

SALP BOARD REPORT

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

50-461/85001  
Inspection Report

Illinois Power Company  
Name of Licensee

Clinton Power Station  
Name of Facility

March 1, 1984 - August 31, 1985  
Assessment Period

## 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. SALP is supplemental to normal regulatory processes used to ensure compliance to 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.

A NRC SALP Board, composed of staff members listed below, met on October 16, 1985, to review the collection of performance observations and data to assess the licensee's 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 Clinton Power Station for the period March 1, 1984 through August 31, 1985.

SALP Board for Clinton Power Station:

- C. Norelius, Director, Division of Reactor Projects, (Acting SALP Board Chairman)
- R. Warnick, Chief, Reactor Projects Branch 1, Division of Reactor Projects
- H. Livermore, Senior Resident Inspector, Vogtle (former Senior Resident Inspector, Clinton)
- P. Hiland, Resident Inspector, Clinton
- F. Jablonski, Clinton Project Inspector, Division of Reactor Projects
- C. Paperiello, Director, Division of Reactor Safety
- J. Streeter, Technical Assistant, Division of Reactor Safety
- J. Harrison, Chief, Engineering Branch, Division of Reactor Safety
- C. Williams, Chief, Plant Systems Section, Division of Reactor Safety
- R. Love, Reactor Inspector, Plant Systems Section, Division of Reactor Safety
- S. DuPont, Reactor Inspector, Test Programs Section
- W. Shafer, Chief, Emergency Preparedness and Radiological Protection Branch, Division of Radiation Safety and Safeguards, (DRSS)
- M. Schumacher, Chief, Radiological Effluents and Chemistry Section, DRSS
- J. Creed, Chief, Safeguards Section, DRSS
- G. Pirtle, Physical Security Inspector, Safeguards Section
- W. Butler, Chief, Licensing Branch 2, NRR
- B. Siegel, Project Manager, NRR
- D. Humenansky, Technical Assistant to Commissioner Zech, OCM

## II. CRITERIA

The licensee's performance is assessed in selected functional areas depending on whether the facility is in a construction, preoperational, or operating phase. Each functional area normally represents areas significant to nuclear safety and the environment, and are normal programmatic areas. 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.

One or more of the following evaluation criteria were used to assess each functional area.

1. Management involvement in assuring quality
2. Approach to resolution of technical issues from a safety standpoint
3. Responsiveness to NRC initiatives
4. Enforcement history
5. Reporting and analysis of events
6. Staffing (including management)
7. Training effectiveness and qualification.

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

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

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 or construction is being achieved.

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

Category 3: Both NRC and licensee attention should be increased. Licensee management attention and 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 has also categorized the performance trend in each functional area rated over the course of the SALP assessment period. The categorization describes the general or prevailing tendency (the performance gradient) during the SALP period. The performance trends are defined as follows:

Improved: Licensee performance has generally improved over the course of the SALP assessment period.

Same: Licensee performance has remained essentially constant over the course of the SALP assessment period.

Declined: Licensee performance has generally declined over the course of the SALP assessment period.



### III. SUMMARY OF RESULTS

Licensee performance was analyzed in fourteen functional areas and determined to be acceptable. Performance showed an overall improving trend. The licensee has shown aggressive management attention and a high level of performance in the functional areas of Containment and Other Safety-Related Structures, Piping Systems and Supports, and Licensing Activities. Additional management attention is warranted in the functional areas of Radiological Controls, Preoperational Testing, and Security in preparation to receive a license for loading fuel. Continued management attention should also be given to the followup of allegations. Increased management attention to all areas of performance has been apparent during the latter part of the assessment period. Licensee management has been responsive to NRC findings and concerns; however, increased attention to details is warranted in initial responses to violations, Bulletins, 50.55(e) reports and other submittals to the Region.

	<u>Functional Area</u>	<u>Rating Last Period</u>	<u>Rating This Period</u>	<u>Trend</u>
A.	Soils and Foundations	NR	2	None
B.	Containment and Other Safety-Related Structures	2	1	Improved
C.	Piping Systems and Supports	2	1	Improved
D.	Safety-Related Components	2	2	Same
E.	Support Systems	2	2	Improved
F.	Electrical Power Supply and Distribution	2	2	Same
G.	Instrumentation and Control Systems	2	2	Same
H.	Quality Programs and Administrative Controls Affecting Quality	2	2	Same
I.	Preoperational Testing	2	2	Same
J.	Radiological Controls	2	2	Same
K.	Security	NR	2	Improved

L.	Operational Readiness	NR	2	None
M.	Licensing Activities	2	1	Improved
N.	Overinspection	NR	2	Same

NR - Not rated because of limited work and inspection activity.

#### IV. PERFORMANCE ANALYSIS

##### A. Soils and Foundations

##### 1. Analysis

Examination of this functional area consisted of portions of one inspection by region-based inspectors, two inspections by resident inspectors, and a portion of the NRC Construction Appraisal Team (CAT) inspection. Areas examined included (1) soil stabilization activities on the plant site proper and at the Clinton Lake Dam, and (2) a review of earthwork logs for safety-related Class B structural fill.

Little or no safety-related soils work was in progress during the assessment period and inspection effort in this functional area was limited to reviewing quality records documenting earth fill and geotechnical construction. The NRC inspector's review was incomplete in this area because the licensee did not have information at hand to clarify several general questions. The questionable areas involved QA records to verify that lift thicknesses, densities, material qualities and inspection frequencies, did in fact, meet specifications and procedures. The licensee indicated that adequate clarity could be provided and the data would be assembled for review. The item was left open for further review. During the CAT inspection this same matter was still open.

One violation was identified by the CAT inspection in regards to the adequacy of soils records:

Severity Level IV - failure to implement adequate corrective action for nonconforming soils test records. (50-461/85030).

This violation was significant because the licensee had identified the problem nine months prior to the CAT inspection but had failed to provide a timely resolution to the problem .

Management attention was directed toward stabilization of plant environs. Work in progress both onsite and at the Clinton Lake Dam was evidence of a continuing commitment to prevent soil erosion.

No allegations were reviewed in this functional area.

##### 2. Conclusion

Licensee performance is rated Category 2 in this functional area. Licensee performance was not rated in the previous assessment period. No trend was identified.

3. Board Recommendations

NRC should perform a followup inspection to assure foundation adequacy and licensee compliance in the geotechnical area.

B. Containment and Other Safety-Related Structures

1. Analysis

Examination of this functional area consisted of ten inspections by region-based inspectors, portions of four inspections by resident inspectors, and a portion of the NRC CAT inspection. Areas examined included: (1) structural steel field verification and overinspection activities; (2) a field walkdown to compare as built conditions with design and records for the fabrication and erection of structural steel in the Auxiliary Building and Containment; (3) observation of completed work and selected records for containment penetrations; (4) licensee actions related to previous inspection findings and 10 CFR 50.55(e) items; (5) in-process welding, bolting, containment penetration sealing, and verification of weld filler metal controls; (6) welding and nondestructive testing activities associated with structural steel fabrication, erection, and modification; (7) fuel storage pool and refueling cavity liner fabrication; (8) containment liner and containment penetration installation; (9) drywell wall and penetration installations; (10) reinforced concrete construction and structural steel installation; and (11) allegations brought to the attention of the NRC.

One violation was identified during the assessment period in this functional area:

Severity Level IV - failure to implement adequate corrective action for inadequate cadweld operator test frequency (50-461/85030).

This violation was considered significant because of the lack of timely corrective action by the licensee but not significant in regards to the total cadweld operator testing program. There was no problem identified with the tensile strength requirements of the cadwelds themselves. Other NRC inspections in this area did not result in any violations.

During the assessment period the adequacy of control over drilling and coring activities was assessed to assure that pertinent information regarding damaged reinforcing steel was properly documented and dispositioned by the licensee and design engineers to ensure adequate structural integrity. No problems were identified.

During the assessment period, portions of three inspections were devoted to the Overinspection Program of items in this functional area. The inspection performed early in the assessment period of several thousand welds reported that in



many cases reinspections were overly conservative and site inspectors were identifying weld attributes as unacceptable which, in fact, were acceptable. Another NRC inspection reported in this functional area that requirements were being met. Late in the assessment period the NRC learned that approximately one third of the accessible category 1 structural steel beams were not in the Overinspection Program. The NRC questioned this exclusion and was pursuing resolution of this issue at the end of the assessment period. The NRC has expended considerable time on overinspection activities in this functional area.

During the assessment period, three allegations pertaining to this functional area were reviewed. The three allegations primarily related to: (1) control elevation markers being off from the true location; (2) concrete expansion anchors were incorrectly installed; and (3) overinspections in the area of structural steel were of questionable quality. A re-survey of the elevations in question established that the control markers were within practical surveying tolerances. Incorrect installation of expansion anchors was substantiated; however a 10 CFR 50.55(e) report had been issued for this deficiency and acceptable corrective action was taken by the licensee and verified by the NRC. The specific example of questionable overinspection of structural steel cited by the alleged was substantiated; however, upon the NRC inspector's review of a random sample of the overinspection effort, no trend of inadequate inspections could be found. The allegation was confirmed but appeared to be an isolated case.

For this functional area, the inspectors determined that management involvement and control was such that decisions consistently were made at a level ensuring adequate management review. Reviews were timely, thorough, and technically sound. Records were complete, well maintained, and available. The licensee's approach to resolution of technical issues from a safety standpoint routinely exhibited conservatism. Enforcement history was good, that is, there were no major violations and only one nonrepetitive minor violation.

The previous SALP report noted two open problems: (1) failure to report a problem via the 50.55(e) system, and (2) failure to perform prompt corrective action in regards to a containment liner weld. Subsequent action by the licensee indicates that the site reporting system worked properly, that careful examination of the weld discontinuity indicated chewing gum was placed on the weld after painting and inspection, and was, therefore, not an attempt to mask the weld. Corrective action by the licensee was intensive and satisfactory.

## 2. Conclusion

Licensee performance is rated Category 1 in this area. The licensee was rated Category 2 during the previous assessment

period. Licensee performance improved during the assessment period.

3. Board Recommendations

None.

C. Piping Systems and Supports

1. Analysis

Examination of this functional area consisted of thirteen inspections by region-based inspectors, portions of eight inspections by resident inspectors, and a portion of the NRC CAT inspection. Areas examined included (1) piping and support installations and field verification/overinspection activities; (2) review of discrepancies and engineering dispositions performed regarding large bore piping, small bore piping, and pipe support overinspection deficiencies; (3) preservice inspection of pressure retaining components; (4) review of selected piping weld repair records; (5) reactor coolant system and connecting system hydrostatic testing activities; (6) independent verification inspection of construction activities and materials using the NRC NDE van and contractor technicians under NRC direction; (7) licensee actions related to previous inspection findings including 10 CFR 50.55(e) and 10 CFR 21 items and IE Bulletins; (8) material storage; (9) energy absorbing material in pipe whip restraints; (10) installation of concrete expansion anchors and diesel generator exhaust silencer supports; and (11) allegations brought to the attention of the NRC.

Three violations were identified as a result of NRC inspections as follows:

- a. Severity Level V - failure to follow procedures for documenting an unacceptable condition during installation of a pipe support. (50-461/84028)
- b. Severity Level V - failure to identify excessive porosity in a piping weld. (50-461/84035)
- c. Severity Level IV - Licensee's program was not adequately implemented in that there was a failure to model and analyze two ASME Class I snubbers in accordance with safety analysis report commitments. (50-461/85030)

The licensee's initial response to the first violation was not complete and required additional information in order to provide an adequate basis for closure. The licensee, in each case, conducted extensive reviews in response to the notice of violation to determine the cause and properly correct the deficiency. No violation was repetitive from the previous

assessment period and none appeared to have programmatic implications. Violation c. above was denied by the licensee after the assessment period ended. NRC review of this matter has not been completed.

During the assessment period, thirty-three allegations pertaining to this functional area were reviewed. The 33 allegations primarily related to: (1) quality of piping and pipe support drawings, welds, and installations; (2) deficiencies in storage and maintenance; (3) quality of vendor audits; (4) quality of inspections by QC; (5) qualification of personnel; (6) adequacy of as-built piping data; and (7) intimidation of welders and inspectors. Twenty-three of the allegations were not substantiated; ten allegations were substantiated resulting in two violations described in paragraph H.1.d and e.

The significance of the remaining substantiated allegations was minimal, because in several instances the licensee was aware of the problems and had taken appropriate corrective action, and in other instances the person making the allegation was not aware of the existence of specifications or procedures that controlled the activities in question.

Independent measurements made using the NRC Region I mobile NDE van did not disclose any significant deficiencies. One minor violation (item b., excessive porosity) discussed above resulted in prompt action by the licensee to determine and correct the root cause of the deficiency. Results of the independent measurements clearly indicate an improvement in performance by the licensee in this functional area over the previous SALP assessment period.

An item identified at another site that related to the use of potentially defective energy absorbing materials in pipe whip restraints was aggressively reviewed by the licensee and determined not to be a problem at Clinton Power Station. The review and testing program initiated by the licensee was very responsive to the NRC initiative, clearly demonstrated management's desire to assure quality, and provided a sound technical basis for resolution of the item.

For the areas examined, the inspectors determined that management control systems consistently showed evidence of prior planning and assignment of priorities. Activities were controlled through the use of well stated, disseminated, and understandable procedures. The licensee's actions in response to NRC initiatives in almost all cases indicated they understood the issues and their reviews were timely, thorough, and technically sound. The approaches used to evaluate verification/overinspection program discrepancies demonstrated clear understanding of the issues, and were viable, conservative, technically sound, and thorough. Records were generally complete, well maintained, and available. Records also showed that the preservice inspection equipment and material certifications were current and complete, and the personnel



performing verification/overinspection program inspection, systems hydrostatic testing, and nondestructive examinations were trained and certified. Audits and surveillances were generally complete, timely, and thorough. The violations identified were minor, not repetitive, nor indicative of programmatic breakdown.

2. Conclusion

Licensee performance is rated Category 1 in this area. The licensee was rated Category 2 during the last assessment period. Licensee performance has been improving over the course of the SALP assessment period.

3. Board Recommendations

None.

D. Safety-Related Components

1. Analysis

Examination of this functional area consisted of two inspections by region-based inspectors, portions of three inspections by resident inspectors, and a portion of the NRC CAT inspection. Areas examined were limited in scope and included: (1) review of previously identified items; (2) in-process observation of reactor pressure vessel (RPV) stud installation; (3) RPV internals installation; (4) installation and test of spent fuel storage racks; (5) in-process review of welding control for RPV internals installation; (6) mechanical equipment installation including emergency diesel generators, diesel generator fuel oil day tanks, and standby liquid control pumps; (7) welding and NDE records for reactor vessel internals modification and installation; (8) visual inspection and review of NDE records for six vendor supplied tanks; (9) routine tours of the construction site to assess the adequacy of housekeeping, storage, and maintenance conditions of materials and equipment, and potential for fire hazards; and (10) completed work and selected quality records related to material certification, installation, and cleanliness of components installed in the reactor recirculation system.

One violation was identified during the assessment period, as follows:

Severity Level IV - failure to assure that vendor supplied tanks, heat exchangers, and radiographs conformed to procurement documents. (50-461/85030)

This violation has significance because vendor procured tanks and heat exchangers were accepted and installed with deficient welds, and some of the vendor radiographs for the containment liner and dry well wall area did not have the required weld and



film quality. This potentially generic problem has been brought to the attention of the NRC Vendor Program Branch and an Information Notice relating to the welds problems has been issued to licensees.

In general, housekeeping throughout the power block and site storage areas has been adequate. The licensee has been responsive to NRC concerns during the assessment period when areas of the plant or a specific system were noted to be in a degraded condition. The licensee has established cleanliness zones in the plant and has maintained adequate fire protection during the assessment period. The storage of material and the maintenance of plant equipment was satisfactory. Additional comments on plant housekeeping can be found in section L of this report.

As noted in the previous SALP report, temporary "in vessel" fuel racks had numerous weld discontinuities, and nonconformance reports associated with the racks had been incorrectly dispositioned. Actions to correct the problems included amending the Final Safety Analysis Report to include the quality requirements and welding code applicability, repositioning the nonconformance reports, and repairing the weld defects.

Inspection activities in this area were limited because construction was essentially completed. For the areas examined, the inspector determined that the management control systems met regulatory requirements. Records were complete, well maintained, and available.

No allegations were reviewed in this functional area.

2. Conclusion

Licensee performance is rated Category 2 in this area. This is the same rating as given in the previous assessment period. Licensee performance has remained essentially constant over the course of the SALP assessment period.

3. Board Recommendations

None.

E. Support Systems

1. Analysis

Examination of this functional area consisted of two inspections by region-based inspectors. Areas examined included: (1) followup and review of licensee actions regarding heating, ventilation and air conditioning (HVAC); (2) review of a 10 CFR 50.55(e) report; (3) review of the implementation of the revised QA program since lifting Stop Work Orders 014, 015, and 020; (4) procedures and instructions; (5) welder qualification

records; (6) inspector certification records; (7) indoctrination and training of personnel; (8) identification and control of materials and components; (9) selected nonconformance reports and installation documentation; and (10) an as-built verification of selected portions of the HVAC system.

No violations or deviations were identified.

For the areas examined the inspector determined that activities related to HVAC installation and inspection were controlled through the use of well stated and defined procedures.

Observations of work indicate that personnel have an adequate understanding of work practices and that procedures were adhered to. Records were found to be generally complete, well maintained, and available. The records also indicate the personnel performing welding and QA/QC surveillances and inspections were being properly trained and that they were certified.

No allegations were reviewed in this functional area.

2. Conclusion

Licensee performance is rated Category 2 in this area. This is the same rating as given in the previous assessment period. Licensee performance has generally improved over the course of the SALP assessment period.

3. Board Recommendations

None.

F. Electrical Power Supply and Distribution

1. Analysis

Examination of this functional area consisted of eight inspections by region-based inspectors, portions of six resident inspections, and a portion of the NRC CAT inspection. Areas examined included: (1) review of previous inspection findings; (2) observations of raceway and equipment installations; (3) observations of electrical cable installation and terminations; (4) equipment storage and maintenance activities; (5) training and qualification of personnel; (6) hanger reinspection, field verification and overinspection activities; and (7) followup on allegations brought to the attention of the NRC.

Five violations were identified as follows:

- a. Severity Level IV - failure to provide adequate dispositions on nonconformance reports (four examples) (50-461/85013).

- b. Severity Level IV - failure to effectively implement certain inspection activities (three examples) (50-461/85030).
- c. Severity Level IV - failure to verify the availability and acceptability of vendor documentation (approximately 50 examples) (50-461/85041).
- d. Severity Level V - failure to provide adequate procedures and failure to follow procedures (50-461/85042).
- e. Severity Level V - failure to provide adequate procedures to implement the requirements of upper tier procedures (50-461/85042).

The first violation identified four NCRs that were dispositioned "written in error" when in fact they were valid deficiencies. The second violation identified the failure to assure that safety-related raceway was installed in accordance with FSAR commitments for electrical separation; the failure to assure that only qualified materials are installed under that Maintenance Work Request Program; and the failure to assure that required insulating materials had been installed on safety-related 5kV power cable terminations. The third violation identified approximately 50 instances where the completed Documentation Checklist had been removed from one receiving report package, changes made, and inserted in another receiving report package. The fourth violation identified that procedures did not address the use of Potential Interaction Reports to document multiple interactions requiring different dispositions and Interaction Reports dispositioned use-as-is were closed without reference to applicable calculations. The fifth violation identified the failure of QC inspectors to record the presence of a QC accept stamp on subdivided materials. Licensee actions to correct these violations will be reviewed during subsequent inspections prior to fuel load. The violations were not repetitive of violations identified during the previous assessment period.

As noted in the two previous SALP reports, numerous problems were identified with QA, QC, drawings, installation of hardware, and associated records. As a result of these problems, the licensee initiated a 100% reinspection program of cable tray hangers installed prior to June 28, 1982, (old work) and an Overinspection Program described in Paragraph N, of all electrical and instrument and control work activities. The hanger reinspection program involved approximately 5100 hangers and is scheduled for completion in 1985. Inspections in this area indicated that the reinspection/rework program did identify and resolve hardware deficiencies. The NRC will continue to follow this program. The licensee has requested NRC concurrence in terminating the Overinspection Program. NRC is in the process of reviewing the data provided to substantiate the request for termination. None of the nonconformances identified



by overinspection in this functional area was safety-significant. In addition to the reinspection/overinspection programs, the licensee has implemented positive corrective actions in the areas of audits and documentation review by removing these responsibilities from Baldwin Associates (except audits required by the ASME program) and placed these responsibilities under the control of the licensee's QA program.

During this assessment period, 54 allegations pertaining to this functional area were reviewed. These 54 allegations primarily related to: (1) material certification and traceability; (2) electrical raceway support welding; (3) qualification, training, and certification of personnel; (4) discrimination, intimidation, harassment, and blackballing of personnel; (5) violations of procedures or changes to them; (6) control and use of drawings and documents; (7) push for production; and (8) disagreement with dispositions to nonconformance reports. Nineteen allegations were not substantiated. Thirty-five of the 54 allegations were substantiated, resulting in one violation as described in paragraph e. above. Thirty-four substantiated allegations did not result in violations for one of the following reasons; the licensee was aware of the problem but had not completed corrective action; the alleged was not knowledgeable of procedures or specifications which satisfied the concern; or the concern did not violate a requirement.

Corrective actions initiated by licensee management during this period appear to have been effective. The inspectors determined that management generally provided timely resolutions that were acceptable. The licensee was responsive to NRC concerns and took appropriate corrective actions to resolve specific and generic issues from a technical and safety standpoint.

2. Conclusion

Licensee performance is rated Category 2 in this area. This is the same rating as the previous assessment period. Licensee performance has remained essentially constant over the course of the SALP assessment period.

3. Board Recommendations

None.

G. Instrumentation and Control Systems

1. Analysis

Examination in this functional area consisted of significant portions of seven region-based inspections, and a portion of the NRC CAT inspection. Areas examined included: (1) review of previous inspection findings; (2) observation of raceway and



equipment installation; (3) observation of electrical cable installation and terminations; (4) equipment storage and maintenance activities; (5) observation of instrument sensing line installation; (6) hanger reinspection, field verification, and overinspection activities; (7) training and qualification of personnel; and (8) followup on allegations brought to the attention of the NRC.

This functional area was also involved in the licensee's reinspection program of old work, field verification, and overinspection. Details of these programs were discussed in Paragraph F. None of the nonconformances identified by overinspection in this functional area was safety significant.

Two violations were identified during the assessment period as follows:

- a. Severity Level IV - failure to ensure that instrumentation piping and fittings were protected from entry of foreign material. (50-461/84043)
- b. Severity Level V - failure to ensure that vendor documentation was complete and acceptable. (50-461/84043)

The first violation was indicative of recurring housekeeping problems. As indicated in Paragraph L, housekeeping was identified as a problem throughout the plant. Senior licensee management was responsive and made good effort in correcting the problem by establishing more restrictive cleanliness zones and increased surveillances. The licensee's response to the second violation was not complete and required additional information in order to provide an adequate basis for closure; however, this failure of the vendor to sign and date documents appeared to be an isolated case.

During this assessment period, 12 allegations pertaining to this functional area were reviewed. The allegations were in regard to: (1) qualifications of engineers; (2) lack of permission to prepare Nonconformance Reports (NCRs) and Field Change Requests (FCRs); (3) "vaulting" travelers without permanent hangers being installed; (4) bend radius/ovality of instrument piping not inspected; (5) "sugaring" of stainless steel instrument tubing; (6) identical tubing material requisition numbers; (7) improper closure of NCRs; (8) termination of a field engineer; (9) use of "unstated" drawings and other drawing controls; (10) push for production; (11) control of changes to procedures and other documents; and (12) discrimination. Seven allegations were not substantiated. Four substantiated allegations did not result in violations for one or more of the following reasons: the alleged was not knowledgeable of the procedure which satisfied the concern; the licensee was aware of the problem but had not completed

corrective action; or tests showed that design loading was not affected. One allegation, discrimination, remained open pending completion of the Department of Labor's review.

For the areas examined, the inspector determined that licensee management's understanding of the issues was generally apparent. Resolutions to problems were generally timely and corrective actions effective. It was also observed that, in general, the licensee was responsive to inspector concerns and took appropriate corrective action to resolve specific and generic issues from a technical and safety standpoint.

2. Conclusion

Licensee performance is rated Category 2 in this area. This is the same rating as given in the previous assessment period. Licensee performance has remained essentially constant over the course of the SALP assessment period.

3. Board Recommendations

None.

H. Quality Programs and Administrative Controls Affecting Quality

1. Analysis

Examination of this functional area consisted of six inspections by region-based inspectors, portions of ten inspections by resident inspectors, and a portion of the NRC CAT inspection. Areas examined included: (1) operational QA program; (2) QA/QC administration; (3) QA for preoperational testing; (4) procurement; (5) safety committee; (6) previously identified items; (7) review of licensee action on IE Bulletins and Circulars; (8) material traceability and control; (9) control of design and design change documents; (10) and corrective action measures.

Significant deficiencies in the licensee's QA Program were found by NRC inspectors in February 1981. Cited problems were identified with seismic Category 1 large bore pipe supports and restraints design, fabrication, installation, and inspection. The licensee took action to correct the deficiencies. More serious QA problems were discovered in December 1981. Allegations were made by electrical contractor employees to the NRC. In January 1982, all safety related electrical work was ordered stopped by the licensee. Shortly thereafter work was ordered stopped by the licensee in the areas of heating, ventilating, and air conditioning; instrumentation; and structural steel. Representatives from the NRC met with senior licensee management personnel in January 1982 to discuss the stop work orders and the licensee's recovery plan. Additional meetings between NRC and the licensee have taken place since then on a recurring basis. All work resumed by December 1983 after each affected area was reviewed and verified ready by the

NRC. The meetings between NRC and licensee management resulted in the licensee's commitment to perform an overinspection of completed work as further described in Paragraph N.

Five violations were identified during the assessment period in this functional area, as follows:

- a. Severity Level V - failure to followup on outstanding document transmittals to verify receipt of current revision of construction documents. (50-461/84017)
- b. Severity Level V - failure to properly implement document control procedures in the filing and updating of one copy of the BA Project Procedures Manual, and in the posting of design change documents in specifications. (50-461/85030)
- c. Severity Level IV - bolting materials for mounting certain plant equipment were not as required by applicable drawings and specifications. (50-461/85030)
- d. Severity Level IV - failure to identify procedural violations during quality review of documentation. (50-461/84030)
- e. Severity Level IV - failure to comply with the procedure for documenting nonconformance reports. (50-461/85026)

The first two violations showed generally good management involvement in the resolution of the problem; corrective actions were prompt. The third violation concerned traceability and control of fasteners and mounting bolts. In general, it was found that the traceability and control of material at the site was satisfactory. The licensee has stated that their "Vibration Monitoring" program would trend the performance of equipment which exhibited the fastener deficiencies. Review of this item was still open at the end of the assessment period. The fourth violation has significance because there were potentially generic problems with the contractor's QA organization final review of documentation to assure that work had been accomplished in accordance with all procedural requirements. The licensee's first response to the violation did not adequately respond to the stated problem; the second response was satisfactory. The licensee determined that the incident was isolated to a single individual and event. The fifth violation was significant because nonconforming hardware conditions were being resolved and corrected in a way that circumvented the established nonconformance system. The extent of this problem was being evaluated by the licensee at the end of the assessment period.

During the assessment period, as discussed throughout this report, several responses to NRC notices of violation required additional information and/or clarification in order to establish acceptability of the response. One IE Bulletin



response was found not to address all required information. Numerous Safety Evaluation Report confirmation of implementation items, identified by the licensee as ready for NRC inspection and closure, were not closeable on the basis of the information provided by the licensee. These items indicate a need for added attention to detail on the part of individuals performing the work and the need for increased management attention in this area.

QA/QC staffing for both the licensee and the licensee's construction contractor, Baldwin Associates, has remained at a level throughout the assessment period that was sufficient to support ongoing construction, inspection, and quality recovery programs.

Of particular merit was the licensee's QA surveillance program. The surveillance program has been instrumental in providing a continuous overview of day to day activities, in identifying problem areas in their early stages, and in effecting prompt corrective action to identified problems.

The QA program for preoperational testing was reviewed and determined to be acceptable.

There was evidence of prior planning usually with defined procedures for control of activities. Decision making was usually at a level that ensured adequate management review. Records were generally complete, well maintained, and available. Corrective action was timely and effective in most cases.

No allegations were reviewed in this functional area.

2. Conclusion

Licensee performance is rated Category 2 in this area. This is the same rating as given in the previous assessment period. Licensee performance has remained essentially constant over the course of the SALP assessment period.

3. Board Recommendations

None.

I. Preoperational Testing

1. Analysis

Examination of this functional area consisted of five intensive region-based inspections and a portion of eight inspections by resident inspectors. Areas examined included: (1) indepth reviews of preoperational test procedures; (2) reviews of administrative controls; (3) observation of maintenance and preoperational test activities; (4) observation of Nuclear Steam Supply System integrated flush; and (5) test witnessing.



Due to the small number of preoperational tests initiated, only limited preoperational testing activities were witnessed during the assessment period. No violations or other significant findings were identified. However, subsequent to the SALP period two inspections were conducted and both identified violations: (1) failure to control preoperational test sequence and (2) inadequate preoperational procedure (Standby Liquid Control System). Both of these findings appear to be administrative weaknesses.

For those activities observed, personnel appeared to be well trained and knowledgeable, with sufficient numbers of test and support personnel available to accomplish important tasks. Procedures were followed and records of testing activities were properly prepared. Complex evolutions were adequately controlled with well established interfaces. Management was constantly involved throughout the assessment period.

The inspectors identified the need for program improvements to assure responsibilities were clearly understood during the testing phase. These needed program improvements were:

- a. Test Program - clarification to distinguish construction activities from operational activities. The licensee made improvements by clarifying commitments to applicable Regulatory Guides and Standards.
- b. Test Program Administration - clarification of administrative controls in document control, preventive maintenance, and equipment protection to fully comply with Regulatory Guide 1.68. The licensee made improvements by committing to all Regulatory Guide 1.68 requirements in the FSAR.

The above concerns were corrected by the licensee during this assessment period. Other areas of the licensee's testing program met Regulatory Guides and Standards including controls for design changes and modifications, and control of jumpers and lifted leads during testing. Additional effort is underway to develop a design change and modification program for operations. The licensee also has demonstrated aggressive management attention by identifying and promptly correcting program weaknesses such as resolving previous inspection findings. Improvements have been noted in resolving previous inspection items in a timely manner.

No allegations were reviewed in this functional area.

## 2. Conclusion

Licensee performance is rated Category 2 in this area. This is the same rating as given in the previous assessment period. Licensee performance was considered to be proceeding positively over the course of the SALP assessment period; however,

subsequent to the assessment period two inspections were conducted in this area and both resulted in violations. Consequently, the trend is considered to be the same and there is concern about the licensee's ability to perform a quality test program when preoperational activities increase.

3. Board Recommendations

The Board recommends that due to the significant amount of preoperational testing remaining to be performed and approved, the licensee should dedicate sufficient resources and management attention to ensure that the testing program is effectively implemented. The Board notes that inspection findings identified just after the end of the assessment period indicated some administrative weaknesses which are deserving of licensee management attention to prevent recurrence.

J. Radiological Controls

1. Analysis

Five preoperational inspections were conducted during the assessment period by regional specialists. One inspection conducted three weeks after the assessment period is also reflected in this appraisal. The inspections covered (1) radiation protection, (2) radiological environmental monitoring (REMP), (3) chemistry/radiochemistry, and (4) radwaste. No violations were identified.

Licensee management support for the radiation protection program appears good. This has been demonstrated by the licensee's responsiveness to identified problem areas such as: the ALARA identification and resolution program; weaknesses in the radioactive material receipt program; and the need to strengthen the experience level of the radiation protection staff. These matters are being satisfactorily resolved by the licensee.

Staffing of the professional and technician health physics positions is almost complete. The staff appears to be qualified, well organized, adequately trained, and stable. The most noteworthy weakness in the staff is the lack of Boiling Water Reactor (BWR) experience; however, the Radiation Protection Manager (RPM) and the Health Physics (HP) Supervisor have considerable BWR experience. The technicians and professional staff continue to receive experience at other operating plants. The staff has several persons with technical expertise in radiological engineering. The health physics training program, which includes abundant on-the-job training, appears good.

Chemistry group staffing consisted of one supervisor and nineteen supporting personnel which is at the authorized level. The group is currently augmented by three technical consultants, two training consultants, and nine or ten contract technicians.

The staff is academically qualified with most of the fourteen Rad-Chem technicians (RCTs) having bachelors degrees or nuclear navy experience. Experience in chemistry is satisfactory, but nuclear power plant radiochemistry experience is limited. RCT training has slipped appreciably about three months from targets anticipated in the spring of 1985, owing partially to delays in installation of laboratory ventilation equipment which is a prerequisite to open source radiochemistry work. The RCTs are currently receiving Phase III training on the Post Accident Sampling System. All but one, a newly hired RCT, have completed Phase I and Phase II training. Formal and hands-on training in radiochemistry and gamma spectroscopy is now scheduled for completion in October 1985, for at least half of the RCTs.

The delay in installation of ventilation equipment has reduced the opportunity for the RCTs to complete their qualifications and become fluent in radiochemical analyses through on-the-job work. Further slippage will jeopardize laboratory readiness for the licensee's projected January 1986, fuel load. The delay will also require more than normal management oversight of laboratory activities during early plant operation. In recognition of this problem, the licensee has agreed to retain a qualified radiochemistry consultant to advise and assist the Supervisor-Chemistry in oversight of the laboratory for a period of at least six months after fuel load.

The Supervisor-Chemistry recently completed vendor chemistry and radiochemistry courses and one month of observation training at Farley Nuclear Generating Station, and two months of "hands-on" training at LaSalle Nuclear Generating Station. The third month of hands-on training at LaSalle, originally anticipated, will be obtained at Clinton while working with the retained consultant.

The health physics staff has performed well in identifying potential radiological problems in all areas of the plant; however, after initially strengthening their controls over contractor radiographer activities, their assessment of a recent radiological incident was weak. The licensee continues to correct self and inspector identified problems and programmatic weaknesses. The RPM and Power Plant Manager have been responsive to the inspector's suggestion of instructing the plant staff supervisors in the need for emphasizing to the workers the importance of employee adherence to radiological procedures and controls. The procedure review program is continuing and procedures have been strengthened.

Laboratory and radiation protection facilities and space appear adequate to perform all necessary work functions. Ventilation in the laboratory is expected to be completed in the fall of 1985. At present, the licensee has the capability of performing limited nonradioactive chemical analyses. Most laboratory equipment was undergoing testing and calibrations. Technicians were becoming familiar with operating the equipment. A limited QA/QC program for operating chemical instruments appeared



adequate, but a QC program for chemical analyses had been implemented only to a limited extent. Nonradiological chemical procedure development was almost complete.

Counting instruments, except for a proportional alpha-beta counter on order, are in place and operational. Calibration sources and solutions are ordered and the licensee expects to prepare standards and complete calibrations in October 1985. Currently only a limited number of RCTs are knowledgeable on the gamma spectrometer and liquid scintillation counting systems. Considerable work remains to be done to qualify other RCTs in their operation, to complete procedures, and to fully implement QC programs to verify capability of instruments and analysts. These activities will have to be essentially completed prior to fuel load.

The Radiological Environmental Monitoring Program (REMP), initiated in 1980, is well established. Sample collection and analysis are being performed by a qualified and experienced contractor. Data recovery and reporting have been satisfactory and no trends or significant anomalies have been observed.

Expansion to full implementation was scheduled for 1985, with the addition of baseline iodine sampling. Difficulty in locating milk animals within 5 miles of the plant has forced the licensee to plan to sample grass and leafy vegetation in place of milk. It is expected that the licensee will have fully met REMP program commitments by fuel load.

The remaining major plant systems scheduled for completion by fuel load are the liquid and gaseous radwaste system preoperational tests and preoperational tests and calibration of the process and area radiation monitors. These tests are currently scheduled to be completed and the systems turned over to the plant staff during December 1985. Although not yet installed, a vendor supplied radwaste system is scheduled to be operational by fuel load. The licensee has submitted a Process Control Program (PCP) covering operation of the vendor supplied solid radwaste processing system to NRR for approval.

No allegations were reviewed in this functional area.

## 2. Conclusion

Licensee performance is rated Category 2 in this area. This is the same rating as given in the previous assessment period. Limited experience in operating plant radiochemistry will place great importance on procedure development and training in this area.

### 3. Board Recommendation

Inspection frequency and intensity should be increased, as appropriate to assure that the licensee is prepared for fuel load. Continued senior licensee management attention is warranted to support fuel load.

## K. Security

### 1. Analysis

Examination of this functional area consisted of five safeguards inspections which addressed (1) security measures for receipt and protection of new fuel, and (2) actions and progress for implementation of the security program required for operations. Initial inspections concentrated on the adequacy of the licensee's planning and scheduling for program completion.

The licensee's security requirements become effective upon issuance of an operating license; therefore, no violations have been cited during this assessment period. Inspection findings have been identified and must be resolved prior to license issuance.

The licensee's planning and scheduling program was found to be generally acceptable. An integrated security system implementation schedule had been developed and most major program elements were included. Additional program elements identified by the NRC have been included in the schedule. Although some element schedule completion dates were not met, general adherence to schedule completion dates has been adequate. Major security system elements (for example, security computer system and alarm systems) completion dates have been closely monitored by senior onsite managers, up to the Vice President level. The licensee's senior management appears to have a keen awareness of the security program's impact on eventual plant operations. The August/September 1985 Inspection Report noted that the proposed complete security implementation date of November 18, 1985, allows minimum time to resolve implementation problems prior to the licensee's projected fuel load.

The licensee's major security documents (security plan, contingency plan, and training and qualification plan) had been initially approved by the NRC; however, one onsite inspection identified the need for significant changes to the security plan. The licensee revised the security plan to address the identified concerns. The plan revision still requires NRC approval. Procedural guidance has been prepared by the licensee's security staff and the procedures appear adequate.

The licensee's proposed staffing level appears adequate to fulfill basic security plan commitments provided numerous compensatory measures are not required upon program implementation. The senior contract security supervisor and the plant protection supervisor assumed their duties December 1984 and March 1985, respectively. Both managers have extensive nuclear security experience. To date, the licensee's progress in planning, scheduling, coordination, and resource management appears adequate.

The licensee appears very effective in identifying and resolving technical problems pertaining to the security program. A security system implementation work group has been established to monitor implementation of the security program. The work group has expertise involving several disciplines; they meet on a weekly basis. Coordination appears very effective and technically correct resolutions to identified problems are evident.

The licensee has been very responsive to NRC concerns pertaining to the security program. The licensee effectively monitors the status of inspection findings and aggressively takes action to resolve them. Several findings pertaining to barriers, emergency power, intrusion alarm systems and closed circuit television systems still require resolution.

To date, support of some nonsecurity departments in fulfilling tasked objectives for the security program has generally been minimally effective. During a June 1985 inspection it was noted that the Personnel Screening Program for unescorted access to vital areas warranted senior management oversight and support. Prior to June 1985, this major portion of the security program had received very limited attention. An August 1985 inspection noted progress toward implementation of the personnel screening program. However, this program continues to warrant senior management attention and if not adequately implemented, could impact on the security programs capability to support fuel load.

Security protection and accountability procedures for special nuclear material were inspected during August/September 1985 and determined to be adequate.

In summary, the licensee's security staff has been effective in planning for implementation of the security program and in identifying problem areas pertaining to the program. Proposed security staffing seems adequate and NRC concerns and findings are effectively monitored and addressed. Departmental support for the security program is effective, except for the Personnel Screening Program. Security protection is adequate for special nuclear material received and stored onsite. Major milestones, such as total integration of the security system, extend into the next appraisal period.



No allegations were reviewed in this functional area.

2. Conclusion

Licensee performance is rated Category 2 in this area. This functional area had not been previously assessed. Licensee performance has generally improved over the course of the SALP assessment period.

3. Board Recommendations

Licensee attention should be increased to assure that the security system is ready for fuel load.

L. Operational Readiness

1. Analysis

Examination of this functional area consisted of four region based inspections and portions of ten inspections by resident inspectors. Areas examined included: (1) programs for operations, tests, and experiments; (2) programs for maintenance, design changes, and measuring and test equipment; (3) plant staffing; (4) operating staff training; (5) administrative procedures review; (6) maintenance procedures review; (7) comparison of as-built plant to Final Safety Analysis Report description; (8) housekeeping; (9) control room behavior; (10) battery operation and maintenance; and (11) review of previously identified items. No violations or deviations were identified.

Early in the assessment period, plant operations personnel were neglecting in-plant familiarization (system walkdown) training in order to support other priority work. Licensee supervision addressed this matter in a timely fashion, adjusting manpower and priorities in order to provide sufficient time for plant operators to continue this important activity.

Inspection of programs for operating staff training identified no significant deficiencies in the programs reviewed. The licensee's plant specific simulator was recently installed and is being used for reactor operator training. Plant specific training information (system descriptions) which was supplied to the NRC for operator licensing examination purposes and which was available to licensed operator trainees was not up to date. Licensee actions to update the system descriptions have not been timely. The lack of up to date information resulted in more time being utilized by the NRC in the development and grading of the examinations. Seventeen of twenty two reactor operator/senior reactor operator license candidates successfully completed the NRC administered license examinations which represents an examination pass rate above the industry average.

This indicates that the lack of up to date information did not significantly effect the knowledge of operator license candidates. Additional operator license exams are scheduled prior to fuel load. Management attention is necessary to assure the timely implementation of re-qualification training programs to maintain the proficiency of cold licensed operators and senior operators.

Several of the administrative procedures reviewed contained numerous minor discrepancies, deviations from committed standards, and were not easy to use. The ANSI standard and technical specification requirements for independent technical review of procedures were not reflected in administrative procedures; the technical adequacy of maintenance and operating procedures reviewed reflected this. Procedures for control of safety-related documents were fragmented, did not provide a strong interface between organizational units, and were improperly classified in the licensee's procedure control system. As a result of these and other similar findings, the licensee instituted changes to their QA program requiring an independent technical review of safety related procedures by highly qualified staff and contractor personnel. A systematic self audit was used to rectify document control procedure problems and a 100% review of the classification of documents in the Operating Manual Status Report was also undertaken. Licensee actions in this regard were progressing satisfactorily at the conclusion of the assessment period. Weaknesses included the technical adequacy and completeness of the operating procedures as discussed above.

System walkdowns by resident inspectors to verify as-builts revealed several strengths, including: component accessibility for maintenance, engineered provisions for maintaining personnel radiation exposures ALARA, valve tagging, and the program for control of locked valves.

An inspection in the area of design changes and modifications identified that the licensee's operations program for design changes and modification control had not been completed. Licensee personnel expected to have the program completed and implemented by the start of operations. There has been substantial effort on the licensee's part to meet that goal.

An inspection in the area of operations tests and experiments showed that all the necessary elements for control of tests and experiments could be accounted for but the program was cumbersome. For example, it used nine procedures to describe the activities of the Nuclear Review and Audit Group (NRAG), Facility Review Group (FRG), technical staff, licensing, and six plant departments. Additional management attention is warranted to ensure that the program is manageable.

Plant housekeeping and control room behavior were assessed as adequate considering the state of construction of the facility. Because of the number of personnel working onsite, (approximately 7300 at the end of the assessment period) daily attention to housekeeping was required to assure the requisite level of cleanliness was maintained, and to preclude degradation of sensitive plant equipment and components. Management attention to this area has been apparent. Housekeeping continued to improve throughout the assessment period, in part as a result of extensive surveillance activities performed by the quality organization and by plant operations supervision. Additional action will be necessary to place all areas of the plant in a state of operational readiness. Control room behavior could not be adequately assessed because of the construction status of the plant.

NRAG activities commenced in the latter half of the assessment period, well in advance of the required implementation date. NRAG has been instrumental in focusing the attention of the FRG on plant operational safety. Although not specifically inspected during the assessment period, resident inspector monitoring of NRAG activities indicates that NRAG has been inquisitive, aggressive, involved, and technically oriented toward assuring plant operational safety.

Management approach to the resolution of issues from a safety standpoint and understanding of the issues is generally apparent. Management's response to NRC initiatives has been generally timely, sound, and thorough.

Management involvement and control in assuring quality is evidenced by adequate planning, assignment of priorities, and awareness of the status of these items. The level of understanding of the issues is generally apparent. Acceptable resolutions are generally proposed.

Significant additional actions are required by the licensee and additional inspection activity should be focused by the NRC in order to assure the operating staff is ready to support fuel load and initial operation.

No allegations were reviewed in this functional area.

2. Conclusion

Licensee performance is rated Category 2 in this area. This functional area had not been previously assessed. There was no data base on which to establish a trend.

3. Board Recommendations

None.



## M. Licensing Activities

### 1. Analysis

The licensee's performance evaluation in the area of licensing activities was based primarily on three attributes: a) management involvement in assuring safety; (b) approach to resolution of technical issues from a safety standpoint; and (c) responsiveness to NRC initiatives. Training was the only other attribute specifically addressed and was judged to apply to only a small fraction of licensing actions.

#### a. Management Involvement and Control in Assuring Quality

The licensee's management participated actively in many licensing activities. In particular, licensee's management was actively involved in the following:

- Resolution of the three remaining licensing contentions that resulted in the signing of Joint Stipulation agreements between the licensee, the NRC, the Illinois Attorney General, and the Prairie Alliance.
- Negotiations to determine the scope of the independent design review (IDR), and commitments related to followup actions once the IDR final report was issued.
- Pursuing the resolution of hydrogen control issues through the hydrogen control owners group and containment pool dynamics encroachment issues.
- Preparations for the Seismic Qualification, and Pump and Valve Operability Review Teams.

The licensee's management involvement has been very effective and instrumental in the resolution of all of these issues in a timely manner to support fuel load except for the Pump and Valve Operability Review Team audit which was completed August 29, 1985. This has been the only issue where the Licensing Project Manager (LPM) has observed a significant management breakdown. However, the problems were recognized by licensee management during the audit and a corrective action plan committed to and initiated.

During this assessment period, several management changes occurred. A new Director of Nuclear Licensing and, very recently, a new Plant Manager were named. The new Nuclear Licensing Director has aggressively pursued the resolution of the remaining licensing issues and any new issues requiring licensing action that have either been identified by the licensee or the NRC staff. On a few occasions,

the licensee's management has been too aggressive by trying to resolve issues before they were fully prepared or before all the relevant information was available.

The licensee's management has an awareness of the licensing issues by virtue of experience in industry, technical expertise, and active participation in Owners Groups. The licensee's management has also consistently exercised firm control over its contractors' activities and maintained good communication between the contractor, their own staff, the NRR staff, and the NRR staff' contractors.

The licensee has a manager at the vice president level stationed at the site who is in charge of the nuclear program management, quality assurance, station management, and nuclear station engineering. The nuclear licensing department is incorporated within the organization reporting to this vice president. As a result, related to licensing activities, there has been consistent evidence of prior planning and assignment of priorities, well stated and understandable policies, and well considered frequent management involvement and review. Moreover, corrective actions have generally been taken promptly to address staff concerns, and scheduler commitments have usually been adhered to.

b. Approach to Resolution of Technical Issues From a Safety Standpoint

The licensee's management and staff have demonstrated a good understanding of the technical issues based on evaluations obtained from the NRC technical reviewers. The onsite location of the licensee's engineering and licensing departments provides assurance that most engineering work related to complex technical issues, either done in-house or performed under its direction by contractors, is adequately addressed.

The licensee's staff has performed particularly well in the resolution of issues associated with the hearing contentions related to emergency preparedness, detailed control room design (SPDS, DCRDR, and R.G.1.97) and quality assurance issues. Environmental qualification and resolution of NUREG 0737 items are two additional areas where the licensee has performed well.

Although the licensee has provided the information needed to adequately resolve licensing issues in a timely manner, the initial submittals in some instances have not been as complete as expected, requiring followup information and clarifications to be provided. The need to request additional information does not necessarily reflect a lack of knowledge of the issue, but rather a lack of complete documentation.

The licensee should be able to improve the quality of its initial submittal so that the need for followup information can be minimized. The licensee has developed a tracking system for resolution of licensing issues called Closure of Licensing Issues Program (CLIP). In conjunction with inputs from the NRC staff, this report is updated on a weekly basis. The CLIP report includes all SER outstanding and confirmatory issues, proposed license conditions, and TMI NUREG 0737 issues. In addition, any other major issues requiring resolution (i.e., design and FSAR changes that require revisions to the staff's safety evaluations) are also included. The CLIP report includes all the licensing actions currently requiring technical resolution and identifies the actions required for closure both by the licensee and the NRC. This report has been very helpful in tracking and resolving the remaining licensing issues. There are currently six SER outstanding issues and seven SER confirmatory items remaining to be resolved prior to issuance of a low power license. This is a relatively small number of open SER issues for this stage of licensing.

c. Responsiveness to NRC Initiatives

Open and effective communication exists between the NRC and the licensee's licensing staffs. Effective dialogue between both staffs usually promotes prompt and technically sound responses to NRC initiatives. The licensee usually meets all established commitment dates or provides written or verbal responses explaining the circumstances associated with any delays and, in most instances, establishes new firm dates. Conference calls with the staff are promptly established and include appropriate engineering, plant, and/or contractor personnel. The establishment of a technical licensing contact in Washington by the licensee for the duration of the licensing stage has been effective in resolving technical issues and expediting the exchange of information in an accurate and concise manner. This should prove to be even more effective during the months just prior to issuance of the low power and full power licenses.

The licensee's staff has demonstrated a good working knowledge of applicable regulations, guides, standards, and generic issues pertaining to their plant. This was evidenced by the licensee's positive attitude and responsiveness to the NRC staff in addressing unresolved SER issues. The licensee's staff has always been prepared to meet with the NRC staff in a short time frame to obtain the necessary understanding of NRC information needs and has been successful, by preparedness and aggressiveness, in expediting most SER issue resolutions in a timely manner.



During meetings, the licensee has demonstrated a thorough understanding of the technical issues and has effectively utilized the services of its architect engineer, the nuclear steam system supplier and other contractors as needed, to make each meeting productive.

d. Staffing (Including Management)

The licensee has during this assessment period, hired personnel with nuclear experience to fill the Director of Licensing and the Plant Manager positions. The NRC staff has reviewed the licensee's plant organization, staff levels and qualifications and found them acceptable.

To satisfy the requirements of Generic Letter 84-16, the licensee has established a supervisory operating plant program under which selected supervisory personnel either have been or will be assigned to another utility's plant for at least six months to obtain operational experience.

This experience combined with the number of operators that passed the SRO and RO examinations indicates that no shift advisors may be required. The security organization positions and responsibilities are well defined. The security staff is considered to be adequate to implement the facility physical protection program.

No allegations were reviewed in this functional area.

2. Conclusion

An overall performance rating of Category 1 has been assigned for the functional area of Licensing Activities. This is an improvement over the licensee's Category 2 rating in the previous SALP rating period. The licensee's performance has improved during the rating period.

3. Board Recommendations

None.

N. Overinspection Program

Management meetings between NRC and the licensee held in 1982, resulted in the licensee's commitment to inspect a portion of work completed prior to July 1982, and subsequent recovery plans to verify the adequacy of the plant's physical construction. The licensee originally committed to inspect approximately 20% of structural steel; mechanical equipment; electrical raceway and supports; heating, ventilating, and air conditioning; large and small bore piping and supports; and instrumentation. Verification inspections began in August 1982, but were stopped by the licensee in October 1982, because the NRC determined that

the licensee had not properly planned the activities or trained the inspectors. Stone and Webster personnel became involved with verification activities at that time. The licensee submitted an Overinspection Program Plan to the NRC in November 1982. The plan described a series of inspections including normal first line quality control inspections by Baldwin Associates; verification inspections by Baldwin Associates Quality Assurance; and overinspections by licensee Quality Assurance. The Overinspection Program Plan was a statistically based random sample inspection based on Military Standard (MIL-STD)-105D, "Sampling Procedures and Tables for Inspection by Attributes". The plan was verified by the licensee, Stone and Webster, and NRC to produce 95% assurance that at least 95% of the items in a lot were not defective. The Overinspection Program (verification inspections) resumed inspection activities in September 1983.

#### 1. Analysis

Examination of the licensee's Overinspection Program involved portions of seven inspections by region-based, resident, and CAT inspectors. Areas examined included: (1) safety related structures; (2) piping systems and supports; (3) heating, ventilating, and air conditioning (HVAC); (4) welding; (5) electrical and instrument control systems; and (6) programmatic aspects of audit and surveillance; and (7) Overinspection Program termination requests.

Inspection findings related to the nonprogrammatic aspects of overinspection activities were discussed in previous sections of this report. Program implementation was found to be adequate with only minor deficiencies being identified by the licensee's QA surveillance group. The licensee has determined that none of the several thousand discrepant attributes identified during overinspection has any significance to safety. Four requests for termination of overinspection were received from the licensee during the assessment period. Review by the NRC of overinspection data and engineering evaluations regarding the licensee's request for termination of overinspection identified numerous inadequacies. The licensee vigorously responded to the identified problems and undertook extensive corrective actions on their own to assure the technical adequacy of future submittals. To date, overinspection of safety-related large bore piping and mechanical supports has been officially terminated. The licensee submitted additional requests to terminate overinspection of electrical hangers, HVAC duct and duct supports, and electrical cables, terminations, cable tray, and conduit. The licensee, at their own risk, suspended overinspection of those commodities pending review by NRC of requested additional technical data. The scope of structural steel overinspection was questioned by the NRC and was under review by the licensee and the NRC at the conclusion of the assessment period. Overall, the overinspection data submitted by the licensee indicates that work done after 1982 has improved,

and that the discrepancies identified were not significant to safety. As noted in the previous SALP report, certain contractor QC inspectors were not properly qualified or certified to perform inspections. The licensee's corrective action included reinspection of the inspectors' work as part of the Overinspection Program. Due to termination of overinspection in several areas the licensee's corrective actions were incomplete. This matter was reviewed with the licensee and will be reinspected by NRC upon completion of licensee actions to assure the adequacy of the inspector's work.

2. Conclusion

Licensee performance is rated Category 2 in this area. This functional area was not previously assessed. Licensee performance has generally remained constant over the course of the SALP assessment period.

3. Board Recommendations

None.



## V. SUPPORTING DATA AND SUMMARIES

### A. Licensee Activities

Construction of the Clinton Nuclear Generating Station was approximately 96% complete at the close of this assessment period. The licensee completed several actions and reached many milestones during the assessment period. The actions were related to the completion of construction, including acceptance and preoperational testing, system turnovers to operations, operator training, completion of licensing activities, and receipt of fuel. Selected activities and milestones are listed below.

#### 1. Major Construction Milestones

April 1984	Suppression pool initially filled
June 1984	Emergency Operations Facility completed
January 1985	Reactor integrated flush completed
February 1985	Reactor cold hydro test completed
March 1985	Diesel Generator Division II synchronized
May 1985	ECCS pumps 100 hour run completed
July 1985	Reactor hot operations test completed
August 1985	Diesel Generators, all divisions, operated
August 1985	Nuclear fuel shipments arrive

#### 2. Major System Turnovers

July 1984	Engineered Safety Systems
August 1984	Radwaste
November 1984	Reactor Plant Component Cooling Water
January 1985	Fuel Pool Cooling and Cleanup
April 1985	Reactor Recirculation and Water Cleanup
June 1985	Containment and Drywell Ventilation
June 1985	Control Rod Drive
July 1985	Craft Security Portal and Systems

#### 3. Major Reviews and Audits

September 1984	Joint Utility Management Audit of QA
January 1985	Independent Design Review by Bechtel
February 1985	"N" Certification by ASME team
March 1985	Equipment Qualification by NRR
May 1985	Near Term Operating License visit by INPO

June 1985	Construction Appraisal Team (CAT) by NRC
July 1985	Case Load Forecast Panel by NRC
July 1985	Training Accreditation Visit by INPO
August 1985	Reasonableness of Cost Audit by Illinois Commerce Commission
August 1985	Seismic Qualification Review Team (SQRT) and Pump and Valve Operability Review Team (PVORT) Audits by NRR

4. Training and Preparations for Operation

General Employee Training  
Radiation Worker Training  
Background Security Screening  
Fitness for Duty Program  
Removal of Temporary Structures from Protected Area  
Integrated Emergency Drills  
Reactor Operators Examined by NRC: (17 of 22 Passed)  
Maintenance Contract Let to Stone & Webster

5. Important Licensing Interactions

Joint Stipulation signed by licensee, Illinois Attorney General, Prairie Alliance, and NRC; all licensing contentions withdrawn.

Atomic Safety and Licensing Board (ASLB) terminated.

Extension of Construction Permit to October 1, 1986.

Illinois Certificate of Registration received for Low Level Radioactive Waste.

Amendment No. 2 to Construction Permit; environmental issues.

Radioactive Waste Agreement between licensee and U.S. Ecology Inc.

Annex to the State of Illinois Plan for Radiological Accidents approved by State of Illinois.

Special Nuclear Material License granted to licensee by NRC.

Supplementary Safety Evaluation No. 4 issued.

6. Petition To Intervene

Petitions to intervene were filed in 1980 by the Prairie Alliance and the State of Illinois Attorney General. An Atomic Safety and Licensing Board was established in 1981 and admitted

12 contentions including quality assurance. The number of contentions was ultimately reduced by negotiations to three, including quality assurance. Quality assurance issues were the subject of extensive discussions and exchanges of information among the licensee, the State, and NRC. The licensee submitted a "Summary of Quality Improvement and Confirmatory Actions" (QICA) report which described the programs and plans for action to address the concerns raised by the contention on quality. The programs and plans included a record verification program, a Final Safety Analysis Report verification program; third party audits; special programs including seismic analyses for as-built safety related piping systems walkdown program, seismic interaction analysis program, electrical separation program, and fire protection program; a configuration program; a system turnover and startup testing program; the overinspection program; and the independent design review. A meeting was held in December 1984, at NRC's office between NRC and representatives of the State of Illinois Attorney General. The purpose of the meeting was to discuss NRC inspector activities and the methods used or contemplated to inspect the previously described licensee quality related plans and programs. Specific matters discussed were the overinspection program, the independent design review, the proposed NRC Construction Appraisal Team (CAT) inspection, and the Operations Quality Assurance Program.

NRC responded in writing to the Illinois Attorney General in January 1985 regarding the NRC actions planned or taken to verify the various programs discussed in the licensee's QICA.

Based on negotiations and the previously described programs, plans, and meetings, a Joint Stipulation was signed in January 1985, between the licensee, the State of Illinois Attorney General, the Prairie Alliance, and the Nuclear Regulatory Commission. The Joint Stipulation allows the Illinois Attorney General to participate in matters relating to those quality related issues previously discussed. As a result, the remaining contentions have been withdrawn and Atomic Safety and Licensing Board proceedings terminated. To date, the Illinois Attorney General's office has attended meetings and actively participated in matters related to the independent design review, overinspection, and the CAT inspection.

#### B. Inspection Activities

During the assessment period of March 1, 1984, through August 31, 1985, there were 80 NRC inspection reports written pertaining to matters at the Clinton Nuclear Generating Station. NRC's inspection activities were as follows: 56 routine inspections; 10 resident inspections; 5 special inspections by Region III; 3 special inspections by other NRC teams; and 6 meetings. All or portions of 25 inspections were devoted to review of allegations. The special inspections were in regards to review of concrete expansion anchors,



HVAC recovery program, NDE activities, review of previous findings, and review of records at the offices of Sargent and Lundy. Enforcement actions for these NRC inspection activities are included in Table 1.

Three special inspections were conducted by other NRC teams.

1. The first inspection was conducted by Region I in regards to independent measurements of piping weldment quality. The inspection verified the adequacy of the licensee's welding and nondestructive examinations (NDE) quality control programs for safety-related piping weldments fabricated to ASME Code, Section III, Class 1 and 2. The inspection included radiographic, penetrant, visual, magnetic particle, and ultrasonic examinations, and measurements of hardness, thickness, ferrite, and alloy content. 205 weldments were involved in the inspection which required 376 hours of onsite inspection. One violation was identified as described in Section IV of this appraisal.
2. The second inspection was conducted by NRC's Office of Inspection and Enforcement in regards to the independent design review conducted by the Bechtel Corporation. The independent design review was a major inspection activity during the assessment period. The NRC inspection team was made up of NRC Office of Inspection and Enforcement representatives and consultants. The inspection was conducted in two phases: a site tour and an evaluation at Bechtel's headquarters.

The objective of the inspection was to ensure that the independent design review was being conducted in accordance with the approved plan. The team was favorably impressed with Bechtel's effort, especially the quality of engineering expertise being employed, and the obvious management commitment to the effort at the highest corporate levels. However, the NRC inspection team did conclude that the independent design review program plan was only moderately implemented in the area of engineering disciplines interaction, that is, the team did not observe good communication between discipline review groups. No violations were identified. (50-461/84039)

3. The third inspection was conducted by the NRC Office of Inspection and Enforcement's Construction Appraisal Team (CAT) and involved examinations, observations, and reviews of selected hardware and related Quality Assurance Program activities. The inspection specifically included welding; nondestructive examination of weldments; construction of electrical, instrumentation, mechanical, and civil structural components and systems; control of design changes and material traceability; and corrective action. The inspection did not identify any pervasive breakdown in the samples of installed hardware or construction controls for managing the construction of the Clinton plant. The Overinspection Program was viewed as being effective in identifying deficiencies with construction. The deficiencies noted by the CAT included

ineffective control of work performed by the plant staff after equipment was released from construction status; inadequate control of design documents; and inadequate programs for verification of electrical cable separation. Six violations were identified and are discussed in Section IV of this appraisal.

### C. Investigations and Allegations Review

No investigations by NRC's Office of Investigation were initiated during the assessment period; however, there are five outstanding allegations concerning wrongdoing scheduled for investigation in the near future.

There were 91 allegation files (258 allegations) opened by NRC during the assessment period, an increase of 182% from the last assessment period. Approximately 20% of the allegations were hardware related. Examples of hardware related allegations include material certification and traceability, piping and electrical raceway support welding, and concrete expansion anchor installation. Examples of the remaining 80% nonhardware related allegations include: qualification, training, and certification of personnel; discrimination, intimidation, harassment, and blackballing of personnel; violations of procedures or changes to them; control of drawings and documents; push for production; and disagreement with dispositions to nonconformance reports.

Twenty-five complete or partial regional and resident inspections were required to close 65 allegation files (102 allegations). Those 25 inspections resulted in substantiation of 52 allegations. Three substantiated allegations were in violation of NRC requirements. These are discussed in Section IV of this appraisal.

The remaining 49 substantiated allegations did not result in violations for one or more of the following reasons:

- The concern did not violate a requirement.
- Licensee had identified the problem and corrective action was in progress.
- The alleged was not knowledgeable of procedures or specifications which satisfied the concern.

The remaining 25 allegation files (85 allegations) were in some stage of inspection activity by NRC.

Late in the assessment period a high number of allegations were received by NRC. The concerns mainly came from members of the Baldwin Associates Document Review Group who alleged poor management practices. On July 2, 1985, NRC forwarded 46 allegations from various allegation files to the licensee for review and disposition. NRC and licensee senior management personnel met July 11, 1985 onsite

to discuss the allegations which had been referred to the licensee for handling. NRC will review results of the licensee's investigative efforts.

The licensee has voluntarily placed a SAFETEAM onsite in addition to the Quality Concern Program and quality "hot line" instituted during the previous assessment period. The SAFETEAM is chartered to conduct routine interviews of terminating employees, scheduled interviews of project staff, and interviews of individuals on a drop in basis. Through the interview process the SAFETEAM determines if an interviewee has any concerns which should be addressed. The SAFETEAM investigates the concerns, attempts to achieve resolution, and responds to the individual with results of the investigation. These activities are carried out while maintaining the individual's confidentiality. NRC has reviewed results of selected SAFETEAM investigations; no substantive problems were identified during these reviews.

Enforcement history in the area of allegations is extremely good considering the high number of allegations. Licensee management attention and involvement in the area of allegations has been aggressive, especially in the latter part of the assessment period. Licensee resources are adequate and reasonably effective such that satisfactory performance with respect to construction is being achieved.

D. Escalated Enforcement Action, Orders, and Civil Penalties

No escalated enforcement action took place during Clinton's SALP 5 assessment period.

E. Administrative Actions

There were no confirmatory action letters issued by NRC during the assessment period.

F. Management Conferences Held During Assessment Period

February 28, 1984	Meeting at Champaign, IL to discuss status of emergency preparedness (50-461/84006).
May 31, 1984	Meeting at Clinton site with management to discuss status of construction and key elements of improvement programs (50-461/84016).
October 16, 1984	Second Corporate Management Meeting (50-461/84033).
October 25, 1984	Meeting at Regional Office with management to discuss proposed changes to the Overinspection Program (50-461/84037).



April 22, 1985

Meeting at Regional Office to discuss proposed changes to Overinspection Program; large and small bore pipe and mechanical supports (50-461/85024).

July 11, 1985

Meeting at Clinton site with management to discuss allegations and SAFETEAM (50-461/85038).

G. Review of Construction Deficiency Reports and Vendor Defect Reports

1. NRC was notified by the licensee of 29 construction deficiencies per the requirements of 10 CFR 50.55(e). Of the 27 deficiencies, thirteen were subsequently withdrawn or determined to be not reportable by the licensee. Corrective actions were initiated by the licensee for all deficiencies. Two of the remaining 14 deficiency reports were reviewed and documented as closed in NRC inspection reports. Below is a listing of the reportable construction deficiency reports made during the SALP 5 assessment period:

<u>Number</u>	<u>Description</u>
461/84006-EE	Damage to Conax electrical penetration terminal blocks
461/84007-EE	Preop test procedures reference incorrect specifications.
461/84016-EE	Workmanship discrepancies with wiring in HPCS diesel generator panels.
461/84018-EE	300 pieces of 1/2 x 15 x 15 inch A-36 steel plate has low yield and tensile strength.
461/84019-EE	Nelson studs on embedment plates.
461/84021-EE	Battery charger conductors pulled out of lugs.
461/84023-EE	Ruskin interlocking fire dampers not closed.
461/85003-EE	Hollow core masonry units (CMU) lack objective evidence that they meet three hour rating claimed in fire protection evaluation report.
461/85004-EE	27 butterfly dampers have defective fillet welds; Pacific Air Products.

<u>Number</u>	<u>Description</u>
461/85005-EE	HVAC contractor did not address impact of design changes on items previously inspected.
461/85006-EE	Vendor supplied electrical panels (Eberline and Power Conversion Products) have miswired circuits and utilize incorrect wiring and terminating techniques.
461/85007-EE	Horizontal piping supports for fire suppression systems have not been designed.
461/85008-EE	Effective throat size of flared bevel groove welds on piping and electrical supports does not meet requirements of specifications.
461/85009-EE	Civil structural design changes have not in all cases been added to drawings as required by procedures.

The increase in construction deficiency reports over the 20 reports submitted during the previous SALP period was due in part to increased licensee activities in the preoperational testing area, and to the NRC Construction Appraisal Team Inspection. A review of the nature and details of the items reported, and the timeliness of reporting indicates that the licensee maintains a proper reporting threshold and is responsive to the reporting requirements of 10 CFR 50.55(e). The quality of written reports and the associated analysis reflects favorably on licensee management and staff. One weakness observed by NRC was that final reports almost exclusively do not reflect completion of all work and associated corrective actions. This matter has been discussed with licensee management on several occasions.

2. NRC was notified by the licensee of ten reportable defects per the requirements of 10 CFR 21. Investigations of the matters have been initiated by the licensee on all items. Below is a list of the vendor defect reports made to NRC during the SALP 5 assessment period:

<u>Number</u>	<u>Description</u>
461/84003-PP	Hub Inc. pipe (3500 ft) not ultrasonically tested.

<u>Number</u>	<u>Description</u>
461/84004-PP	Circuit breaker environmental test failure of circuit for hydrogen recombiner.
461/84005-PP	Rosemount transmitter amplifier board functional problem.
461/84006-PP	Deficiencies in ELMA Power supplies.
461/84007-PP	General Electric improper setting of Topaz inverter low voltage shutoff.
461/85001-PP	Titus model 272 grilles internal tension wires used for adjustment of blades will not remain in place when blades are closing.
461/85002-PP	Rosemount model 1153B transmitters have environmental leak.
461/85003-PP	General Electric model CR 2940 control switches not environmentally qualified.
461/85004-PP	Technology for Energy Corporation (TEC) model 914-1 acoustic valve flow monitor module failure of indicator to reset.
461/85005-PP	Basic Engineers sway strut and snubber failure.

The number of vendor defect reports made during the assessment period was slightly higher than the number made during the previous SALP period. The quality of the licensee's review and associated analysis of vendor defect reports did not approach that done for construction deficiency reports. This matter has been discussed with licensee management on several occasions and some improvement has been noted.

#### H. Noncompliance Data

Facility Name:	Clinton Power Station
Docket:	50-461
Inspection Numbers:	84006 through 84043 85001 through 85042



TABLE 1

SALP 5

Functional AreaViolations and Severity Level

	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>
A. Soils and Foundations				1	
B. Containment and Other Safety Related Structures Supports				1	
C. Piping Systems and Supports				1	2
D. Safety Related Components				1	
E. Support Systems					
F. Electrical Power Supply and Distribution				2	2
G. Instrumentation and Control Systems				1	1
H. Quality Programs and Administrative Controls				2	3
I. Preoperational Testing					
J. Radiological Controls					
K. Security					
L. Operational Readiness					
M. Licensing Actions					
N. Overinspection					
TOTALS				<u>9</u>	<u>8</u>