

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

REPORT NO. 50-461/95014

FACILITY

Clinton Power Station

License No. NPF-62

LICENSEE

Illinois Power Company
500 South 27th Street
Decatur, IL 62525

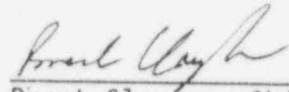
DATES

November 10 through December 18, 1995

INSPECTORS

M. J. Miller, Senior Resident Inspector
K. K. Stodter, Resident Inspector
M. E. Bielby, Operator Licensing Examiner
R. L. Doornbos, Operator Licensing Examiner

APPROVED BY



Brent Clayton, Chief
Reactor Projects Branch 5

Dec. 22, 1995
Date

AREAS INSPECTED

A routine, unannounced inspection of operations, engineering, maintenance, and plant support was performed. Safety assessment and quality verification activities were routinely evaluated. Follow-up inspection was performed for non-routine events and for certain previously identified items.

Results: No violations or deviations were identified in the areas inspected.

Executive Summary

Plant Operations

- Good performance was noted in response to an increase in reactor recirculation pump seal degradation.
- Regarding the licensed operator requalification training program, strengths included the testing and evaluation of operator performance, as well as a noted improvement in the program control procedures. However, minor question discrepancies reduced the overall quality of the written examination.
- The preparations to protect plant equipment during winter conditions were thorough.

Maintenance

- The structural integrity of the radioactive waste system tanks and piping appeared to be excellent.
- An excellent maintenance effort during planned outage-7 resulted in the completion of several major work items.

Engineering

- Degraded capacity concerns on the "C" condensate pump were resolved due to the good questioning attitude of plant engineering personnel.

Plant Support

- Radiation worker practices improved over the course of the inspection.
- Continued use of previous dose reduction initiatives contributed to the low dose received during planned outage-7.

Safety Assessment/Quality Verification

- Although suppression pool cleanliness was excellent, the licensee was proactive in their decision to clean all of the emergency core cooling suction strainers in order to establish a baseline for future inspections.
- Identification of a training program weakness was an example of good self-assessment by the line organization.

Summary of Open Items

Non-cited Violation: One identified in Section 1.5

DETAILS

1.0 OPERATIONS

NRC Inspection Procedures 71707, 71714, and 71001 were used in the performance of an inspection of ongoing plant operations. The licensee's response to the increased reactor recirculation pump seal degradation, and the subsequent actions taken, were good. Regarding the licensed operator requalification training program, testing and evaluation of operator performance was a strength and there was a marked improvement in the program control procedures. However, minor question discrepancies reduced the overall quality of the written examination. Cold weather preparations were found to be thorough.

1.1 Quick Response to Increase in Reactor Recirculation Pump Seal Degradation

In July 1995, the licensee began to experience a slow failure of the "B" reactor recirculation pump inner seal. Outer seal pressure (normally 510 psig) slowly began to increase and achieved its highest reading of approximately 867 psig on November 18, 1995. The following day, outer seal pressure began to decrease slowly over time, signifying that the outer seal was also beginning to degrade. However, throughout this period, and up to the start of the outage, drywell leakage had not increased significantly, if at all. The licensee quickly responded to the seal pressure indication by initiating preparations for a planned outage to replace the seal package. Compensatory action guidance was provided to the operators in the event that the seal degraded faster than the expected rate.

On December 9, 1995, the plant was shut down for planned outage-7 (PO-7) to replace the seal package on the "B" reactor recirculation pump. The seal performed as expected during the shutdown and no compensatory actions were needed. Operator performance during the outage was good; however, operational difficulties were encountered prior to reactor start up (see Section 1.2).

1.2 Personnel Error Resulted in Improper Tagout Restoration

During the restoration of both reactor recirculation loops two reactor operators failed to remove a danger tag and reposition the valve for the "A" seal water supply; however the tagout sheet indicated the tag was cleared. The licensee reperformed all drywell valve manipulations associated with the two operators prior to commencing reactor start up. All details concerning the issue were not available at the conclusion of the inspection. This issue will be dispositioned in the next routine report.

1.3 Status of Licensed Operator Requalification Training Program (LORT) was Good

During the inspection period the LORT program was reviewed to ensure compliance with 10 CFR 55 requirements. While specific strengths and weaknesses were identified, the overall program was considered good.

The licensee's effort in the preparation of both dynamic scenarios and job performance measure (JPM) material was a continued strength. Dynamic scenarios were challenging and unpredictable. JPMs were discriminating and contained specific tasks designed for senior reactor operators (SROs) only. Two sets of JPMs, each set with an alternate path and no JPM overlap, were prepared and administered during every week of this year's examination cycle.

The preparation of written examination material was acceptable. Although the exam contained some good open reference questions, and made use of the simulator as a reference, the collective effect of minor question discrepancies reduced the overall quality of the written examination.

Evaluation of operator performance during the requalification process was very good. Although all critical tasks were performed properly during scenarios, weaknesses in individual procedural usage and communications of event progression to management were identified by the evaluators. As a result of JPM evaluations, the licensee identified an inattention to detail weakness because the same JPM critical step was not properly performed by two of three operators. Individual and crew weaknesses including the inattention to detail issue described above were discussed during a subsequent critique. All individuals were evaluated as satisfactory by the licensee with no remedial training required. The inspectors agreed with licensee's evaluations.

When needed, the administration of remedial training was satisfactory. The inspectors reviewed two examples of remedial training conducted during this year's exam cycle and concluded that the proposed training was appropriate. However, documentation of the proposed re-evaluation for one individual was incomplete. This problem was corrected during the inspection week and was acceptable.

Significant improvement was noted in the licensee's newly developed training program control procedures. Nuclear Training and Support (NT&S) department procedure 11.01, revision 0, "Nuclear Training Program," applied to all formal training conducted at the facility and clearly established requirements for the licensee's five phase Training Systems Development (TSD) model. NT&S 11.01 accurately depicted elements of a systematic approach to training (SAT) based program as outlined in 10 CFR 50. Operations Continuing Training Program Description (OCTPD) incorporated the guidance of NT&S 11.01, and clearly provided sufficient details to consistently implement the TSD model.

Development of NT&S 11.01 resulted in a licensee identified program weakness of making new NRC commitments without re-evaluating applicability of old and potentially outdated NRC commitments. Additionally, during the inspectors' review, several inconsistencies in term usage between the NT&S and OCTPD procedures were identified. The licensee planned to review the discrepancies at a later date. The inspectors had no further concerns in this area.

The most recent nuclear training department (NTD) (Q38-94-23) and NTD limited scope (Q38-95-11) audit reports were reviewed in the course of the inspection. Both audits accurately captured strengths and weaknesses of the training department.

Performance of the simulator during the licensee's requalification effort was good. No simulator modeling or fidelity discrepancies were noted during the operating examination. The inspectors reviewed the simulator problem reports and concluded that a continuous review, tracking and upgrade program was in place to address immediate and long range simulator repair and improvement.

1.4 Extent of Cold Weather Preparations Sufficient to Protect Plant Equipment

The inspectors reviewed the licensee's cold weather preparations and determined that the actions taken were thorough and protected plant equipment during winter weather conditions. This included verifying the performance of preventive maintenance procedures to drain ventilation cooling systems, reviewing operation procedures to check heat tracing, performing system walkdowns, and evaluating the effects of freeze protection failures. No concerns were identified.

1.5 Follow-up on Previously Opened Items

A review of previously opened items (violations, unresolved items, and inspection follow-up items) was performed per NRC Inspection Procedures 92901 and 92702. For items which are considered "closed" on the basis of the inspection, the Inspection Procedures were satisfied with regard to the verification of appropriate licensee corrective and preventive actions.

(Closed) Violation (461/95012-01(DRP)): This violation was the result of an inadvertent mode change during a forced shutdown. Corrective actions included briefing other operating crews on the event, revising the surveillance procedure to provide additional guidance on mode switch position, and providing procedural guidance on how to denote procedure steps that are not applicable.

(Closed) Inspection Follow-up Item (461/95013-01 (DRP)): Lack of attention to detail by operations resulted in the plant being operated .03 percent above the licensed power limit. Prior to this event, reactor water cleanup (RT) was isolated for an outage. The lack of flow through the system resulted in an invalid RT computer point for the heat

balance calculation. The shift technical advisor (STA) removed the computer point from service and manually substituted a value of zero. Although the substitution was an acceptable action, the STA failed to communicate his action and no formal tracking system was required to track such changes to computer points. Following restoration of the RT system on November 2, the computer point was not restored. The error went unnoticed for two shifts by the operating crews. The licensee identified the problem on November 3, promptly reduced power, restored the computer point, and took appropriate corrective actions (which included implementing a method of tracking this type of computer information).

The safety significance of this event was minimal. Although the plant was typically operated several thermal megawatts (MW) below the licensed limit, the added heat load of the RT system resulted in exceeding the limit by .9 MW (based on a weighted 8 hour period). This is a violation of Section 2.C.(1) of the Clinton Power Station Operating License "Maximum Power Level." However, this licensee identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII of the NRC Enforcement Policy.

One non-cited violation was identified in this area.

2.0 MAINTENANCE

NRC Inspection Procedures 62703 and 61726 were used to perform an inspection of maintenance and testing activities. Maintenance efforts during PO-7 were well planned and executed. In response to industry concerns, the inspectors toured various radwaste areas and found material condition to be excellent.

2.1 Maintenance Effort During PO-7 was Excellent

The scope of work performed during PO-7 addressed current significant issues and allowed for other items as time permitted. In addition to the reactor recirculation (RR) pump seal replacement, the licensee installed a filter modification to the seal water path flowing to the RR pump seals, degassed the main transformer oil in phases "A" and "B", and repaired a leak on a feed water flow venturi flange. The licensee also used the opportunity to clean and document the final condition of all emergency core cooling system strainers and to replace the Division I SS-14 solid state trip devices in bus isolation breakers.

Outage work was accomplished in a controlled and deliberate manner. In most cases the tasks were accomplished ahead of schedule. During flushing of the RR pump seal filter modification, a significant quantity of particles were flushed out down stream of the new filter. The licensee had theorized that the premature RR pump seal failures were the result of poor seal water quality. The flush results lent credence to this theory. Restoration from the outage progressed equally well.

2.2 Excellent Material Condition of Radioactive Waste System Tanks and Piping

Examples of degraded structural integrity of radioactive waste (WX) processing tanks and piping was previously identified at other nuclear sites. The inspectors visually inspected several areas of the WX system at Clinton Power Station. This review included a radioactive waste sludge tank and a spent resin tank in high radiation areas and several other WX tanks and transfer pumps in low dose areas. The tanks and piping were in excellent condition. The stainless steel tanks and piping appeared clean and shiny while pipes with the original paint were in good condition as well. No evidence of rusting or cracking was observed. In addition, housekeeping in the tank rooms was also excellent. The inspectors will continue to observe material condition of the WX tanks through normal inspection activities.

The level instrumentation for some of the WX tanks was degraded, but the licensee planned to complete instrument upgrades by the fall of 1996. The planned activities and schedule appeared acceptable.

No violations or deviations were identified.

3.0 ENGINEERING

NRC Inspection Procedure 37551 was used to perform an onsite inspection of the engineering function. Plant engineering, in conjunction with maintenance, were thorough in determining the root cause of recent condensate pump capacity concerns.

3.1 Good Questioning Attitude Resulted in Resolution of Degraded Pump Capacity Problems

Thorough actions by plant engineering and maintenance personnel resulted in identifying the root cause of recent pump capacity concerns. Following the overhaul of the "C" condensate pump in July 1995, the licensee identified a degraded pump capacity concern during the post maintenance test run. Specifically, an 8 percent reduction in pump performance was experienced based upon fluctuations in the pump's flow rate and motor amps. Both engineering and maintenance considered the possibility that one of the pump's impeller stages was installed incorrectly during the pump overhaul; however, inspections of the impeller disproved this theory.

During further troubleshooting, plant engineering personnel performed visual inspections of both the installed and spare impellers. During this inspection, discrepancies with certain impeller dimensions were identified. Further review determined that the width of the second and third stage impeller vanes on the installed impeller were greater than those on the spare impeller, indicating that the vanes were not properly trimmed during the manufacturing process. The engineering personnel involved in this effort demonstrated good questioning attitudes concerning the impeller vane measurements since any discrepancy in this

measurement would not be inherently obvious during the receipt inspection process (since the dimensions were considered proprietary by the vendor). The impeller vendor later verified that improperly trimmed impeller vanes was the likely cause of the degraded pump capacity. Subsequently, the suspect impeller stages were replaced and the pump's performance returned to normal.

No violations or deviations were identified.

4.0 PLANT SUPPORT

NRC Inspection Procedures 71750 and 83750 were used to perform an inspection of plant support activities. Radiation worker practices improved over the course of the inspection. In addition, dose reduction efforts during PO-7 were considered good.

4.1 Improved Radiation Worker Practices

In Inspection Report 95013 the inspectors noted examples of poor radiation worker practices. Specifically, poor frisking techniques and improperly controlled materials within contamination areas were noted. During the current inspection period, radiation worker practices had improved; however, the inspectors will continue to monitor the licensee's performance in this area.

4.2 Good Dose Reduction Efforts

Good dose reduction efforts resulted in a dose of approximately 11 rem during PO-7. The licensee's continued use of initiatives introduced during the previous refueling outage contributed to the small dose received. Specifically, radiation protection (RP) personnel were assigned as drywell coordinators in order to restrict access to the drywell; daily dose tracking reports were provided to management as a dose reduction tool; and remote dosimetry and cameras were used to monitor work performed in high radiation areas. In addition, no respirators were used during the outage and no personnel contaminations were reported.

4.3 Follow-up on Previously Opened Items (92904)

(Closed) Violation (461/95009-01(DRS)): This violation pertained to a failure to comply with the fire protection program with regard to monthly functional testing of safe shutdown emergency lighting units and annual maintenance on portable fire extinguishers. Corrective actions included improving procedural controls governing the emergency lighting testing program (included changing the system designator listed on emergency lighting PMs to ensure they were included in the scope of all future outages) and simplifying the process for verifying required maintenance dates for fire extinguishers. The inspector reviewed the licensee's corrective actions and had no further concerns.

(Closed) Violation (461/95009-02(DRS)): This violation involved an instance where the licensee, due to negligence, failed to complete several procedural requirements prior to performing work involving an ignition source. The licensee's immediate corrective actions were completed during the course of the fire protection inspection in May 1995. Long-term actions included training craft personnel on hot work requirements, performing additional hot work area inspections by fire protection personnel, and revising the hot work permit such that the requirements were easily recognizable. The inspector reviewed the licensee's actions and had no further concerns.

No violations or deviations were identified.

5.0 SAFETY ASSESSMENT/QUALITY VERIFICATION

5.1 Efforts to Clean Emergency Core Cooling Suction Strainers Considered Proactive

In response to NRC Bulletin 95-02 concerning the clogging of emergency core cooling system (ECCS) suction strainers, plant engineering took the lead and inspected one ECCS suction strainer to determine the overall material condition. A light fluffy film of material was found on the strainer. Although engineering determined that the material would have no effect on ECCS pump performance, due to the highly unstable structure of the film, the ECCS strainers were cleaned during PO-7. The clean condition of the strainers should provide a good baseline for future strainer inspections. A sample of the material was obtained for analysis at the end of this inspection cycle.

5.2 Program Weakness Identified During Development of Training Procedure

As discussed in Section 1.3 of this report, the training organization identified a program weakness during development of a training program control program control procedure. The weakness was making new NRC commitments without re-evaluating the applicability of previous commitments. This was an example of good self-assessment by the line organization.

5.3 Follow-up on Previously Opened Items (92902)

(Closed) Unresolved Item (50-461/95008-01(DRS)) This unresolved item addressed a possible reduction in commitment in the quality assurance program. By letter dated August 25, 1995, the licensee addressed their current practices regarding qualifications of quality assurance inspectors versus their commitment to regulatory guide 1.58, revision 1. In an October 12, 1995, letter the NRC accepted the licensee's approach, with minor wording changes regarding specific documentation of each individual's qualification limitations. The inspector had no further concerns.

6.0 PERSONS CONTACTED AND MANAGEMENT MEETINGS

6.1 Region III Deputy Regional Administrator Visited Clinton Site

The Region III Deputy Regional Administrator (DRA) visited the Clinton site on November 29, 1995. The DRA toured the plant and met with senior licensee management to introduce himself and to encourage continued communications between the NRC and Illinois Power.

6.2 Preliminary Inspection Findings (Exit)

The inspectors contacted various licensee operations, maintenance, engineering, and plant support personnel throughout the inspection period. Senior personnel are listed below.

At the conclusion of the inspection on December 18, 1995, the inspectors met with licensee representatives (denoted by*) and summarized the scope and findings of the inspection activities. The licensee did not identify any of the documents or processes reviewed by the inspectors as proprietary.

*J. Cook, Vice President

*R. Morgenstern, Manager - Clinton Power Station

J. Miller, Manager - Nuclear Station Engineering Department

*R. Phares, Manager - Nuclear Assessment

*D. Thompson, Assistant Manager - Nuclear Assessment

*J. Palchak, Manager - Nuclear Training and Support

*D. Morris, Director - Plant Radiation and Chemistry

*P. Yocum, Director - Nuclear Assessment

W. Clark, Director - Plant Maintenance

*K. Moore, Director - Plant Operations

*A. Mueller, Director - Plant Support Services

*C. Elsasser, Director - Planning & Scheduling

*D. Korneman, Director - Plant Engineering

J. Langley, Director - Engineering Projects

*M. Stickney, Supervisor - Regulatory Interface

*W. Bousquet, Director - Maintenance & Technical Training

7.0 DEFINITIONS

7.1 Violations for Which a "Notice of Violation" will Not Be Issued

The NRC uses the Notice of Violation as a standard method for formalizing the existence of a violation of a legally binding requirement. However, because the NRC wants to encourage and support licensee's initiatives for self-identification and correction of problems, the NRC will not generally issue a Notice of Violation for a Severity Level IV violation that meets the tests of the NRC Enforcement Policy (NUREG 1600) Section VII. A violation of regulatory requirements identified during this inspection for which a Notice of Violation will not be issued was discussed in Section 1.5 of this report.