U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/92012(DRP)

Docket No. 50-461 License No. NPF-62

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

Facility Name: Clinton Power Station

Inspection At: Clinton Site, Clinton, Illinois

Inspection Conducted: 6 - July 27, 1992

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5-17-92
Date

Inspection Summary

Inspection from June 16 through July 27, 1992 (Report No. 50-461/92012(DRP))
Areas Inspected: Routine, unannounced safety inspection by the resident and regional inspectors of licensee actions on previous inspection findings, event followup, operational safety, maintenance and surveillance, emergency preparedness, security, engineering and technical support, meetings with local officials, management changes, and management meetings.
Results: Of the seven areas inspected, no violations or deviations were identified in six areas. In the remaining area, one violation was identified (failure to properly perform a 10 CFR 50.59 evaluation after changing the method of operating the two Division 3 diesel generator starting air system receiver tanks described in the Updated Safety Analysis Report - Paragraph 7.e).

The following is a summary of the licensee's performance during this inspection period:

Plant Operations

- Operating crew actions, in response to the reduction in cooling water flow to the "B" reactor recirculation pump, were prudent and conservative.

- A personnel error by a reactor operator resulted in a Group 1 isolation and reactor scram during a unit cooldown.

- Several errors and poor communications contributed to an event where the "C" reactor water cleanup pump was pressurized with high temperature reactor water, while several vent and drain valves were open. The leak was quickly isolated and there was no effect on the reactor.

Maintenance and Surveillance

- The "D" inboard main steam isolation valve (MSIV) stuck shut after a Group 1 isolation. This was due to insufficient clearance between the nosepiece of the poppet and the valve body's counterbore. The licensee concluded this error was due to inaccurate measurements performed during the previous refueling outage (RF-3).

- The "B" turbine driven reactor feed pump actuator was repaired during the maintenance outage. The root cause of the problem was due to improper alignment of the torque arm actuator combined with an incomplete root cause analysis of previous failures.

- Questions were raised about non-supervisory personnel reviewing preventive maintenance documents. While this was not in strict compliance with the licensee's procedure, the licensee concluded that this was an appropriate method for reviewing documents and has revised the conflicting procedures to allow this practice.

Emergency Preparedness

- No problems were identified during observation of an off-hours drill.

Security

- No contraband was identified during a search by canine units.

Engineering and Technical Support

- A weakness was observed in general employee training on hazard communications involving the presence of asbestos and utilization of previous lessons learned.

- Weaknesses were noted in component cooling water modification CCF010 in revising the 10 CFR 50.59 screening evaluations and in the basis for the modification. The screening evaluation demonstrated only adequate performance and the documentation of the basis was sparse.

- A question was raised concerning the possibility that loop seals in drywell and containment pressure and differential pressure transmitters

could collect moisture, affecting the instruments' accuracy. Licensee evaluation of this issue was in progress (IFI 461/92012-01(DRP)).

- The licensee failed to properly perform a screening evaluation for a change to the method of operating the Division 3 diesel generator starting air receivers in violation of 10 CFR 50.59 (NV4 461/92012-02(DRS)).

DETAILS

1. Persons Contacted

Illinois Power Company (IP)

*J. Perry, Senior Vice President
J. Cook, Vice President and Manager of Clinton Power Station (CPS)
*J. Miller, Manager - Nuclear Station Engineering Department (NSED)
*R. Wyatt, Manager - Quality Assurance
F. Spangenberg, III, Manager - Licensing and Safety
*R. Morgenstern, Manager - Training
J. Palchak, Manager - Nuclear Planning and Support
L. Everman, Director - Radiation Protection
«*P. Yocum, Director - Plant Operations
*W. Clark, Director - Plant Maintenance
«R. Phares, Director - Licensing
K. Moore, Director - Plant Technical
*W. Bousquet, Director - Plant Support Services
*C. Elsasser, Director - Planning & Scheduling
*S. Hall, Director - Nuclear Program Assessment
«*J. Sipek, Supervisor - Regulatory Interface
J. O'Brien, Supervisor - Independent Safety Engineering Group
«*D. Korneman, Director - Systems and Reliability, NSED
*R. Kerestes, Director - Engineering Projects, NSED
J. Langley, Director - Design and Analysis, NSED
*T. Arnold, Coordinator - Human Performance Enhancement System
*M. Lyon, Director - Emergency Response
«J. Peterson, Supervisor - Technical Assessment

The inspectors also contacted and interviewed other licensee and contractor personnel during the course of this inspection.

* Denotes those present during the exit interview on July 27, 1992.
« Denotes those present during a meeting in Region III on June 26, 1992.

2. Action on Previous Inspection Findings (92701)

a. (Closed) Open Item (461/88014-05): High contact resistance in Agastat GP relays used in low current applications. This item was previously closed in Inspection Report 461/89026 and related licensee event report 461/88017 was also closed in Inspection Report 461/90028. The original issue involved a design error by General Electric in specifying relays which were not suitable for low current applications. The licensee's action plan involved the replacement of the affected relays with ones having gold plated contacts, in both safety-related and nonsafety-related applications. The licensee had completed replacement of nonsafety-related relays under modifications E-F028 and E-F029; however, the licensee had decided not to complete the replacement of safety-related relays under modification E-F030. This was due to Agastat not manufacturing gold plated relays in a safety-related application. The licensee concluded it would be

cost prohibitive to purchase the relays as commercial grade and upgrade them to safety-related. The licensee instead decided to perform preventive maintenance (PM) on the safety-related relays, by periodically burnishing the contacts (to keep their resistance low). The PM program had been successfully implemented and no further relay failures have occurred. The inspectors have reviewed the licensee's actions and concluded they were appropriate. These items remain closed.

b. (Closed) Unresolved Item (461/92005-01(DRS)): Adequacy of 10 CFR 50.59 evaluation on changes to the operation of the Division 3 diesel generator starting air system. The NRC held a meeting on June 26, 1992, in the Region III office, to discuss this issue. Personnel in attendance are indicated in Paragraph 1. Based on the information provided by the licensee, the NRC concluded that a violation did occur. Consequently, this item is considered closed. This issue is discussed further in Paragraph 7.e.

c. (Closed) Inspection Follow-up Item (461/92010-02): Corrective actions taken to resolve problems with the "B" reactor feedwater pump actuator linkage. The licensee's efforts to resolve the problem were successful. The inspectors have no further concerns and this item is considered closed. Details of this problem are discussed further in Paragraph 4.c.

3. Plant Operations

The unit operated at power levels up to 100% until 9:30 p.m. on June 23, 1992, when the unit was shut down to repair a problem with the cooling water flow to the "B" reactor recirculation pump (see Paragraph 3.b(1)). The reactor was taken critical at 2:20 a.m. on July 6, 1992, and was synchronized to the grid at 11:56 p.m. on the same day. The unit operated at power levels up to 100% for the rest of the report period.

a. Onsite Event Followup (93702 & 71707)

The inspectors performed onsite followup activities for an event which occurred in June 1992. This activity included reviews of operation logs, procedures, deviation reports, licensee event reports (LERs) (where available), and interviews with licensee personnel. For the event, the inspectors developed a chronology; reviewed the functioning of safety systems required by plant conditions; and reviewed licensee actions to verify consistency with procedures, license conditions, and the nature of the event. Additionally, the inspectors verified that the licensee's investigation had identified the root causes of equipment malfunctions and/or personnel error. Details of the event and the licensee's corrective actions developed through inspector follow-up appear below.

Group 1 Isolation And Reactor Scram Due To Operator Error (LER 461/92007)

At 2:30 p.m. on June 23, 1992, with the reactor in Operational Condition 3 (HOT SHUTDOWN) at 600 psig [4.1 Mpa], the reactor operator inadvertently rotated the mode switch past the startup position, during the performance of a routine surveillance activity. The run position contacts momentarily closed. Since reactor pressure was less than 849 psig [5.9 Mpa], the logic was satisfied for a Group 1 isolation (main steam line isolation valves (MSIVs) and drain valves) and subsequent reactor scram. No rod motion occurred since the control rods were already fully inserted. All equipment responded as designed.

The operators reset the scram and reopened all MSIVs except the "D" inboard MSIV, valve 1B21F022D, which was stuck closed. The cooldown was continued and 10 hours later the operators were successful in reopening the valve. Further discussion of the maintenance activities performed on valve 1B21F022D is contained in Paragraph 4.b. As corrective action for this event, the licensee verified that the mode switch functioned properly, counseled the reactor operator, and reviewed this event with other operating crews. The inspectors have no further concerns on this issue.

b. Operational Safety (71707)

The inspectors observed control room operation, reviewed applicable logs, and conducted discussions with control room operators during June and July 1992. During these discussions and observations, the inspectors ascertained that the operators were alert, cognizant of plant conditions, attentive to changes in those conditions, and took prompt action when appropriate. The inspectors verified the operability of selected emergency systems, reviewed tagout records, and verified the proper return-to-service of affected components. Tours of the circulating water screen house and the auxiliary, containment, control, diesel, drywell, fuel handling, rad-waste, and turbine buildings were conducted to observe plant equipment conditions — including potential fire hazards, fluid leaks, and excessive vibrations — and to verify that maintenance requests had been initiated for equipment in need of maintenance.

The inspectors observed plant housekeeping and cleanliness conditions and verified implementation of radiation protection controls. The inspectors witnessed portions of activities associated with radioactive waste shipments.

The inspectors verified by observation and direct interviews that the physical security plan and all other activities were being implemented in accordance with the requirements established under Technical Specifications (TS), Title 10 of the *Code of Federal Regulations*, and administrative procedures.

(1) Reactor Shutdown Due To Overheating Of The "B" Reactor Recirculation Pump

On June 23, 1992, with reactor power at 70%, the reactor operators received a low flow alarm for component cooling water (CC) flow to the "B" reactor recirculation (RR) pump. Temperatures for the upper and lower motor oil coolers were observed trending upward. No change was observed in motor stator temperature. When oil cooler temperatures reached 210 °F (99 °C), operators secured the RR pump and entered single loop operation. The unit experienced an anticipated transient and was stabilized at approximately 29% power. Prior to this event, the licensee had been experiencing problems with the "B" RR pump second stage seals. As a conservative operating measure, operations management had directed that control rods be inserted below the 80% rod line. Consequently, if the pump had to be secured, the reduction in core flow would not cause the reactor to enter the power-to-flow instability region.

The operators subsequently commenced a controlled shutdown and entered Maintenance Outage 4 (MO-4). The principal work accomplished in this outage was to correct the problems with the low CC flow, the low second stage seal pressure, and the sticking shut of the "D" inboard MSIV. Work on reactor feedwater pump actuators and RR pump vibration monitors was also accomplished. The problems with the MSIV and feedwater pump actuators are discussed further in Paragraphs 4.b and 4.c, respectively. The low CC flow problem is discussed in Paragraph 7.c.

The shutdown and cooldown was normal with the following exceptions. First, the main generator output breaker tripped immediately after the turbine was tripped; instead of after an expected 30 second time delay. Second, a main steam isolation occurred during the cooldown (see Paragraph 3.a).

(2) Work Accomplished During MO-4

The "B" RR pump's low second stage seal pressure was due to foreign material at the entrance to the breakdown orifice between the first and second stages. The foreign material was found during the replacement of the old seal package. The licensee subsequently tested the old seal package and the seal performed normally. The foreign material was non-metallic and appeared to be a Buna-N type elastomer. The licensee identified all potential components where the material could have originated and performed inspections. The licensee also flushed the control rod drive water system supply to the seals. Both efforts yielded negative results. The foreign material was examined for neutron activation with negative results. The material was shipped to a laboratory for further analysis. A new seal package was installed and was observed to be performing normally after

reactor startup. The licensee's analysis of the source of the foreign material was not completed by the end of the inspection period.

The cause of the generator output breaker tripping sooner than expected was improperly adjusted reverse power contacts in a type GGP relay. The reason for the improperly adjusted contacts was vendor manual information not being incorporated into the relay calibration and adjustment procedure. The licensee's evaluation of this problem was in progress at the end of the report period. The inspectors will review it in a subsequent report.

(3) Vent Plugs Dropped Into The Suppression Pool

On June 27, 1992, operations personnel were venting the withdraw and insert riser lines for the control rod drive mechanisms. The operator had removed eight vent plugs from the line and placed them in the pocket of his lab coat. While proceeding to a bucket, which was used to temporarily store the vent plugs, he became entangled in his sound powered telephone cord. While extricating himself, seven vent plugs fell from his pocket into the suppression pool. Replacement plugs were obtained and installed after the lines were vented. The licensee determined that the plugs could remain in the suppression pool without any adverse impact until the next time the pool was cleaned. The individual was counseled on his performance.

(4) Pressurizing the "C" Reactor Water Cleanup (RT) Pump With Vent And Drain Valves Open To Atmosphere

At 10:35 a.m. on July 8, 1992, operations personnel pressurized the "C" RT pump to allow mechanical maintenance personnel to check the pump seal for leaks. When the operator partially opened the suction isolation valve, aligning the pump to the reactor vessel steam issued from all the pump's vent and drain valves which were still open. The suction isolation valve is located in the RT mezzanine area, above the RT pump room. Personnel inside the RT pump room evacuated immediately and the operator shut the suction valve. Main control room operators received an RT differential flow high alarm and immediately bypassed the isolation signal. They also received an RT room high temperature and delta temperature alarms and entered emergency operating procedure EOP-8 on secondary containment control. The operators exited EOP-8 when temperatures returned to normal as the room coolers condensed the steam. The isolation bypass was returned to normal. By 11:30 a.m., the vent and drain valves were shut and the RT pump was started with no further leakage observed.

The licensee conducted a fact finding investigation into this event and identified breakdowns in communications and work practices as principal contributors. As corrective

action, operations management reviewed with all shift crews the importance of documenting abnormal system configurations, performing thorough shift turnovers, self-checking when deviating from previously established courses of action, and proper communications and planning between the maintenance and operations departments. The licensee's initial conclusion was that existing programs should have prevented this event, but individuals did not adhere to program guidelines. The licensee's evaluation was in progress at the end of the report period. The inspectors will review it in a subsequent report.

The inspectors evaluated the operating crew's response in bypassing the RT isolation signal. The system operating procedure, CPS 3303.01, "Reactor Water Cleanup," Section 6.7, provided guidance on when the operators could bypass the isolation signal. The inspectors concluded that the operators actions were consistent with approved procedures. The inspectors also recommended that management review NRC Information Notice 92-47, "Intentional Bypassing of Automatic Actuation of Plant Protective Features," to ensure that the guidance provided in the RT procedure was appropriate.

(5) RR Pump Seal Parameter Action Levels

Before and after the degradation of the "B" RR pump seal package, the inspectors asked licensed operators on three different crews what guidance was provided on securing the RR pumps, relating to second stage seal pressure. The operators were very familiar with the guidance contained in the RR system procedure and RR annunciator response procedures; however, they were unfamiliar with any guidance provided by the Nuclear Station Engineering Department (NSED). The inspectors contacted the NSED system engineer and were informed that a June 27, 1990, memorandum (Y-94348) had been issued on this subject and was in the shift technical advisor's files. The operating crews were not familiar with this document. The inspectors discussed this issue with operations department management and suggested that management verify that the operating and annunciator response procedures contain the appropriate information. The inspectors also noted that the original memorandum did not provide any guidance on vibration limits since no vibration proximity probes were installed at that time. However, a modification to monitor pump vibration was being installed. The licensee informed the inspectors that this information would be reviewed for incorporation in procedures.

No violations or deviations were identified.

4. Maintenance and Surveillance (61726 & 62703)

a. Observations Of Work Activities

Station maintenance and surveillance activities of both safety-related and nonsafety-related systems and components listed below were observed or reviewed to verify they were conducted in accordance with approved procedures, regulatory guides, industry codes or standards, and in conformance with TS.

Document	Activity
D10219	Replace "B" RR Pump Seal Package
D10494	Install Modification C-F031 to Transmitter 1E31N088B
D26333	Feedwater Flow Transmitter Calibration
D27342	Removal of Vibration Instrument From RR Pumps
D31129	Repair "D" MSIV
D33113	Inspection of Main Generator Disconnect Links (4508)
PEMDGM011	Clean/Rebuild/or Replace Air Start Solenoid Valves for Div 3 DG
PMMSXM004	Radiography of Shutdown Service Water Line
PMMSXM010	Radiography of Shutdown Service Water Line
PEMVC115	Hydramotor OFZVC125 Inspection
PEMVC119	Hydramotor OFZVC126 Inspection
9532.29	Channel Functional Test of Main Steam Line Area Temperature Monitors
CCF010	Component Cooling Modification F010

The following items were considered during this review: the limiting conditions for operation (LCOs) were met while affected components or systems were removed from and restored to service; approvals were obtained prior to initiating work or testing; quality control records were maintained; parts and materials used were properly certified; radiological and fire prevention controls were accomplished in accordance with approved procedures; maintenance and testing was accomplished by qualified personnel; test instrumentation was within its calibration interval; functional testing and/or calibrations were performed prior to returning components or systems back to service; test results conformed with TS and procedural requirements and were reviewed by personnel other than the individual directing the test; any deficiencies identified during the testing were properly documented, reviewed, and resolved by appropriate management personnel; and work requests were reviewed to determine the status of outstanding jobs and to assure that priority was assigned to safety-related equipment maintenance which may affect system performance.

b. Inspection And Repair Of MSIV 1B21F022D

The licensee's investigation of the sticking of the "D" inboard MSIV, valve 1B21F022D, identified the problem as insufficient clearance between the poppet's nosepiece and the valve body's

counterbore. The clearance should have been a nominal 0.010 to 0.015 inches (in) [0.25 to 0.38 mm] but was found to be 0.006 to 0.009 in [0.15 to 0.23 mm]. This dimension had been checked before the valve was reassembled in RF-3. The licensee concluded the problem occurred due to the type of measuring equipment used and the physical difficulty in measuring this dimension. As corrective action, the poppet was machined to 0.012 to 0.016 in [0.30 to 0.41 mm]. After reassembly, the valve failed its local leak rate test (LLRT).

Further investigation revealed that the point of contact between the poppet and the valve seat was too high on the valve seat. Consequently, if there was any angular misalignment between the poppet and seat, the valve would fail its LLRT. Engineering calculations indicated that the valve seat should have been at least 0.331 in [8.41 mm] wide. The seat was found to be 0.312 in [7.93 mm] wide. As corrective action the licensee machined the valve seat to make it 0.390 in [9.91 mm] wide; thus moving the point of contact into the middle of the seat. The valve then successfully passed two LLRTs, with very low leakage rates. Based on this information, the inspectors concluded that the licensee had identified and corrected the root causes of the sticking MSIV and have no further concerns.

c. Repair of Reactor Feedwater Pump (RFP) Throttle Linkages

The "B" RFP throttle linkage had malfunctioned (locked up) several times over the last 2 years. In May 1991, the root cause was identified as metallic grit in the torque motor and armature for the servo valve connected to the torque arm actuator (see Figure 1). In September 1991, the licensee determined the pillow block bearings were worn out and one spherical bearing was locked up. The pillow block bearings were rotated and lubricated with grease as recommended by the vendor, due to the unavailability of new bearings. The spherical bearings were lubricated and exercised. The torque arm was reassembled and tested satisfactory. In November 1991, the pillow block bearings were replaced.

On January 30, 1992, the "B" RFP again locked up. The actuator broke loose, after a few minutes, without operator intervention. On February 27, 1992, the "B" RFP again locked up, eventually resulting in a reactor trip on low water level. The licensee investigated this problem during RF-3 and the torque arm was disassembled and inspected. The pillow block bearings were found galled to the torque arm journals and the bearing anti-rotation pins were sheared. The interior surface of the bearings was designed to be lubricated with graphite. The licensee determined that a vendor recommendation to grease the bearings contributed to the problem by interfering with the ability of the graphite to function properly. Extensive measurements were taken of clearances and the runout of the torque arm. Misalignment was found between the elevation of the pillow block platforms and the pillow block bearing surfaces. The torque arm components were reworked. The actuator was reassembled and tested satisfactorily

On June 13, 1992, the "B" RFP again locked up. The torque arm was disassembled and inspected. The bushings were worn excessively. The licensee performed additional measurements and found several problems. There was a 0.004 in [0.10 mm] runout on one of the torque arm journals. The pillow blocks and the bearings (both old and new) were found to not be concentric. The licensee machined the pillow blocks to be concentric and then place the new bearings in the pillow blocks and machined them to a zero runout. Both torque arm journals were machined to eliminate any runout and then ground to a very fine, 16 μin [0.41 μm], finish. The torque arm was then installed and aligned using a laser alignment tool. The actuator was thoroughly tested and could be moved freely with one hand. The licensee placed the unit in service and was monitoring its operation. The licensee also measured the "A" RFP torque arm critical dimensions and found similar problems, although not as serious. The components were machined and reassembled. That pump was also returned to service. The licensee concluded that the root causes of the problems were improper alignment of the torque arm actuator and inadequate root cause analysis of previous failures. Based on this information, the inspectors concluded that the licensee had identified the cause of the problems with the RFPs and have no further concerns.

d. Review of Completed Maintenance Documents by Non-Supervisory Individuals

The inspectors reviewed a concern identified in licensee Condition Report 1-92-04-053 which involved non-supervisory individuals reviewing preventative maintenance documents for closure (AMS No. RIII-92-A-0047). The licensee's evaluation determined that procedure CPS 1029.01 "Preparation and Routing of Maintenance Work Requests (MWR)," Paragraph 8.8, permitted designated individuals to review MWRs for closure. However, this note was not included in CPS 1502.01, "Conduct of Maintenance," or CPS 1034.01, "Station Preventive Maintenance." The licensee concluded that while the actions taken were not in strict compliance with CPS 1034.01, the policy of using craft personnel to review and correct documentation was appropriate provided that a final review was performed by a maintenance supervisor.

The licensee's final corrective actions was to brief all craft personnel on this event and to revise CPS 1034.01 and 1502.01 to permit craft personnel to perform closure reviews when directed by management. The inspectors have reviewed the licensee's evaluation and concluded that although CPS 1034.01 was not strictly followed, the activity was within the licensee's discretion and the methodology utilized was appropriate. Based upon this review, the inspectors have no further concerns with this issue and it is considered closed.

e. Rubber Boot Seal Preventive Maintenance (PM) Program

The inspectors reviewed the licensee's PM program to determine if inspections of rubber boot seals in safety-related equipment were required and if any safety-related equipment had been inoperable

due to degraded rubber seals. This review was in response to an issue involving a containment air cooling unit boot seal failure at the Calvert Cliffs Nuclear Power Plant. The licensee has determined that all air cooling units (not just containment units) were of a design which did not utilize a rubber boot seal. Any rubber seals installed were certified for the life of the plant and were not required to be periodically inspected. Based on this information, the inspectors have no further concerns.

No violations or deviations were identified.

5. Emergency Preparedness Exercises (82301)

The inspectors observed an announced, off-hours, drill of the Clinton Power Station's Emergency Plan on July 24, 1992. The drill commenced at 3:40 a.m. to demonstrate the licensee's ability to conduct an exercise between the hours of midnight and 6:00 a.m. There was no State or local government participation. The drill was terminated at 7:00 a.m.

The inspectors concluded that drill objectives had been met. Activation of facilities included all onsite emergency response facilities, the Emergency Operations Facility (EOF), and the Joint Public Information Facility. Offsite notifications were completed in a timely manner with all Nuclear Accident Reporting System (NARS) forms reviewed and initialed by the Emergency Directors. Documentation of the protective action recommendations was included on the NARS form. The inspectors did not identify any concerns.

No violations or deviations were identified.

6. Security

On June 25, 1992, the licensee had two canine units from the Illinois State Police perform searches for controlled substances of various areas both inside and outside of the protected area. The search results were negative.

No violations or deviations were identified.

7. Engineering and Technical Support

a. Review of Inservice Inspection (ISI) Summary Report

Inspection of the ISI activities at the Clinton Power Station was documented in NRC Inspection Report 461/92007(DRS). The NRC specialist inspector reviewed the RF-3 ISI Summary Report of activities performed from March 10 through May 31, 1992, and determined that the observations made by the NRC inspector during the inspection were consistent with the data presented in the ISI report. No concerns were identified.

b. General Employee Training

The inspectors attended the licensee's general employee, hazard communication, refresher training course XC10128-00. The course material stated there should not be any friable asbestos onsite. This was generally correct; however, there was gasket material in the plant which contained asbestos. If power grinding tools were to be used upon this material it would become friable. This type of gasket material was used in the manways of the turbine low pressure heaters. The presence of asbestos was discovered during RF-2 (spring 1991), when workers grinding on the gasket material were exposed to concentrations of asbestos above the Occupational Safety and Health Administration (OSHA) limits. A notice of noncompliance was issued by OSHA. Neither the OSHA noncompliance, the specific event, nor any lessons learned were discussed in the refresher class. The inspectors discussed this missed opportunity, to educate the very workers who would be potentially exposed to this hazard, with training department management.

c. Review Of Modification CCF010

The inspectors reviewed the package for modification CCF010, which was installed in RF-3. The modification had two purposes. The first was to measure the flow to each cooler for RR pumps "A" and "B" and the second was to throttle the cooling water flows to each cooler to reduce fluid velocities and thus erosion rates. The first goal was successful and flow rates were accurately measured; however, the second goal was not successful. The licensee had a significant amount of difficulty in completing post modification testing and was forced to abandon the original concept of controlling the flow with the newly installed throttle valves. Instead the flow was throttled with upstream isolation valves. Instabilities in the flow hydraulics led to the loss of cooling event on June 23, 1992 (see Paragraph 3.b(1)). The licensee's resolution to the problem was to leave all throttle valves fully open until further analysis could be completed. The licensee verified with General Electric that unacceptable erosion would not occur before the next refueling outage in September 1993.

In reviewing the modification package, the inspectors identified two concerns. First, the 10 CFR 50.59 screening evaluation which had been performed for the original modification, was not supplemented after the modification was revised to utilize the isolation valves as throttle valves. The original screening evaluation was very thorough and correctly concluded that the modification could be made without prior NRC approval. The only screening evaluation for the revised modification was that associated with the revision to the CC system valve lineup procedure. This screening evaluation did not contain any analysis; but simply stated a conclusion. While this was in technical compliance with the requirements of 10 CFR 50.59, the inspectors concluded this was only adequate performance.

Second, the documentation of the bases for the modification was sparse. The information contained in the package only referenced a

General Electric letter which stated that the high flow rates in the CC system could lead to accelerated erosion in coolers. There were no independent calculations by engineering personnel of what erosion rates and hence flow rates would be acceptable. At the exit meeting, engineering personnel stated that because the flow rates had not been accurately known before the modification, this modification had been a research and development vehicle to determine acceptable flow rates. The inspectors commented that if this was the intention of the modification, it was not expressed in the package. Additionally, no commitments had been made to analyze the new flow rate data and determine appropriate flow rates.

However, the inspectors concluded that a more fundamental problem exists with the engineering department's development and approval of this modification. This fundamental problem was in confusing methods and goals. The inspectors believe that the goal of the modification should have been to achieve an acceptable service life. The method by which this g[illegible] would be achieved would be to adjust the CC flow rate and thus control the fluid velocity and rate of erosion. With a known erosion rate and present tube wall thickness, the service life of the coolers can be projected. With that information, a cost benefit analysis (including radiation dose savings) can be developed. Possible conclusions from the analysis might be that with present erosion rates, the coolers will last the life of the plant, or 20 years, or some smaller number. Or it also might be simpler to replace the coolers after a fixed number of years, rather than to try to control flow rate. This basic type of engineering analysis was not present in this case. The inspectors discussed their concerns with licensee and engineering department management.

d. Loop Seals In Impulse Lines For Drywell And Containment Pressure And Differential Pressure Transmitters

In response to a pilot inspection performed at the Haddam Neck plant in the instrumentation and control area (Inspection Report 213/92-902) the inspectors asked two questions of the licensee. First, were there any low spots in the impulse sensing lines for drywell or containment pressure transmitters? If there were low spots, did the licensee have any procedures for periodically purging the lines? This could be necessary due to the possibility that moisture inside the sensing line could condense due to temperature differences. The presence of moisture in the sensing line could affect the accuracy of the instrument.

A second question involved the use of lithium batteries in electronic circuit cards. If used, was their presence recognized in the fire hazards analysis? The licensee determined that lithium batteries were used in the plant. There were none in safety-related applications and were some in nonsafety-related applications. Their effect on nonsafety-related buildings was considered negligible, and no 10 CFR Part 50, Appendix R equipment was affected.

The licensee informed the inspector that the drywell and containment pressure transmitters were designed to be at the high point of the tubing routing and that the tubing was sloped down to the penetration. Consequently, any moisture would drain back into containment and not affect the instrument readings. No procedures existed to periodically purge the sensing lines.

Subsequent to receiving this information from NSED personnel, the inspectors readily identified at least 10 containment pressure and differential pressure transmitters that were not installed consistent with the design. The problems can be segregated into two types. First, several of the transmitters were below the elevation of the penetration. Second, the tubing runs on the other transmitters did not have a constant downward slope to the penetration. Inasmuch as the inspectors observations contradicted the information provided by the licensee, the inspectors requested that the licensee identify any drywell or containment pressure or differential pressure transmitters, utilizing containment atmosphere, that had low point traps. Based on this information, the licensee should then determine if any procedures or preventative maintenance tasks are necessary to periodically purge the lines to ensure the accuracy of the instrument (IFI 461/92012-01).

As a secondary issue to the technical question, the inspectors expressed concern to licensee management about the accuracy of the information supplied to the NRC and the depth of field evaluations performed by NSED personnel in this case.

e. 10 CFR 50.59 Evaluations Of Diesel Starting Air Systems

The inspectors had raised questions on the licensee's method of operating the starting air system for the Division 3 diesel generator (DG). The system consisted of two air receivers, each supplied from its own air compressor. One compressor was powered by an electric motor while the other was powered by a diesel engine. The licensee had found the check valve on the discharge of the diesel driven air compressor (DDAC) frozen shut in June 1991, and had isolated it for maintenance when the DDAC was taken out of service in August 1991. After that, operators would refill the DDAC air receiver via a cross-connect valve to the motor-driven air compressor (MDAC) air receiver. This action was authorized by a procedural change effective February 1990.

The maintenance of records of a safety evaluation for changes to the facility, as described in the safety analysis report, with the basis for determining that the change did not involve an unreviewed safety question, was required by 10 CFR 50.59. In this case, the safety evaluation screening form prepared for the procedural change was insufficient in that it did not identify that the modified system operation deviated from the USAR safety analysis report description and therefore required an evaluation in accordance with 10 CFR 50.59. The procedural change allowed an operator to manually cross-connect the two air trains to refill the DDAC receiver by temporarily opening a valve. The screening

evaluation was insufficient. Questions that were not addressed included the increased service on the MDAC in filling two receiver tanks and the potential for more frequent breakdowns. Exacerbating this concern was the fact that the MDAC was already undersized. Additionally, the possibility of human error increased when the automatic air receiver filling operation was replaced by manual action. The failure to document the basis for operating the starting air system differently than described in the USAR is a violation of 10 CFR 50.59(b)(1) (461/92012-02(DRS)).

The NRC held a meeting on June 26, 1992, in the Region III office, to discuss these concerns. The discussion centered on when a safety evaluation would be needed. During the meeting, the licensee discussed corrective actions taken for the violation, including a licensee commitment to perform a safety evaluation on the starting air system operation. The licensee also described a program to review systems, equipment, or components that were taken out-of-service for 6 months to identify any *de facto* temporary modifications (TM) which may have been inadvertently created via the tagout system. Any TMs that were identified would receive an immediate safety evaluation. Additionally, the licensee indicated that information contained in the Updated Safety Analysis Report (USAR) did not match the normal Division 3 DG starting air system configuration and operation. The licensee stated that an initiative would be undertaken to make the USAR descriptions accurate. Based on these actions, the inspectors have no further concerns and no response to the violation is required.

No deviations were identified. One violation was identified.

8. Meetings With Local Public Officials (94600)

In accordance with the NRC's inspection program, public officials for communities surrounding Clinton Power Station were queried by the Region III State Liaison Officer on their interest in having a meeting with the NRC to discuss Clinton's performance or any other concerns. No interest was expressed in having such a meeting; consequently, this activity is considered complete for this assessment (SALP) period.

9. Management Changes

On June 15, 1992, the Illinois Power Company Board of Directors promoted Mr. J. S. Perry from Vice President to Senior Vice President and Mr. J. G. Cook from Manager - Clinton Power Station to Vice President and Manager of Clinton Power Station. Both individuals remain in the present position and reporting relationships remain the same except i the manager of training, who will now report to Mr. Cook; vice Mr. Perry.

10. Management Meeting

On July 23, 1992, Mr. C. J. Paperiello, Deputy Regional Administrator, RIII, and members of the NRC staff, presented the results of the Clinton SALP 11 (Systematic Assessment of Licensee Performance) evaluation to Mr. L. D. Haab, Chairman, President, and Chief Executive Officer and members of his staff, in a public meeting at the Clinton Visitor Center. A further description of the SALP 11 results and a list of persons attending the meeting is contained in Inspection Report 461/92001.

11. Inspection Follow-up Items

Inspection Follow-up Items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. An inspection follow-up item disclosed during this inspection is discussed in Paragraph 7.d.

12. Exit Interview

The inspectors met with the licensee representatives denoted in Paragraph 1 at the conclusion of the inspection on July 27, 1992. The inspectors summarized the purpose and scope of the inspection and the findings. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents or processes as proprietary.

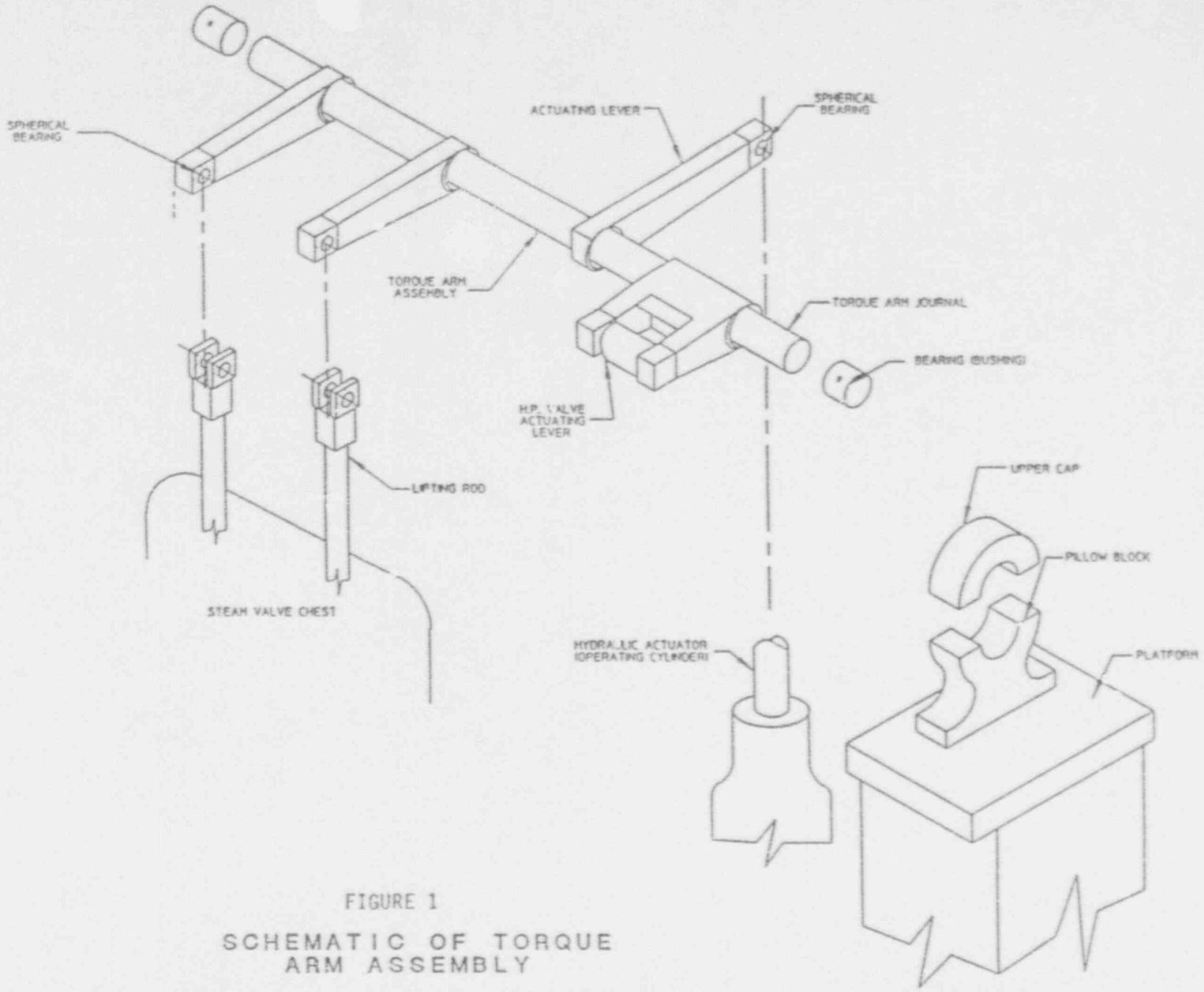

FIGURE 1

SCHEMATIC OF TORQUE ARM ASSEMBLY