

SALP 4

U.S. NUCLEAR REGULATORY COMMISSION
REGION III

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

Illinois Power Company

CLINTON NUCLEAR GENERATING STATION

Docket No(s). 50-461

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Assessment Period

October 1, 1982 through February 29, 1984

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I. INTRODUCTION

The Systematic Assessment of Licensee Performance (SALP) program is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate licensee performance based upon this information. 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 May 7, 1984, to review the collection of performance observations and data to assess the licensee performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance." A summary of the guidance and evaluation criteria is provided in Section II of this report.

This report is the SALP Board's assessment of the licensee's safety performance at Clinton Nuclear Generating Station for the period October 1, 1982 through February 29, 1984. The period represents a major transition between stop work orders initiated in certain areas during the previous assessment period and a return to general construction activities toward the latter part of this assessment period. Licensee effort was devoted to ongoing construction and reinspection of past construction and record deficiencies and implementing corrective action in accordance with their recovery program to lift the imposed stop work orders.

SALP Board for Clinton Nuclear Generating Station:

- J. A. Hind, Chairman SALP Board, Director, DRMSP
- R. L. Spessard, Director, DE
- C. E. Norelius, Director, DPRP
- R. F. Warnick, Chief, Projects Branch 1, DPRP
- R. C. Knop, Chief, Projects Section 1C
- K. R. Ridgway, Program Support Engineer, TSS, DPRP
- H. H. Livermore, Senior Resident Inspector
- F. J. Jablonski, Project Inspector
- D. H. Danielson, Chief, Materials and Processes Section, DE
- A. Schwencer, Chief, LB2, NRR
- G. Harrison, Project Manager, LB2, NRR

II. CRITERIA

The licensee performance is assessed in selected functional areas depending whether the facility is in a construction, pre-operational 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 reportable 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 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 are 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 or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appear to be strained or not effectively used so that minimally satisfactory performance with respect to operational safety or construction is being achieved.

III. SUMMARY OF RESULTS

Overall, the licensee's performance was found to be improved and acceptable in each functional area. Commitment to quality was generally evident at all levels of management and staff. Resolution of most problems has been responsive and comprehensive and orientated toward quality construction. The licensee's staff effort to improve performance in Support Systems, Electrical Power and Control Systems, and Quality Assurance is notable.

<u>Functional Areas Assessment</u>	<u>Last Period</u>	<u>This Period</u>	<u>Trend</u>
1. Soils and Foundations	2	Not Rated*	
2. Containment and Other Safety-Related Systems	2	2	Same
3. Piping Systems and Supports	2	2	Same
4. Safety-Related Components	2	2	Same
5. Support Systems	Not Rated	2	Improved
6. Electrical Power and Distribution	Not Rated	2	Improved
7. Instrumentation and Control Systems	2	2	Same
8. Licensing Activities	2	2	Same
9. Quality Assurance	3	2	Improved
10. Preoperational Testing	2	2	Same
11. Radiological Controls	2	2	Same

*Due to limited NRC and licensee activity in this functional area.

IV. Performance Analysis

1. Soils and Foundations

a. Analysis

Licensee activities in soils and concrete foundations were evaluated during portions of two resident inspections. Areas inspected were: anchor bolt installations in concrete slabs/walls and concrete crack identification and establishment of requirements. Anchor bolt installation is discussed in paragraph 3.

Inspection in soils and foundations had no identified noncompliances with NRC requirements. Licensee activity has been minimal since the majority of work has been completed. The licensee has instituted a corrective action program in regard to incomplete concrete documentation and incomplete concrete repairs. A systematic field reinspection and review of documentation will be complete by August 1984. The Soils and Foundation program appears to be satisfactory, and no significant strengths or weaknesses were identified.

b. Conclusion

The licensee is not rated in this area due to limited licensee and NRC activity.

c. Board Recommendations

None.

2. Containment and Other Safety Related Systems

a. Analysis

Inspection in this functional area consisted of three routine inspections by regional based inspectors and numerous inspections by the resident inspector. Areas examined included a review of reported 10 CFR 50.55(e) items, licensee corrective actions on previous inspection findings, procedures and checklists developed for Phases 2A-1 and 2A-2 or Stop Work Order 019, the licensee's reinspection items, calibration of torque wrenches, work on the Polar Crane, personnel training and other ongoing activities. In addition, a field walkdown and related record review of activities concerning the containment regenerative and nonregenerative heat exchanger bays, and a field walkdown of elevation 755'-0" and related records for containment structural beams were conducted.

As noted in the previous SALP Report, the Containment Structural Steel Stop Work Order (019) was initiated on June 23, 1982, because structural steel bolting practices were not properly controlled and a number of Quality Control records were lost. A Region III Confirmatory Action Letter was issued to ensure a controlled, integrated recovery. Resident and regional inspectors reviewed and monitored the two phase reinspection of structural steel, the retraining of craft and inspection personnel, procedure revision, and the documented recovery plan. As a result of the recovery effort, all new installations or modifications are controlled by travelers issued through the traveler tracking group, as required to support construction schedules. QC inspection activities are kept current with construction progress. Based on NRC inspections and satisfactory licensee performance, Region III concurred in the licensee lifting of Stop Work Order 019 (Steel) on June 24, 1983.

The licensee's performance in the recovery effort was satisfactory.

During this assessment period several problem areas and three items of noncompliance were identified.

A noncompliance was identified during inspections of the performance of the Containment Gas Control Boundary pressure test. A subcontractor of the licensee was performing a pressure test of the Containment Gas Control Boundary Structure with uncalibrated test equipment and with an unapproved, incomplete test procedure (Severity Level V, 82-19). As a result of the NRC's concern, the licensee initiated a Stop Work Order (021). The pressure test was revised and approved by the subcontractor and the licensee. Following retraining of personnel the test was successfully completed, lifting SWO 021. While this event indicated a lack of management and QA understanding of their responsibilities, it occurred early in the assessment period and did not represent a repetitive concern.

Weaknesses in the licensee's corrective action and reporting controls were identified. On two occasions nonconformances identified by the licensee concerning undersize structural steel column welds and cracks in the containment dome liner horizontal weld seam were not reported to the NRC under the provisions of 10 CFR 50.55(e). An item of noncompliance was identified concerning the containment liner (Severity Level IV, 83-22). In both cases the licensee subsequently issued the required reports and revamped the site reporting/investigation system. This failure to report has not been identified as a problem in other functional areas. An item of noncompliance was identified

when the licensee failed to properly identify, disposition, and ensure corrective action concerning the use of chewing gum to mask a weld discontinuity in the containment liner horizontal weld seam (Severity Level IV, 83-22). The licensee's corrective action is still under review.

In a followup licensee surveillance of an inspection of structural steel attachments in the Containment Heat Exchanger Bays by the licensee's contractor, numerous hardware problems, such as missing bolts, loose nuts, missing washers, etc. were identified. The licensee concluded the problem was probably caused by two careless QC inspectors during the initial inspection. Corrective action in the form of retraining and a complete reinspection was comprehensive and effective.

In most cases, the activities observed, the management controls used, and the records and record control systems in place met requirements, and personnel involved in the areas reviewed were properly trained and certified.

b. Conclusion

The licensee is rated Category 2 in this area. The licensee's corrective actions initiated during this assessment period appear to have been effective.

c. Board Recommendations

None.

3. Piping Systems and Supports

a. Analysis

There were no Stop Work Orders in effect in this functional area and construction continued throughout the assessment period.

Inspections in this functional area consisted of two inspections by regional inspectors and numerous inspections by the resident inspector. Areas examined included a review of reported 10 CFR 50.55(e) and 10 CFR 21 items, actions related to IE Bulletins and Circulars, the QC overinspection program for piping and piping suspension systems, controls for traveler work packages and material traceability, welding and welder qualification, reactor coolant pressure boundary and other safety related piping quality records, and reports of audits for piping and piping suspension system activities. In addition, in-process work verification and inspection activities were performed in the field for piping and piping suspension system installations.

Four items of noncompliances were identified: failure of the architect-engineer to include bellows expansion joint pressure thrust loads in the analysis of the emergency diesel engine exhaust piping (Severity Level V, 82-20); failure to correctly and consistently apply the ASME vs. AISC Code boundary on pipe component supports and attaching structures (Severity Level IV, 83-09); improper installation of component support concrete expansion anchors in which anchors were knowingly welded to plates in order to bypass their normal concrete installations (Severity Level IV, 83-22); and improper threaded rod was installed in pipe riser clamp load bolt holes (Severity Level IV, 84-04). The last two noncompliances were due, in part, to the licensee's previous failure to do in-process inspections and a lack of adequate craft and QC procedures. This lack of in-process inspection resulted in the licensee's reinspection program that is still underway. Problem investigations and proposed corrective actions are still in progress.

It should be noted that these noncompliances were concerned with construction work of a previous assessment period. The corrective action programs indicate management's more aggressive involvement in the resolution of problems even though the resolution of the anchor bolt problem has taken considerable time.

Except as stated above, the activities observed, the management controls used, and the records and record control systems in place met requirements. Current in-process QC overinspections appeared to be adequate. Four licensee audit reports were examined and found to be generally complete and thorough. Personnel involved in the areas reviewed were properly certified.

b. Conclusion

The licensee is rated Category 2 in this area.

c. Board Recommendations

None.

4. Safety Related Components

a. Analysis

There was only one Stop Work Order in effect in this functional area. Construction in most areas was ongoing throughout the assessment period.

Region based inspections of this functional area consisted of one special and three routine inspections. Areas examined included a review of applicable specifications and procedures, quality records and welding activities for installation of the reactor vessel and internals, and completed travelers, purchase orders, and receipt inspection reports of installed mechanical equipment and components. In addition, portions of in-process work verification and inspection, and post installation protection activities were performed for three valves, a fuel pool heat exchanger, new fuel storage racks, RCIC pump turbine and gland seal air compressor, HPCS pump and motor, and the reactor pressure vessel support skirt access hole covers.

Numerous partial routine resident inspections were performed in the area of Safety Related Components. Site surveillances assessed the cleanliness of the site; storage and maintenance of equipment, material and components; potential for fire hazards on components and equipment; handling, rigging and installation of components; and witnessing general construction activities in process. An inspection was performed by the resident inspector on the In-Vessel Fuel Racks supplied to the site by General Electric. Numerous fillet weld discontinuities such as incomplete fusion and cracks were identified and incorrectly dispositioned on Nonconformance Reports (NCR). The licensee is redispositioning the NCRs and intends to rework the defective welds. Management action has been adequate, although not as timely as it might have been.

No items of noncompliance or deviations were identified. The activities observed, the management controls used, and the records and record control systems, in general, met requirements.

As noted in the previous SALP Report, the licensee issued a Stop Work Order on construction of the Reactor Vessel Refueling Bellows. Numerous welding, NDE, and procurement problems were identified. A Confirmatory Action Letter was issued by Region III to ensure a controlled integrated recovery. The resident inspector reviewed and monitored the rework, UT and visual reinspection, drawings, radiographic film, retraining of personnel, and the Sargent & Lundy (AE) conclusions on crack propagation and flaw stability in the refueling bellows welds. The licensee's performance in the recovery effort was satisfactory. Based on the resident inspector's site review and inspection, and licensee satisfactory performance, Region III concurred in the licensee lifting of Stop Work 010 on May 19, 1983.

b. Conclusion

The Licensee is rated Category 2 in this area.

c. Board Recommendation

None.

5. Support Systems

a. Analysis

Inspections and observations in this functional area were limited to licensee's actions concerning Stop Work Orders in the area of Heating, Ventilation, and Air Conditioning (HVAC) and an incident involving record shredding. These inspections reviewed the licensee's actions under Phases I, II, and III of the Illinois Power Recovery Plan initiated as a result of Stop Work Orders 014, 015, and 020 for the fabrication and installation of the safety related HVAC system. Areas examined included a review of Zack Company corporate procedures, field quality control procedures, field construction procedures, welding procedures and departmental instructions, welder qualification records, inspector certification records, and records of inspection and surveillances conducted by the Zack Company.

A special resident inspection was performed to review circumstances and corrective action taken in regard to a Zack Co. (HVAC) incident where records were being shredded on site in November 1982. A Baldwin Associates (BA) audit of Zack identified numerous problems with documentation handling and control but did not find any examples of Zack destroying quality or permanent plant records. The licensee's QA verified, based on an expanded sample, that there were no permanent plant records destroyed. Inspection findings indicated that the shredded documents were duplicates of field construction copies. Corrective action was instituted resulting in Zack procedure revisions for tighter document control. A program of surveillance by Zack and BA has been instituted and implemented.

The NRC inspection of this incident assured that all corrective actions were taken. No items of noncompliance or deviations were identified.

Significant quality program improvements in the HVAC area have been implemented by the licensee. Program enhancements include complete revision of the Zack Quality Assurance Manual, at both corporate and site locations. Audits and surveillances by both BA QA and Zack QA personnel of BA QA contracts and Zack (HVAC) QA/QC were increased. BA Vendor Surveillance Inspection Point Program was expanded along with Zack QA surveillances of its own QC program.

NRC inspections of the activities in the HVAC areas indicated that the management controls used, and the records and the record control systems in place, met NRC requirements. Personnel

involved in the areas reviewed were properly trained and certified and no significant trend adverse to quality was identified.

The inspection concluded that the licensee's actions met the requirements of their recovery plan and that they should be permitted to start rework and new work. As a result, Region III concurred in the licensee lifting of HVAC Stop Work Orders 014, 015, and 020 on December 22, 1983.

The effectiveness of the licensee's recovery plan and its implementation is still under review.

b. Conclusion

The licensee is rated Category 2 in this area. The licensee was not previously rated in this area due to the transition period of identifying and correcting past weaknesses. In progressing from a nonrating in this area, the licensee has demonstrated a substantial improvement.

c. Board Recommendation

None.

6. Electrical Power and Distribution

a. Analysis

Licensee activities in this functional area were observed during resident inspector's surveillances and significant portions of three region based inspections.

As noted in the previous SALP Report, numerous problems surfaced with quality control (QC), craft installation of hardware, drawings and quality assurance (QA). The Electrical Cable Tray and Attachments Stop Work Order (007) was issued on January 18, 1982. The Electrical Equipment Stop Work Order (017) and Electrical Conduit Stop Work Order (016) were issued on June 23, 1982. A multi-faceted Recovery Program was instituted by the licensee. A three phase sample reinspection and work program was approved and implemented.

Results of the recovery program were monitored by the regional and resident inspectors during this assessment period. The NRC review of all actions taken to support lifting of SWO 007, SWO 016, and SWO 017 resulted in certain conditions which had to be satisfied. These conditions were to assure that craft personnel were aware of the acceptance criteria used by QC inspectors and Field Verification personnel and that inspection criteria from various instructions and checklists be brought

into agreement. Furthermore, training was provided to craft personnel in the inspection criteria. The licensee verified that the necessary actions were completed. The resident inspector reviewed the aforementioned procedural comparisons and changes and the related training results and determined that the recovery actions by the licensee were adequate and appropriate.

During this assessment period, four items of noncompliance were identified. They are as follows: failure to properly execute an inspection program for activities affecting quality (seven examples) (Severity Level V, 83-02); failure of the licensee to meet commitments to the NRC by revising the Cable Installation Procedure negating the requirements for the inspection and acceptance (Severity Level IV, 83-23); failure to provide an adequate response on a valid deviation report (Severity Level V, 83-23); and failure to establish a program to assure that known nonconforming conditions are promptly identified and documented (Severity Level IV, 83-23).

In summary, the licensee and contractor have implemented positive corrective actions and improvements to preclude the recurrence of similar events depicted in SWO 007, SWO 016, and SWO 017 and the above noncompliances. The corrective actions and improvements included extensive project training, work control by travelers, formation of a BA QA Field Verification Inspection Group, a level III scheduling system, QC support of the Level III schedules, comprehensive procedure and instruction revisions, recruitment and retention of better qualified personnel, initiation of a BA QA trending group, plus the formation of the NRG (Nonconformance Review Group). Management has become involved in all phases of the quality activity.

Based on NRC review, site inspections, and satisfactory licensee performance, NRC Region III concurred in the licensee lifting of Stop Works 007, 016, and 017 on July 22, July 29, and May 19, 1983, respectively.

b. Conclusion

The licensee is rated Category 2 in this area. This rating indicates a significant improvement, since this functional area was not rated in the last assessment because performance was considered to be less than minimally acceptable. Corrective actions initiated during this period appear to have been effective.

c. Board Recommendations

None.

7. Instrumentation and Control Systems

a. Analysis

The inspections in this functional area were limited to followup activities in regard to Electrical Instrumentation SWO 018. This Stop Work was imposed because traveler requirements were not understood and followed by construction. The main effort by region based inspections was in the electrical area which overlaps into the Instrumentation and Control Systems area.

Stop Work Order 018 on electrical instrumentation was initiated on June 23, 1982. A Region III Confirmatory Action Letter was issued to ensure a controlled integrated recovery. During this SALP period the resident inspector reviewed and monitored the licensee recovery effort. Licensee improvements and corrective actions were: training of craft and quality control personnel, establishment of a traveler tracking committee, project procedure revisions, development of job instructions, controlling work in the field through travelers, increased QA audits and surveillances plus implementation of Level III scheduling system requiring craft and QC participation.

Based on NRC review, site inspections, and satisfactory licensee performance, Region III concurred in the licensee lifting of Stop Work Order 018 (Electrical Instrumentation) on May 19, 1983.

The licensee's activities in this area appear to be adequate.

b. Conclusion

The licensee is rated Category 2 in this area.

c. Board Recommendations

None.

8. Licensing Activities

a. Analysis

During this assessment period the staff was involved, along with the applicant, in resolving the open and confirmatory items related to the issuance of an operating license for Unit 1. Supplement No. 2 was issued to the SER and a significant amount of review effort and documentation by the NRC staff was accomplished for Supplement No. 3 which is scheduled to be issued in May 1984. On October 14, 1983, the applicant officially cancelled Unit 2.

Our licensing evaluation conclusions are based on the following licensing activities:

- Hydrogen Control
- Pool Dynamics
- Containment Purge
- Site Analysis
- Meteorology
- Fire Protection
- Seismic Design Criteria
- Instrumentation and Control
- Q/A
- Equipment Qualification
- Heavy Loads
- Legal
- Emergency Planning

Management involvement was, in general, evidenced by the appropriate level of management attendance at technical meetings, prior planning and review of the preparations for these meetings, thorough and technically sound presentations made in related submittals, and in the quality of communications from the Clinton licensing staff. As examples, the applicant's management involvement was considered good with respect to the licensing issues of post-accident sampling, heavy loads, and alternate safe shutdown given the event of fire. Management concern for the hearing contentions has also been supportive of the NRC staff's efforts to either accomplish resolution or reduce the scope or number of internal issues within a specific hearing contention. Numerous meetings were held with and between the NRC technical and legal staff, intervenors, and the State of Illinois. Considerable resolution progress has been made and, in fact, it appears that only a few hearing contentions will remain. As a result, the March 1984 hearing has been deferred.

The applicant's resolution of technical issues has generally been adequate. However, in the technical area of the site amplification study, the applicant was judged to be not fully responsive and, although the applicant was aware of the issues, its initial approaches lacked thoroughness or depth. The NRC staff has since found this technical issue to be fully resolved. One important review area is the Operations Quality Assurance program. Our SER had found the QA program description to be satisfactory, but several sub-issues remained open. The applicant resolved the remaining open items and, as a result, the NRC staff has found the applicant's Operations QA program description to be acceptable and fully resolved.

The applicant's responsiveness was satisfactory and a necessary ingredient to the accomplishment of numerous reviews of many open and confirmatory issues. The applicant submitted numerous letters, revisions to the FSAR, and participated in many meetings held to resolve technical issues. The applicant has met deadlines agreed to by the staff and proposed resolutions to problems which have subsequently been found acceptable during the review. The applicant has generally demonstrated responsiveness to NRC initiatives by supporting staff efforts directed at the resolution of open issues and confirmatory items. Of the original 20 open issues and the 71 confirmatory issues, 5 open issues and 22 confirmatory items still remain to be resolved. The majority of the issues are under review by the NRC staff.

Personnel involved with Clinton Unit 1 are knowledgeable and professional. Appropriate personnel are made available in meetings with the NRC staff to make the meeting productive. Management has also taken an active interest in the licensing activities. In addition, a Director - Nuclear Licensing and Configuration was appointed. The licensing staff was increased from 2 to 7 people, and the Licensing Department was relocated to the Clinton site.

b. Conclusion

The licensee is rated Category 2 in this area. Although this is the same rating as the previous SALP period, the licensee's overall performance in this area has improved and a positive trend is indicated.

c. Board Recommendations

None.

9. Quality Assurance

a. Analysis

The previous SALP report detailed numerous quality assurance problems that resulted in the issuance of 10 Stop Work Orders and the levy of a \$90,000 civil penalty.

During this SALP period, QA and related QC activities of Illinois Power Company (IPCo) and Baldwin Associates (BA) were observed during portions of eight inspections by the resident and regional inspectors.

One of the areas examined was procurement of spare and replacement parts by Illinois Power. The licensee initiated a Stop Work Order in March 1982, on the purchasing of spare/

replacement parts due to the inadequacy of procedures controlling the process. Subsequently Management Guide 4-1, "Procurement", was issued to define department responsibilities for procurement. Department procedures were issued to implement the program and all personnel involved in the procurement process were trained to the revised program. The licensee also performed a surveillance on a procurement "dry run" using the revised procedure. Problems identified were corrected by additional procedural changes. The final program appeared to be adequate and included the needed management attention and personnel training. However, the adequacy of implementation of the procurement activities was not determined during the inspection. No items of noncompliance were identified.

Another area examined was the piping quality assurance. The scope of the inspection included training and qualification of quality control, procurement, receipt inspection and installation personnel, nonconformance/corrective action, and audits. Two items of noncompliance were identified: procurement document for welding filler metal did not specify 10 CFR Part 21 applicability (Severity Level V, 83-15), and two inch and under production pipe bends did not have inspection records assuring quality compliance (Severity Level IV, 83-15). Management attention and corrective actions regarding these matters were considered both aggressive and comprehensive. The actions included the review and revision to purchase orders and supplier information and the measurement and documentation of quality dimensions for field pipe bends. The licensee's corrective actions should adequately assure the quality of the purchased materials and installed field-bent piping.

The other area examined was the QA and QC training, qualification and certification. The scope of the first inspection included the review of the training, qualification, and certification of BA QA, QC, and Technical Support (TS) personnel, Zack, and US Testing (UST) QC personnel. Two items of noncompliance were identified: the BA QA Manual did not describe the QA organization (Severity Level V, 82-18), and the qualification and certification of QC personnel was not in accordance with procedure (Severity Level IV, 82-18). Regarding the first item, licensee action was considered aggressive and timely. Regarding the second item, an additional concern was identified concerning the quality of work performed by inspectors who were not properly certified. Licensee management attention in this area was not fully responsive as demonstrated by the lack of an adequately implemented training, qualification, and certification program for inspection personnel. A followup inspection was conducted to review the Licensee Training Recovery Plan and implementation and the certification activities for the BA QA, QC, and TS personnel, the IPCo QA and QC personnel, and UST QC personnel.

Activities had been implemented to upgrade the training, qualification, and certification program. The licensee has implemented a program to reinspect the quality of work where certification of inspectors was questionable. This program is still in progress. Additionally, a training program had also been established for BA craftsmen and craft supervision. No items of noncompliance were identified. The licensee's corrective actions in these areas appeared to be aggressive and comprehensive.

Numerous other inspections were performed in the QA area during the assessment period in which four items of noncompliances were identified: failure to take timely and adequate correction in regard to identified improper pipe support Code boundaries (ASME vs. AISC) (Severity Level IV, 83-09); failure to follow procedures and improper corrective actions in regard to QC allegations (Severity Level IV, 83-19); nonconforming conditions were improperly handled by quality management (Severity Level IV, 83-19); and contractor QC improperly dispositioned and voided a nonconforming hardware condition (Severity Level V, 84-04). Licensee and contractor actions on the foregoing items have been aggressive and satisfactory.

During this SALP assessment period, numerous improvements and corrective actions have taken place that directly improved quality assurance. Some of these are:

- (1) The licensee has performed all necessary actions required to lift Stop Work Orders 007, 010, 014, 015, 016, 017, 018, 019, and 020. The last SWO was lifted on December 22, 1983.
- (2) A new on-site licensee Vice President has been appointed to personally direct all quality operations.
- (3) Licensee and constructor Quality Assurance Managers have been replaced.
- (4) The engineering firm of Stone and Webster (S&W) has been selected by the licensee to direct certain licensee construction efforts.
- (5) Illinois Power Quality Assurance (IPQA) has developed and implemented organizational changes to improve quality participation in site activities such as:
 - (a) Appointment of the IPQA Corrective Action Coordinator and personnel.

- (b) A major reorganization of IPQA (i.e., the expansion to directors and supervisors) including a new Manager-QA,
 - (c) Development and implementation of an IPQA Training Department responsible for IPQA personnel training, qualification, and certification,
 - (d) Development and implementation of the IPQA Information Management Group to provide computer (software and hardware) support to programs such as Corrective Action, Trend Analysis, Over-Inspection, and Traveler Tracking,
 - (e) Increased staffing in all areas of QA. Improved knowledge levels and experience of QA personnel.
 - (f) IPQA has developed and implemented the Management Corrective Action Request (MCAR) Program. This program is intended to identify program breakdowns which require immediate management attention.
- (6) IPCO has developed and implemented Corporate Nuclear Procedures to provide organizational interface guidelines for Clinton Power Station Programs.
 - (7) IPCO has developed and implemented a Records Review Program. This review consists of 100% review by BA QA of safety-related, Augmented D, and fire protection records, with IPQA reviewing 20% of those records reviewed by BA. IPCO has also developed and implemented the IPQA Overinspection Program to assure the quality of construction work completed prior to July, 1982.
 - (8) IPCO and BA have developed and implemented a computerized Traveler Tracking Program. This program ensures that the issuance and subsequent work performed by travelers at CPS is a controlled process. It also ensures identification and timely resolution of backlog items.
 - (9) IPCO has developed and implemented an IPQA Corrective Action Program. This program tracks and performs trend analysis of CPS corrective action/deficiency documents.

(10) There has been a positive trend in the identification and detail investigation of 10 CFR 50.55(e) items. The number of audits and surveillances has increased, and the expertise and knowledge used in identification and disposition shows a positive trend.

b. Conclusion

The licensee is rated Category 2 in this area. The previous rating was Category 3. This reflects a significant improvement in overall performance in this functional area.

c. Board Recommendations

None.

10. Preoperational Testing

a. Analysis

There were no region based inspections performed during the assessment period and only limited inspections by the resident inspectors have been conducted in the preoperational testing area. A preliminary review was conducted of the Startup Manual which provides administrative instructions for implementing and effecting the plant Startup Program. The administrative control of the program appears to be adequate.

Since October 1, 1982, the IPCO Startup Organization has increased in staffing from 74 to 153 employees and is continuing to expand. IP Startup has accepted 70 turnovers since SALP 3 and has approved 170 test procedures. At the present time, 34.2% of all checkout and initial operational tests have been completed and 2.6% of all preoperational tests have been completed by the Startup Group.

The level of experience of the IPCO startup engineers was reviewed by the resident inspector to classify the fifty-seven Startup Engineers by past experience (prior to employment by Clinton Power Station). Thirty-three engineers have previous commercial nuclear experience and 27 engineers have more than 5 years of commercial nuclear experience. The level of experience appears to be adequate to conduct the startup program. Experience requirements for operations is still an open issue with NRR.

Licensee performance in the conduct of preoperational testing was not observed due to the lack of safety-related systems turned over to the Startup Group.

b. Conclusion

The licensee is rated Category 2 in this area. This rating is based upon a limited review during which no significant strengths or weaknesses were identified.

c. Board Recommendations

None.

11. Radiological Controls

a. Analysis

Three Region III based preoperational radiation protection inspections were conducted during the assessment period by a regional specialist. No items of noncompliance or major concerns were identified.

Licensee management support for the radiation protection program appears satisfactory. This has been demonstrated by the licensee's responsiveness to identified problem areas, such as: the lack of separation of radiation protection management from plant operations management, the need for major improvements in accuracy, clarity, and coverage of radiation protection procedures, and the lack of operating reactor experience of the radiation protection staff. These matters have been satisfactorily resolved by the licensee.

Advancements made in Clinton's radiological protection program since SALP 3 include:

- (1) Radiation protection organizational responsibilities were redefined, with the Radiation Protection Supervisor now reporting directly to the Plant Manager.
- (2) The Radiation Protection Department was reorganized and expanded into three sections; Radiological Engineering, Radiological Operations, and Radiological Support.
- (3) RP Technicians received at least two months of experience at an operating power reactor.
- (4) A computerized system was ordered to provide gamma analysis, whole body counting, exposure management/records, effluent reporting, and emergency dose assessment.

The progress in development and implementation of the licensee's radiological controls program appears adequate. The licensee's plans for equipment, space, and staffing appear sufficient to conduct an acceptable radiation protection program.

b. Conclusion

The licensee is rated Category 2 in this area.

c. Board Recommendations

None.

V. SUPPORTING DATA AND SUMMARIES

A. Noncompliance Data

Facility Name: Clinton Nuclear Power Station Docket No. 50-461
 Inspection: No. 82-15 through 84-05

Functional Areas Assessment	Noncompliances and Deviations Severity Levels					Dev.
	I	II	III	IV	V	
1. Soils and Foundations						
2. Containment and Other Safety-Related Systems				2	1	
3. Piping Systems and Supports				3	1	
4. Safety-Related Components						
5. Support Systems						
6. Electrical Power and Distribution				2	2	
7. Instrumentation and Control Systems						
8. Licensing Activities						
9. Quality Assurance				5	3	
10. Preoperational Testing						
11. Radiological Controls						
Total				12	7	

B. Licensee Report Data

1. The Licensee submitted construction deficiency reports pursuant to the requirements of 10 CFR 50.55(e)

Report No.	Description
55-82-10	Safety-Related Piping, Minimum Wall Violation
55-82-11	Incorrect Identification of Base Material and Weld Procedures on Piping Hanger Traveler
55-82-12	Binding of Sway Strut/Snubber Piping Component Supports
55-82-13	Detailing and Fabrication of Structural Steel Connectors (Bristol Steel)
55-83-01	Suppliers of Measuring and Test Equipment
*55-83-02	Counterboring of Safety-Related Piping
*55-83-03	Certification of Startup Test Personnel
55-83-04	Document Control of Design Change Documents: FDDR's and FDI's
55-83-05	Failure of Certain 1/4" Hex Head Screws During Installation
55-83-06	Structural Steel Welding (Rockwell Engineering)
55-83-07	Pipe Shop Welds by Southwest Fabricating, Inc.
*55-83-08	Damage to Main Steam Guard Pipe Bellows
55-83-09	Damage to PGCC Cable Termination Connectors
*55-83-10	Containment Liner Dome Welds
55-83-11	Laminations in 3/8" Steel Plate
*55-84-01	Design change control NCRs/FCRs
*55-84-02	Material Traceability
*55-84-03	Concrete Expansion Anchor Installation
55-84-04	Heavy Schedule Pipe Fittings

55-84-05 Wall Thickness on MS Downcomer Piping

*Indicates report attributable to licensee and could have been prevented had licensee controls been more effective.

2. Reports of Defects (10 CFR Part 21)

IPCO Report No.	Description
21-82-11	Cable Has Oil Leakage (Okonite)
--	Emergency Generator Requires Field Winding Modification (Beloit Power Systems)
21-83-02	Design of band clamp on CRD housing and associated
21-83-04	Insulation cuts in multiconductor cable
21-84-01	Anti-rotation set screws on Anchor Darling valves
21-84-02	Failure of linear converter (Pacific Air Products)

The licensee has become more responsive in reporting construction defects. The threshold of reporting is lower and the content of the reports improved.

C. Licensee Activities

The licensee continued with the construction of Unit 1 and at the end of the assessment period, construction was approximately 83% completed. At the end of March 1983, the licensee had been reporting 88% complete. Due to a revised reporting methodology, the completed percentage was then backed up to 80% in June, 1983. Unit 2 was officially cancelled in October, 1983. At the beginning of this assessment period, there were 10 Stop Work Orders (SWO) in effect at the Clinton Site. Approximately 50% of all work had been shut down (determined by manpower figures). Ongoing work continued in the areas of electrical hangers, piping, and pipe hangers. On May 24, 1983, Illinois Power announced a fuel load change from January 1984 to January 1986. As detailed in the aforementioned SALP IV sections, numerous rework, retraining, and reinspection programs were completed by the contractor and licensee during the assessment period. The last of the Stop Work Orders was lifted by the licensee and concurred in by Region III on December 22, 1983. Construction work is continuing in all areas.

D. Inspection Activities

In addition to the routine and regional based construction inspection program activities, inspectors supported NRC legal and headquarters staff representatives with ASLB pre-hearing conferences.

E. Investigations and Allegations

There have been 50 allegations of improprieties or deficiencies submitted to Region III during this assessment period. Twenty nine of these allegations have been closed resulting in twelve substantiations and two items of noncompliance. The noncompliances dealt with the improper dispositioning and corrective actions of nonconformance reports. The remaining allegations addressed the areas of quality control intimidation, improper corrective actions, electrical work, and the appearance that construction schedule overrides quality. The remaining allegations are under review by NRC.

The licensee instituted a Hot Line telephone number, published on bulletin boards and in newsletters, in order to provide an immediate and direct channel for allegations. The resident inspector's in-plant phone number was also included on the in-plant bulletin board. Allegations to the NRC are on an increase (only 20 had been submitted prior to this assessment period).

F. Enforcement Actions

1. Orders and Civil Penalties

A Civil Penalty for \$90,000 was issued during this evaluation period for programmatic breakdowns in quality assurance which occurred during the previous SALP period. The breakdowns resulted in the 10 Stop Work Orders issued by the licensee over the period of January 1982 through August 1982. The SWO were discussed in detail in the previous SALP. The \$90,000 penalty was incurred and paid by Illinois Power on October 21, 1982.

G. Administrative Actions

1. Confirmatory Action Letters

As noted in the previous SALP and in Section V.C., 10 SWOs were issued by the licensee through August 1982. NRC Region III issued two Confirmatory Action Letters (CAL) in January and June 1982 to confirm agreements between the licensee and NRC. A CAL on the Overinspection Program was issued on October 6, 1982. As previously detailed in this report, licensee corrective action and recovery efforts were completed and deemed satisfactory by Region III. Letters from Region III concurring in the

lifting of the Stop Work Orders were issued during this assessment period, the last being on December 22, 1983. Approval of the revised Overinspection Program was given on January 25, 1983.

2. Management Conferences

- a. On October 8, 1982, a management meeting was held on site to discuss the Overall Schedule and Master Management Plan. Further discussions were held in regard to NRC commitments and 50.55(e) event reporting. Details are in Inspection Report 461/82-19.
- b. On October 28, 1982, a site management meeting was held in regard to the Licensee Overinspection Plan. Details are included in Inspection Report 461/82-19.
- c. On November 15, 1982, a meeting was held to discuss licensee's response to Investigation Report 461/82-02 concerning electrical matters. Details of the meeting are recorded in Inspection Report 461/82-22.
- d. A Management meeting with representatives of IPCO and Region III representatives was conducted on November 22, 1982. Subjects of discussion were the status of the licensee's Improvement Program. Details are contained in Inspection Report 461/82-23.
- e. A Systematic Assessment of Licensee Performance (SALP) meeting with representatives of Illinois Power and Baldwin Associates was held in Region III by NRC on March 17, 1983. This assessment is detailed in Inspection Report 50-461/82-21.
- f. A management meeting was held on March 17, 1983, to discuss the status of Illinois Power's Nuclear Power Improvement Program. Details are provided in Inspection Report 461/83-06.
- g. On April 13, 1983, there was a meeting onsite with NRC representatives and those of Illinois Power. Subjects discussed were the status of the Clinton Improvement Program and scheduled predictions of forthcoming requests to lift the current Stop Works. Also discussed was the requirement to notify the NRC of any changes in commitments prior to implementation.
- h. A management meeting was held on June 29, 1983, to discuss ongoing activities at the site including: need to maintain attention to quality issues for site activities, charter and emphasis being given for simplification activities, review of status of stop work recovery plans, and failure of work backlog to diminish.

- i. A meeting was held with corporate officers and staff of IPCO and NRC Region III Administrator and staff at CPS. The purpose of the meeting was to discuss the status of construction and key elements of the site improvement program. Details are provided in Inspection Report 50-461/83-21.

3. Stop Work Chronology

This summation of Stop Work events was extracted from NRC Inspection Reports covering the SALP IV period. Prior to this period an electrical Stop Work Order (SWO 007) with an accompanying Region III CAL was implemented on January 27, 1982. On September 1, 1982 an additional CAL was imposed on eight other stop work orders imposed by the Licensee on construction on June 23, 1982. A total of ten Stop Work Orders were then in effect.

- a. On October 5, 1982, five members of Stone and Webster Company assumed the top management positions of Illinois Power Construction Project Management. This additional nuclear expertise had been recommended in a previous outside agency audit of IPCO. On October 6, 1982, NRC issued a CAL encompassing the ongoing IPCO Overinspection Program. An NRC inspection concluded that ongoing activities were not being accomplished in accordance with an approved well-defined program. The CAL documented IPCO's understanding that no further overinspection would be allowed until the NRC had reviewed and concurred in a revised Overinspection Program Plan.
- b. On October 7, 1982, the NRC levied a \$90,000 civil penalty against IPCO for violations of Federal Regulations as detailed in Report 50-461/82-02. The penalty was paid in full without contention on October 21, 1982. On October 8, 1982, the NRC approved a partial release of Refueling Bellows SWO 010. The release consisted of allowing a controlled plan of ultrasonic inspection of questionable welds in order to provide the Architect Engineer with realistic data for problem disposition.
- c. On October 13, 1982, A Baldwin (BA) request was made to modify the numbers of travelers released to construction for work. Traveler control was an IPCO commitment made to the NRC in a presentation at a previous management conference. SRI approval of the request was granted and a follow-up approval letter from Region III was received on October 25, 1982. On October 21, 1982, Zack Company Stop Work No. 1 was issued encompassing all nonsafety seismic HVAC duct fabrication onsite. BA included this in existing SWO 020. The site fabrication and installation of nonsafety seismic HVAC duct systems was included in the existing Stop Work Recovery Program.

- d. On October 27, 1982, SWO 021 was issued against the subcontractor H. R. Robertson for testing of the Containment Gas Control Boundary Structure.
- e. The NRC approved partial release of SWO 19, Containment Structural Steel Plan 2A-1, to allow reinspection of fixed connections in five quadrants of Containment. The reinspection was completed on October 22, 1982. Results of the reinspection plus IPCO's plans for inspection of the remaining connections in Containment, Plan 2A-2, were submitted to the NRC on November 29, 1982. The plan underwent review by NRC in Region III.
- f. On November 12, 1982, IPCO forwarded a request for a partial release of SWO 016, Electrical Conduit, to the NRC for review and concurrence. The request was for release of 9,119 feet of conduit awaiting final construction walkdown and QC inspection. On November 18, 1982, NRC provided verbal approval to proceed with Phases I through III of the partial release. (NRC letter dated December 2, 1982).
- g. The CAL of September 1, 1982, provided for NRC to review and concur in a Master Management Plan as a prerequisite to lifting SWOs at Clinton. On November 16, 1982, IP submitted a description of their Improvement Program (Master Management Plan) to NRC for review. Also included were plans for Record Verification and Over-inspection. On November 18, 1982, NRC gave verbal approval for IP to proceed with their plans as outlined in their submittals. (Refer to NRC letters dated December 3 and 20, 1982).
- h. On November 18, 1982, Illinois Power embarked on an approved partial release work effort of Stop Work 016 Electrical Conduit. Commencement of Phases I through III, a controlled demonstration of work effort, was approved by the NRC Region III.
- i. On December 15, 1982, NRC Region III concurred in the release of Phase II of electrical SWO 007. This was a limited resumption of inspection and remedial electrical tray and connection work.
- j. The results of the SWO 019 Containment Structural Steel, 2A-1 reinspection effort was reviewed and approved by NRC. Subsequently, on December 17, 1982, Region III approved reinspection phase 2A-2, the remaining friction and slip connections in Containment.
- k. On January 17, 1983, NRC Region III acknowledged receipt of Illinois Power's detailed plan for disposition of the Drywell Refueling Bellows. The NRC reviewed the plan and concurred with the continued action on the partial release of SWO 010.

- l. On March 9, 1983, Illinois Power submitted their Record Verification and Overinspection plans to NRC Region III for review and concurrence. A partial trial run of the Records Verification Program was approved on March 11, 1983.
- m. On April 26, 1983, NRC Region III concurred with Illinois Power's corrective action in regards to the procurement stop work. Concurrence with the Recovery Plan actions was noted, and agreement was given to lift the procurement stop work.
- n. On May 19, 1983, NRC Region III concurred in Illinois Power's lifting SWOs 017, 018, and 010 (Electrical Equipment, Instrumentation, and Refueling Bellows).
- o. On June 14, 1983, the licensee notified the NRC that their Records Verification Program "dry run" was complete and assessed as adequate. IPCO lifted the dry run and proceeded with record verification in accordance with the approved program.
- p. On June 24, 1983, NRC concurred with IPCO in lifting SWO 019, Structural Steel.
- q. On July 22, 1983, NRC concurred with Illinois Power in lifting SWO 007, Electrical Tray and Attachments.
- r. On July 28, 1983, IPCO, requested NRC, by letter, to concur in IPCO's proceeding to phase III of the HVAC Recovery Plan. The exception to SWOs 014, 015, and 020, to perform inspections was not granted due to Zack procedure inequities.
- s. On July 29, 1983, NRC Region III concurred with Illinois Power in lifting SWO 016, Electrical Conduit Installation.
- t. On October 3, 1983, NRC Region III concurred with the Licensee by letter, in proceeding with Recovery Program Phase III HVAC reinspection effort. The remainder of SWO 014, 015, 020 continued in effect.
- u. On December 15, 1983, IPCO formally requested the NRC to review IP's recovery actions and concur in the lifting of SWOs on HVAC installation.
- v. On December 22, 1983, NRC concurred in a request by IPCO to lift the three HVAC stop work orders still in effect at Clinton Station. A detailed inspection was performed by NRC. There are no stop work orders presently in effect at Clinton.