage.

2. Conclusions

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

3. Board Recommendations

None.

K. Training and Qualification Effectiveness

1. Analysis

Evaluation of this functional area was based on the results of licensed operator examinations administered to six candidates, one special inspection to evaluate the adequacy of the implementation of the licensed operator requalification program, and observations by resident, Operational Safety Team and region-based inspectors while inspecting other functional areas.

Three apparent violations were identified during the assessment period associated with the operator requalification program. The severity level of these violations was under consideration at the end of the assessment period. The licensee took comprehensive corrective actions addressing each of the potential violations. Further, the licensee presented their corrective actions and implementation schedule to the NRC in a meeting held on June 9, 1987. NRC review determined that the corrective actions were adequate; however, followup inspection in the area was not conducted in that the violations have not yet been issued and as such, a formal response from the licensee has not been required. A violation related to training is discussed in the Fire Protection functional area. No violations were identified in the previous assessment period.

As discussed in the previous assessment period an inadequate level of management attention to the operator requalification training aspect of this functional area was evident. Management involvement in this area was subsequently increased and tighter administrative controls were established.

The inadequacies in the operator requalification program resulted in the issuance of a Confirmatory Action Letter (CAL). The CAL required the licensee to perform a number of analyses and reviews and submit the results to the NRC. By May 15, 1987, all the required information had been received. Based on NRC acceptance of the licensee's response and actions taken, the NRC resumed processing of license renewal applications which had been held in abeyance pending completion of the CAL items.

Also, management efforts were focused on improving operator instructor skills during the assessment period. Personnel exchanges between the operations department and the training organization helped to increase the credibility and awareness of the training organization. As evidenced by some of the operator responses to plant conditions, additional refinements in the site simulator were necessary. These changes were accomplished. These actions are viewed as positive.

Stronger feedback mechanisms were established from management to the shifts regarding their performance. Efforts to assure consistent performance from the operating shifts were not totally successful. Training initiatives to correct original weaknesses in understanding the Technical Specifications were slow in developing.

Operator licensing examinations were administered in December 1987. Four of the six candidates passed their examination. The sample size was too small to draw any meaningful quantitative conclusion. However, the success rate of the operator licensing program showed no improvement.

The training and qualification effectiveness of other organizations appeared adequate in most areas such as security, radiation/chemistry, and emergency planning. Mechanical and electrical engineering personnel were trained to the appropriate level of expertise with the exception of how to provide proper justification for preventive maintenance deferrals. Key personnel received environmental qualification (EQ) training with the only exception being maintenance personnel. The maintenance individuals responsible for EQ activities were not formally trained regarding specific EQ requirements. Also in the maintenance area, based on several procedural violations, training of first line supervisors and craft personnel needed improvement in the areas of quality consciousness and awareness of administrative controls that affect safety and quality. Training and qualification of auditors and lead auditors appeared to be adequate. INPO completed accreditation of all the training programs in May, 1987.

2. Conclusions

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

3. Board Recommendations

None.

L. Startup Testing

1. Analysis

Evaluation of this functional area was based on routine inspections of Test Condition 3 and 5 test results conducted by region-based inspectors and resident inspector observations of Test Condition 3 and 5 testing.

Enforcement history in this area continued to indicate regulatory conformance. No violations or deviations were identified during this assessment period.

Management involvement to assure quality in this functional continued to be apparent. Testing evolutions were properly controlled and scheduled to minimize impact on normal plant activities. Proper planning was always evident with extra preparation taken on the more difficult and complex evolutions. Reflective of this was the execution of HPCI testing at lower than normal power levels without causing major operational transients. A specific shift team was assigned to complete shutdown from outside the control room testing. This dedicated shift team received additional training and familiarization prior to test performance and is considered to be a positive licensee initiative. Proper procedural adherence was always noted and good documentation of test deficiencies was always performed. As a result of these actions a significant design deficiency in the HPCI system and degraded equipment performance in the feedwater control system were identified.

The licensee's approach to resolution of technical issues was appropriate as evidenced by reperformance of the major HPCI startup tests following major modifications to that system. No reportable events were attributed to startup testing personnel errors. There were few NRC initiatives in this functional area. In those few instances management was responsive and appropriately addressed the concerns.

Staffing was adequate. Personnel were experienced and knowledgeable. Authorities and responsibilities were well defined even during the transition period when the Startup Manager changed half way through the assessment period.

2. Conclusion

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

3. Board Recommendations

None.

M. Engineering/Technical Support

1. Analysis

This is a new functional area and consequently was not rated in the previous assessment period. Evaluation of this functional area was based on the results of several inspections performed by region based inspectors, resident inspectors, and one Operational Safety Team inspection. Areas examined included equipment environmental qualification, licensee actions in response to certain NRC documents (IEB 85-03, Generic Letter 84-11, Unresolved Safety Issue A-7), licensee activities with regard to selected mechanical, electrical and structural deficiencies and engineering support to the maintenance/operations departments.

Enforcement history during the assessment period was poor and consisted of ten violations. One Severity Level III, six Severity Level IV, and three Severity Level V, were identified during the assessment period. The Severity Level III violation highlighted inappropriate engineering decisions during final construction/initial licensing. These decisions resulted in the Low Pressure Coolant Injection (LPCI) loop select bus being vulnerable to a single failure. The violation incurred a civil penalty of $25,000.

Three of the violations reflected inadequate technical decisions by engineering personnel during the assessment period that affected equipment/structures performance capability. Three of the violations reflected a failure to correctly translate the design basis into drawings, one of which was safety significant and resulted in modifications to some of the masonry block walls. One violation dealt with a breakdown in the spare parts dedication process, and another involved failure of engineering personnel to properly classify a minor electrical modifications. The last violation dealt with isolated environmental qualification documentation deficiencies and was of minimal safety significance.

Another issue similar to the LPCI swing bus and of the same timeframe remained outstanding at the end of the assessment period. This issue dealt with the containment isolation portion of the primary containment monitoring piping configuration not being in conformance with General Design Criteria 56. The matter is under consideration for escalated enforcement.

Management involvement in assuring quality by addressing identified engineering problems was mixed. Proper involvement was noted in resolving main steam line instrument tap failures, vibration testing, resolving swing bus electrical circuit deficiencies, and resolution to moisture separator reheater damage. Management involvement was lacking in issues dealing with the Jamesbury butterfly valves, MSIV spring failures, use of Furmanite, analysis of masonry block walls and concrete expansion anchors, and engineering support provided to the Maintenance Department. It appears that several of the problems encountered by the Maintenance Department could have been prevented by accurate and effective support from the Engineering Department. Though some initiatives were made to increase engineering presence in the facility, this was not the norm.

The engineering effort applied to the issue of flow induced vibration cracks of instrument lines on the main steam system significantly improved the piping configuration with respect to fatigue design. This effort demonstrated excellent management involvement and attention. Similarly, during startup vibration testing, the engineering records were found to be generally complete, well maintained, and available.

In contrast, the engineering effort with respect to analysis of block walls and concrete expansion anchors resulted in three violations with multiple examples. Engineering records were in some cases not complete and contained numerous errors. With respect to the Jamesbury butterfly valves, repeated valve failures occurred due to common causes because the design weakness of the materials used was not well evaluated after the first failure. In addition, gradual degradation in the valve's performance was allowed to continue until valve failure without taking any corrective action. With respect to the failure of several MSIV springs, corrective action was taken, but was not effective because the lessons learned on one component were not extrapolated to similar components. For example, the licensee's investigation of the broken MSIV springs was limited to inner springs until a broken outer spring was found. The heat treatment, which was eventually established as the cause of the problem, was performed for both sets of springs and for the "proposed" replacement springs by the same vendor at about the same time. Site engineering had concluded that based on spring compression tests of 105% the replacement springs could be used despite corporate engineering's analysis that a 105% compression test was unacceptable. The site had failed to assume embrittled material when the fracture analysis was conducted, even though testing had identified that the material

was embrittled. These inconsistencies in the quality of engineering performance appear to be function of the individual assigned a specific task rather than engineering discipline or level of management review.

An NRR audit conducted at the end of the previous period (March 1987) on the Detailed Control Room Design Review (DCRDR) and the Safety Parameter Display System (SPDS) identified significant deficiencies in management oversight. In particular, one of the findings with respect to the DCRDR was that there was an apparent lack of licensee management support to perform a meaningful and effective DCRDR. Meetings on these two items were held during the current period in August and November 1987. As a result of these meetings, the licensee submitted an updated summary DCRDR report and SPDS report. This is further evidence that the licensee's management is demonstrating greater involvement. With respect to the DCRDR/SPDS and MSIV spring issues, significant NRC management involvement was required to achieve appropriate resolution.

The OSTI identified that overall technical support to operations appeared to be weak. Actions on operational improvement documents were slow as evidenced in the establishment of ambient room temperature criteria and electrical load lists. Operations administrative support appeared strained. Some improvements were noted in the last part of the period as evidenced by modifications to the emergency equipment cooling water system in an effort to reduce unplanned ESF actuations. However, this type of performance needed to be exhibited on a broader, more consistent basis.

The licensee's approach to resolution to technical issues from a safety standpoint was mixed. In the area of environmental qualification, the licensee demonstrated viable and generally sound approaches in resolving technical issues. In several other cases, such as validation of feedwater suction piping pressure qualification, replacement of unqualified check valve soft seats and HPCI overpressurization, resolution of engineering issues was generally sound, conservative, and thorough.

However, poor resolution of technical issues from a safety standpoint was identified in a number of areas: the lack of a program to address testing or long-term operability of MOVs identified in Bulletin 85-03, the lack of depth and timely correction of multiple failures of the Jamesbury butterfly valves, and MSIV spring failures. In addition, the Engineering Department in a number of instances did not provide effective support of the preventive maintenance (PM) program. The most significant case was the justification to defer or reschedule 137 PM activities on Class 1E circuit breakers. The engineering justification lacked thoroughness, depth, technical completeness,

and accuracy; and failed to evaluate the effects on system operability, availability, or reliability. Scheduling and availability of personnel were the predominant reasons listed for deferrals of PM items. The licensee indicated that steps would be taken to re-evaluate the justification to ensure operability and reliability of the breakers; however, the deferral of PMs without adequate justification appeared to be a pervasive and chronic problem.

Responsiveness to NRC initiatives was mixed. Generally the licensee provided sound, timely, acceptable responses. The licensee's analysis and documentation to support proposed resolution to EQ issues was adequate. In response to the NRC identified deficiencies relative to the ECCS motor adapters and termination box mountings, the licensee performed a comprehensive review and identified additional deficiencies. All deficiencies had been scheduled to be corrected in a timely manner and the program has prevented further deficiencies in this area.

Response to Bulletin 85-03, on the other hand, was poor in that requirements of the bulletin were not implemented by the requested completion date. Similarly, initial responses to two of the violations were inadequate in that they failed to adequately address the concerns identified by the original violations. Acceptable responses were subsequently received after the NRC provided a written description of how the original responses were inadequate.

A number of operational events associated with this functional area occurred during the assessment period. Twelve of thirty-five unplanned ESFs were due to either design or design control deficiencies. Approximately 25% of the LERs were due to the same cause. Three of the nine unplanned reactor protection system actuations were the result of design/design control problems. A number of these events were due to original design deficiencies.

Staffing was adequate. Key positions were identified and responsibilities were well-defined. EQ personnel were knowledgeable of technical and regulatory requirements. Only one key position, Technical Engineer, was not permanently filled.

2. Conclusion

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

3. Board Recommendations

The SALP Board notes that licensee management attention is required to further integrate the engineering function into the support of plant operations, to provide consistency in the resolution of technical issues within engineering, and to encourage engineering to become more proactive in anticipating plant problems.

V. SUPPORTING DATA AND SUMMARIES

A. Licensee Activities

During the SALP 9 assessment period, the licensee continued to implement the startup testing program. Significant outages and major events which occurred during the period are summarized below:

1. On April 11, 1987, the plant was shut down to repair several steam leaks.

2. On May 13, 1987, the plant scrammed due to failure of the south reactor feed pump.

3. On May 21, 1987, the plant was shut down to repair a valve packing which had been leaking in the reactor water cleanup system.

4. On June 25, 1987, the plant was manually scrammed because of excessive arcing from the "B" recirculation M-G set due to excessive wear of the generator brushes.

5. On June 26, 1987, an unplanned mode change occurred.

6. On July 31, 1987, the reactor scrammed while shutting down to repair feedwater check valve leakage. The plant entered an extensive maintenance outage until October 10, 1987.

7. On December 5, 1987, the plant was authorized to operate up to 75 percent power.

8. On January 15, 1988, the plant was authorized to exceed 75 percent power, the final NRC restart effort holdpoint.

9. On February 27, 1988, the plant entered a planned local leak rate testing outage following a shutdown when all four diesel generators were declared inoperable.

Fermi 2 experienced 35 ESF actuations, and 9 reactor scrams.

B. Inspection Activities

Forty-six inspection reports were issued during April 1, 1987 through March 31, 1988, however, four of these inspection reports (87006, 87008, 87012, and 87013) were addressed in the previous SALP 8 report. Forty-eight inspection reports are discussed in this SALP report and are listed below, some of which have not yet been issued to the licensee. Significant inspection activities are listed in Paragraph 2 (Special Inspection Summary) of this section.

1. Inspection Data

Facility Name: Fermi
Unit: 2
Docket No. 50-341
Inspection Reports Nos. 87000, 87001, 87007, 87014 through 87016, 87018 through 87050, 88002 through 88007, and 88009 through 88011.

Table I
Number of Violations in Each Severity Level

Functional Areas	I	II	III	IV	V
A. Plant Operations			1	4	4
B. Radiological Controls					1
C. Maintenance				3	1
D. Surveillance				10	1
E. Fire Protection				1	1
F. Emergency Preparedness					
G. Security				2	1
H. Outages					
I. Quality Programs and Administrative Controls Affecting Quality				1	1
J. Licensing Activities					1
K. Training & Qualification Effectiveness					
L. Startup Testing					
M. Engineering/Technical Support			1	6	3
TOTALS	I	II	III	IV	V
			2	27	14

2. Special Inspection Summary

a. During July 1-10, 1987, a special inspection was conducted as a result of the unplanned mode change incident of June 26, 1987 (Inspection Report No. 341/87027).

b. During July 13-30, 1987, members of Region III's Quality Assurance Program Section, and NRR conducted an inspection of the licensee's QA program, this included a followup on corrective actions taken in response to the NRR maintenance survey.

c. During July 27-August 7, 1987, an Operational Safety Team Inspection was conducted which focused on the effectiveness of management oversight of plant operational performance. This was part of RIII's overall regulatory assessment to determine the licensee's readiness to operate at power levels greater than 50% (Inspection Report No. 341/870030).

d. During August 27-20, 1987, the annual emergency preparedness exercise was conducted (Inspection Report No. 341/87029).

C. Investigation and Allegations Review

Sixteen allegations relating to Fermi 2 were received in Region III during this assessment period. Ten allegations were closed during the assessment period. Overall, seventeen allegations remained open at the conclusion of the assessment period.

D. Escalated Enforcement Actions

1. A severity level III violation and proposed imposition of civil penalty in the amount of $75,000 was issued to the licensee on September 24, 1987. This action was based on the June 26, 1987, Technical Specification violation, involving the uncontrolled heat-up of the reactor which resulted in a change from Mode 4 to Mode 3. The escalated and mitigation factors in the Enforcement Policy were consider and the civil penalty was increased by 100% because of the licensee's past poor performance in this area. However, unusually prompt and extensive corrective actions by the licensee, including disciplinary actions of the individual(s) involved warranted a 50 percent reduction in the civil penalty (Enforcement Case No. EA-87-133, Enforcement Notice No. EN-87-081, Preliminary Information No. PN-III-87-091, Inspection Report No. 341/87027).

2. A severity level III violation and proposed imposition of civil penalty in the amount of $25,000 was issued on February 11, 1987. This action was based on a design error discovered on September 8, 1987, in the circuitry of the swing electrical bus, which would have resulted in the loss of both divisions of low pressure coolant injection, during an accident condition. The civil penalty was mitigated by 50 percent because of the licensee's prompt and extensive corrective action (Enforcement Case No. EA-87-232, Enforcement Notice No. EN-88-011, Inspection Report No. 341/87049).

E. Licensee Conferences Held During Assessment Period

1. On May 11, 1987, a management meeting was conducted at the site with RIII management, NRR, and licensee representatives to discuss the status of the maintenance program including preventative maintenance, staffing, material control, training and planned corrective actions in response to the NRR Maintenance Survey.

2. On June 4, 1987, a management meeting was conducted at Region III with licensee representatives to discuss actions being taken by the licensee to ensure that all activities required by the operator licensing requalification program are implemented and to resolve the processing of pending reactor operator renewal applications.

3. On July 7, 1987, a management meeting was conducted at Region III with licensee representatives to discuss the licensee's investigation and corrective actions associated with the unplanned mode change on June 26, 1987.

4. On July 31, 1987, an Enforcement Conference was conducted in the Region III office with licensee representatives to discuss the inspection findings concerning the June 26, 1987, incident in which an unplanned mode change occurred.

5. On August 7, 1987, a management exit meeting was conducted at the site with licensee representatives, at which time the NRC Operational Safety Team Inspection (OSTI) findings were presented to the licensee.

6. On August 24, 1987, a management meeting was conducted at Monroe County Community College to discuss SALP 8, the status of ongoing licensee programs addressing issues discussed in the December 1985, 10 CFR 50.54(f) letter, the Reactor Operations Improvement Plan, and the Nuclear Operations Improvement Plan.

7. On October 5, 1987, a management meeting was conducted at the site to review outstanding issues which must be resolved prior to exceeding 50% power.

8. On October 29, 1987, a management meeting was conducted at Region III to discuss Fermi 2 plant status and plans.

9. On November 2, 1987, a management meeting was conducted at Region III to discuss the Control Room Evolution Evaluation Program.

10. On November 16, 1987, a management meeting was conducted at Region III to discuss corrective actions taken as a result of deficiencies identified during the emergency preparedness annual exercise.

11. On November 18, 1987, a management meeting was conducted at Region III to review the results of the Control Room Evolution Evaluation Program.

12. On December 22, 1987, an Enforcement Conference was held at Region III to discuss the violation of 10 CFR 50.59 on two separate occasions.

13. On February 1, 1988, a monthly meeting to discuss plant status, schedules, improvement programs, and NRC commitments was held at the site.

14. On March 29, 1988, a monthly meeting to discuss plant status, schedules, improvement programs, and NRC commitments was held at Region III.

15. On April 13, 1988, an Enforcement Conference was conducted to discuss access control programmatic weaknesses and a violation pertaining to use of force by a security officer.

F. Confirmatory Action Letters

1. On April 3, 1987, a Confirmatory Action Letter (CAL-RIII-87-003) was issued to the licensee addressing corrective actions to be taken regarding licensed operator requalification training deficiencies.

G. Review of Licensee Events Reports and 10 CFR Part 21 Reports Submitted by the Licensee

1. Licensee Event Reports (LER's)

Fermi 2
Docket No.: 50-341
LER Nos.: 87007, 87009, 87010 through 87056, and 88001 through 88008.

Fifty-seven LER's were issued during this assessment period. A table of cause code comparisons is shown below:

	(12 mo)	(12 mo)
CAUSE AREAS	SALP 8	SALP 9
Personnel Errors	40.7% (22)	28.1% (16)
Design Problems	12.9% (7)	24.5% (14)
External Causes	0% (0)	0% (0)
Procedure Inadequacies	22.2% (12)	28.1% (16)
Component/Equipment	9.2% (5)	10.5% (6)
Other	9.2% (5)	3.5% (2)
Unknown	5.8% (3)	5.3% (3)
TOTALS	100% (54)	100% (57)
FREQUENCY (LERs/MO)	4.5	4.8

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

2. 10 CFR Part 21 Reports

a. A Part 21 was reported by the licensee on June 30, 1987, regarding premature failures of hydrogen and oxygen sensors manufactured by Exosensor, Inc. The sensors are used in the post accident hydrogen/oxygen analyzers.

b. On December 3, 1987, the licensee notified the NRC of a potential 10 CFR 21 regarding unqualified Kalrez soft seats used in feedwater check valves supplied by Atwood and Morrill.

H. Licensing Activities

1. NRR/Licensee Meetings

August 1987	SPDS and DCRDR
October 30, 1987	Compensatory measures in support of GDC-56 exemption request.
November 17, 1987	Progress on SPDS
February 17, 1988	To discuss interpretations of certain Technical Specifications.

2. Commission Meetings - None

3. Schedular Extensions Granted - None

4. Reliefs Granted

September 28, 1987	Inservice Testing
October 6, 1987	ASME Code, Section XI

5. Exemptions Granted

November 13, 1988	Exemption to GDC-56 for Primary Containment Radiation Monitor

6. Orders Issued - None

7. Emergency Technical Specifications Issued

October 9, 1987	TS table changes for leakage testing
January 6, 1988	Setpoints for reactor coolant system interface

8. License Amendments Issued

Amendment No.	Description	Date
8	Editorial correction to T.S.	July 17, 1987
9	APRM setpoint action statement and control rod block information	July 21, 1987
10	Leakage test requirements for containment isolation valves	October 9, 1987
11	Administrative controls	October 22, 1987
12	Emergency diesel generator lube oil surveillance program	December 10, 1987
13	Battery surveillance requirements	January 11, 1988
14	Reactor coolant leakage	January 12, 1988
15	LPCI cross-tie valve	March 14, 1988
16	Primary containment isolation valves	March 21, 1988
17	Addition of isolation valves for the primary containment radiation monitor	March 29, 1988