

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/89026(DRP)

Docket No. 50-461

License No. NPF-62

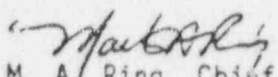
Licensee: Illinois Power Company
500 South 27th Street
Decatur, IL 62525

Facility Name: Clinton Power Station

Inspection At: Clinton Site, Clinton, IL

Inspection Conducted: July 7, 1989, through August 17, 1989

Inspectors: S. Ray
P. Hiland
R. Kopriva
J. Hickman

Approved By: 
M. A. Ring, Chief
Reactor Projects Section 3B

9/1/89
Date

Inspection Summary

Inspection on July 7, 1989, through August 17, 1989 (Report No. 50-461/89026(DRP))

Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of licensee action on previous inspection findings; onsite followup of written reports; IE Information Notice followup; operational safety verification; monthly maintenance observation; monthly surveillance observation; and onsite followup of events at operating reactors.

Results: Of the seven areas inspected, one violation with two examples was identified in the area of operational safety verification concerning entering an OPERATIONAL CONDITION without meeting the requirements of Technical Specification Limiting Conditions for Operation. The violation was not considered to have a major safety significance although the inspectors determined that corrective actions to previous violations should have prevented recurrence.

DETAILS

1. Personnel Contacted

Illinois Power Company (IP)

- *D. Hall, Senior Vice President
- *J. Perry, Assistant Vice President
- *K. Baker, Supervisor, I&E Interface
- *R. Campbell, Manager, Quality Assurance
- *J. Cook, Manager, Nuclear Planning and Support
- *R. Freeman, Manager, Nuclear Station Engineering Department
- *R. Gruerewald, Supervisor, Nuclear Program Scheduling
- S. Hall, Director, Nuclear Program Assessment
- *D. Holtzcher, Acting Manager, Licensing & Safety
- J. Miller, Manager, Scheduling & Outage Management
- *S. Rasor, Director, Maintenance
- *J. Weaver, Director, Licensing
- J. Wilson, Manager, Clinton Power Station
- *R. Wyatt, Manager, Nuclear Training

Soyland

J. Greenwood, Manager, Power Supply

Nuclear Regulatory Commission

- J. Hickman, Project Manager
- P. Hiland, Senior Resident Inspector, Perry
- R. Kopriva, Resident Inspector, LaSalle
- *S. Ray, Resident Inspector, Clinton

*Denotes those attending the monthly exit meeting on August 17, 1989.

The inspectors also contacted and interviewed other licensee and contractor personnel.

2. Followup of Previously Identified Items (92702) (92703)

- a. (Closed) Open Item (461/87011-02): Vibration Testing and Tack Weld Repairs on Anchor Darling Globe Valves.

This Open Item tracked completion of the remaining licensee commitments regarding the August 28, 1986, 10 CFR 50.55(e) report on broken tack welds on Anchor Darling globe valves. The matter was previously discussed in Inspection Reports 50-461/26060, Paragraph 3.a, 50-461/86072, Paragraph 5, 50-461/87002, Paragraph 3.b, and 50-461/87011, Paragraph 6.a. The remaining actions were to inspect 32 Anchor Darling valves during the first refueling outage and to review vibration testing on valve 1E51-F022 during startup testing.

The inspectors reviewed the engineering disposition to Field Problem Report 201,491 which concluded that the vibration measured on valve 1E51-F022 during a quick start test of the Reactor Core Isolation Cooling Turbine was insignificant. The inspectors also reviewed completed Maintenance Work Requests and other documentation under which 28 valves were reworked during the first refueling outage to provide circumferential welds between the disc nut and disc. Four valves were deleted from the scope because they were part of the steam condensing mode of the Residual Heat Removal System. That mode has been deleted from the plant design and the valves were not to be used. Three other valves were added to the scope and three deleted based on engineering evaluation of which valves might be susceptible to damage due to throttling. This item is closed.

- b. (Closed) Violation (461/88004-04): Failure to Declare Drywell Particulate Radioactivity Monitor Inoperable.

This item was previously discussed in Inspection Report 50-461/88004, Paragraph 9.b.(2). It involved the failure of the licensee to promptly declare a malfunctioning radioactivity monitor inoperable and take the required grab samples as a compensatory measure.

The inspectors reviewed training records for Operating and Radiation Protection personnel to verify that the lessons learned from the event were addressed. The inspectors also reviewed Plant Manager's Standing Order 50, "Execution of CPS Technical Specifications." That order contained several directives which enhanced the licensee's adherence to Technical Specification requirements including instructions to improve tracking of short term repetitive surveillance requirements, ensure repetitive tasks were started early enough to prevent exceeding time limits, declare channels with invalid indications inoperable, and promptly investigate channels indicating questionable values. Other procedural and administrative enhancements which decreased the probability of problems discussed in this violation happening again were also verified. This item is closed.

- c. (Closed) Unresolved Item (461/88014-04): Improper Installation of Secondary Containment Penetration Boot Seals.

This item was previously discussed in Inspection Reports 50-461/88014, Paragraphs 8.b and 12.b.(1), 50-461/89008, Paragraph 5.a, 50-461/89014, Paragraphs 2.a and 5.e, and 50-461/89018, Paragraph 2.c. The licensee has reported root cause and corrective actions for several problems noted in secondary containment electrical penetration seals in LERs 89-006-00 and 89-023-00. The licensee has also responded to NRC issued Violation 461/89018-01.

The licensee determined that the problems with secondary containment electrical penetrations seals were due to construction/installation errors made by the penetration seal contractor (BISCO). As discussed in the inspection reports and LERs listed above, extensive walkdowns have been performed to identify and correct the deficiencies. This item is closed.

- d. (Closed) Open Item (461/88014-05): High Contact Resistance on Agastat Relays Used in Low Current Applications.

This item was previously discussed in Inspection Report 50-461/88014, Paragraph 8.c. The item remained open pending completion of the licensee's action plan to deal with the generic implications of failures of the Agastat relays.

The inspectors reviewed documentation of completed actions which resolved the issue. It was determined that General Electric had made a design error in specifying relays for low current applications that were not suitable for those applications. The licensee completed an action plan which included evaluation, refurbishment, replacement, and testing of all Agastat Type GP relays in the plant, both in safety and non-safety applications. Procedures were developed and implemented to insure the relays would remain functional. A notification to the NRC in accordance with 10 CFR 21 was made on September 12, 1988. The licensee was evaluating industry experience to determine if a better model relay was available for low current applications. This action was to be completed prior to the second refueling outage and was being tracked by Centralized Commitment Tracking Number 049067. Based on that commitment and the inspectors' verification of the completion of all other parts of the action plan, this item is closed.

- e. (Open) Violation (461/88016-02): High Pressure Core Spray System Inoperable due to Shutdown of Room Cooling Fan.

This item was previously discussed in Inspection Report 50-461/88016, Paragraph 4.a. The violation involved a High Pressure Core Spray (HPCS) System room cooling fan which was required to be running continuously to support HPCS operability. The inspectors found that the fan had been secured for about three weeks. Contributing to the cause of the violation was the fact that a caution tag on the control switch for the fan did not contain any instructions concerning the nature of the caution.

Among the corrective actions the licensee took for the Violation was a revision to Administrative Procedure CPS No. 1014.01, "Safety Tagging Procedure," which required that "yellow [caution] tags shall contain sufficient descriptive information stating the specific reason for the tag and any specific instruction." On August 16, 1989, the inspectors audited the caution tags in the Main Control Room "horseshoe" area. A total of 30 caution tags were in place. Of those, 12 did not contain any descriptive information about the reason for the tag. Eight of the tags had been in place since before the events leading to violation 461/88016-02. Four of the tags had been placed since the tagging procedure was revised. The inspectors noted that one of the tags which didn't contain descriptive information was on a continuously running room cooling system similar to the one which led to the violation. Several of the tags had undergone quarterly and annual field verifications and no discrepancies concerning missing descriptive information had been noted.

The inspectors interviewed Control Room personnel to insure that they understood the reason for tags that did not contain descriptive information. The inspectors also verified that tag sheets containing descriptive information were available in a notebook in the Control Room. However, the inspectors noted that Control Room personnel were generally not aware of the requirement to include descriptive information even on the miniature adhesive type caution tags used in the Control Room. The inspectors determined that the corrective actions for this violation were inadequate to prevent a possible recurrence. This item will remain open pending the inspector's review of further corrective actions by the licensee.

- f. (Closed) Violation (461/88030-01): Design Deficiency in the Division III Diesel Generator Exhaust.

This item was previously discussed in Inspection Reports 50-461/88023, Paragraph 4.a, 50-461/88027, Paragraph 10.b.(4), and 50-461/88030, Paragraph 2.a. It involved a rupture disk which was left installed in the exhaust bypass line of the diesel which could have rendered the diesel inoperable after tornado missile damage to the exhaust line. An Engineering Change Notice which should have removed the disk was not accomplished. The licensee also failed to properly declare the diesel inoperable when the condition was discovered.

The inspectors reviewed Maintenance Work Request D00189 and conducted a field walkdown to verify that the rupture disk had been removed. The inspector also reviewed training records to verify that appropriate Engineering and Operating personnel had been trained on the lessons learned from the event including the need to refer to the Updated Safety Analysis Report to determine whether a system meets its design basis. The inspectors also reviewed investigations conducted by Engineering and Quality Assurance to verify that the uncompleted Engineering Change Notice was an isolated case. This item is closed.

- g. (Closed) Unresolved Item (461/89018-03): Diesel Generator Slow Start.

This item was previously discussed in Inspection Report 50-461/89018, Paragraph 5.b. The item remained unresolved pending the inspectors' review of the disposition of the Condition Report evaluating the reason for the slow start.

The inspectors reviewed the disposition to Condition Report 1-89-06-035 which reported that the reason for the slow start (12.2 seconds to reach rated speed verses the specified 12 seconds maximum) was that the start was being done after work on the Diesel Generator which included a fuel filter changeout in accordance with PMMDGA027. The licensee determined that the first start attempt after a fuel filter changeout would be expected to be slower than normal because of air in the fuel lines. Thus the start should be considered an invalid test rather than a failure. The inspectors found that determination reasonable. This item is closed.

- h. (Closed) Confirmatory Action Letter CAL-RIII-89-005 (461/89C05-01)

This item was previously discussed in Inspection Reports 50-461/89002, Paragraph 4 and 50-461/89008, Paragraph 4. On June 7, 1989, the Regional Administrator issued a letter to Illinois Power Company which stated that the NRC considered all the action items in the CAL appropriately resolved and terminated the CAL. This item is closed.

- i. (Closed) Confirmatory Action Letter CAL-RIII-89-016 (461/89C16-01)

This item was previously discussed in Inspection Report 50-461/89021, Paragraph 2. On August 9, 1989, the Regional Administrator issued a letter to Illinois Power Company which stated that the NRC considered all the action items of the CAL appropriately resolved and terminated the CAL. This item is closed.

No violations or deviations were identified.

3. Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities (92700)

For the LERs listed below, the inspectors performed an onsite followup inspection to determine whether responses to the events were adequate and met regulatory requirements, license conditions and commitments, and to determine whether the licensee had taken corrective actions as stated in the LERs.

- a. (Closed) LER 88-005-00 (461/88005-LL): Licensed Operator Failure to Recognize Inoperable Drywell Atmosphere Particulate Radioactivity Monitoring System Results in Missed Particulate Grab Samples.

This event resulted in the issuance of Violation 461/88004-04 which was closed in Paragraph 2.b of this report. Corrective actions for the LER were essentially the same as those of the violation and were verified complete by the inspectors. This item is closed.

- b. (Closed) LER 88-017-00 and 88-017-01 (461/88017-LL and 461/88017-L1): Relay Misapplication Causes Contact Oxide Buildup and Loss of Control Signal Resulting in Reactor Scram During Feedwater Pump Shift.

The corrective action for this event resulted in the licensee developing an action plan which was tracked by Open Item 461/88014-05. Completion of the action plan and closing of the Open Item were discussed in Paragraph 2.d of this report. The action plan included corrective actions to close the LER. This item is closed.

- c. (Closed) LER 88-018-00 (461/88018-LL): Pump Room Cooling Fan Left Shutdown Following Surveillance Due to Insufficient Review of Tag-Out Instructions Renders High Pressure Core Spray System Inoperable.

This event resulted in the issuance of Violation 461/88016-02 which was discussed in Paragraph 2.e of this report. The violation remained open pending further corrective actions by the licensee. Corrective actions for the violation and the LER were the same. The LER is closed to simplify administrative tracking requirements.

- d. (Closed) LER 88-021-00 (461/88021-LL): Failure of Reactor Water Cleanup (RWCU) Isolation Bypass Switch During Channel Functional Test Results in RWCU System Isolation.

This item was previously discussed in Inspection Report 50-461/88021, Paragraph 8.b.(1). After extensive troubleshooting, vendor analysis, review of industry experience, and testing, the licensee was unable to determine a definite root cause for the failure of the bypass circuit. It could not even be established whether the failure was in the switch, as first suspected, or in some other part of the circuit. The failure could not be duplicated. The bypass switch was replaced and has been tested and used numerous times since the event with no failures. The licensee concluded that the failure was an isolated incident and completed all reasonable actions that could be expected to isolate the cause. The inspectors reviewed the action plan carried out by the licensee as well as the analysis by the vendor and agreed that the licensee's action was reasonable. This item is closed.

- e. (Closed) LER 88-027-00 (461/88027-LL): Failure to Track Implementation of a Design Change Removing a Disk From the Bypass Exhaust Line Renders the Division III Diesel Generator Inoperable.

This event resulted in the issuance of Violation 461/88030-01 which was closed in Paragraph 2.f of this report. The corrective actions for the LER were essentially the same as for the Violation and were verified by the inspectors to be complete. This item is closed.

- f. (Closed) LER 88-029-00 (461/88029-LL): Deficient Surveillance Procedure Results in Failure to Perform Seven-Day Breaker Alignment Verification for Four Regulating Isolation Transformer Switches.

This item was previously discussed in Inspection Report 50-461/88030, Paragraph 5.a. The event was considered a "licensee identified" violation for which a Notice of Violation was not issued. The inspectors verified that revisions had been made to Surveillance Procedures CPS No. 9082.01, "Electrical Distribution Verification Mode 1, 2, or 3," and 9082.02, "Electrical Distribution Verification Mode 4, 5, or When Handling Irradiated Fuel in the Secondary Containment." The inspectors also verified that licensed operators were provided with information on the lessons learned from this event. This item is closed.

- g. (Closed) LER 89-006-00 (461/89006-LL) and LER 89-023-00 (461/89023-LL): Failures by Penetration Seal Contractor Results in Failure to Meet Secondary Containment Integrity Requirements. This issue is discussed in Paragraph 2.c above. The deficiencies reported in these LERs resulted in the issuance of Violation 461/89018-01. Remaining corrective actions for the issue will be reviewed when closing the violation and the LERs are closed to simplify administrative tracking requirements.
- h. (Closed) LER 89-029-00 (461/89029-LL): Mechanical Failure of Rubber Expansion Joint Between the A Low Pressure Turbine and the Main Condenser Results in Loss of Condenser Vacuum and Manual Reactor Scram.

This event was discussed in Paragraph 8.b.(1) of this report. The inspectors noted that the LER was timely and very comprehensive. In addition to the problem with the expansion joint which led to the loss of vacuum, the LER discussed several other problems which occurred during the event as well as their corrective actions. The inspectors determined that all corrective actions were either complete or had tracking mechanisms initiated. This item is closed.

No violations or deviations were identified.

4. IE Information Notice Followup (92701)

For the Information Notice discussed below, the inspectors verified that the licensee had received the Information Notice, had distributed the Notice to appropriate personnel, and had completed the appropriate actions.

(Closed) IE Information Notice 88-67 (461/88067-IN): PWR Auxiliary Feedwater Pump Turbine Overspeed Trip Failure.

The licensee received the Information Notice on August 29, 1988, and issued Review Sheet Y-209320 to assign review responsibility to Nuclear Station Engineering Department (NSED) on September 12, 1988. On November 10, 1988, NSED provided their response which determined that, although the Information Notice addressed PWR Auxiliary Feedwater Pump Turbines, the information was applicable to Clinton's Reactor Core Isolation Cooling (RCIC) System Turbine. The licensee determined that they had in place Preventative Maintenance Task PMMRIM008 which required that Maintenance Procedure CPS No. 8223.02, "RCIC Pump Turbine Maintenance," be conducted each refueling outage. The procedure included steps to test the overspeed trip setpoint. The licensee issued Centralized Commitment Tracking Number 50028 to add a step to the procedure to inspect the tappet ball and emergency trip mechanism. The inspectors determined that the licensee's response to the Information Notice was reasonable. This item is closed.

No violations or deviations were identified.

5. Operational Safety Verification (71707)

The inspectors observed control room operations, attended selected pre-shift briefings, reviewed applicable logs, and conducted discussions with control room operators during the inspection period. The inspectors verified the operability of selected emergency systems and verified tracking of LCOs. Routine tours of the auxiliary, fuel, containment, control, diesel generator, and turbine buildings and the screenhouse were conducted to observe plant equipment conditions including the potential for fire hazards, fluid leaks, and operating conditions (i.e., vibration, process parameters, operating temperatures, etc). The inspectors verified that maintenance requests had been initiated for discrepant conditions observed. The inspectors verified by direct observation and discussion with plant personnel that security procedures and radiation protection (RP) controls were being properly implemented.

Inspections were routinely performed to ensure that the licensee conducted activities at the facility safely and in conformance with regulatory requirements. The inspections focused on the implementation and overall effectiveness of the licensee's control of operating activities, and the performance of licensed and nonlicensed operators and shift technical advisors. The following items were considered during these inspections:

- Adequacy of plant staffing and supervision.
- Control room professionalism, including procedure adherence, operator attentiveness and response to alarms, events, and off-normal conditions.
- Operability of selected safety-related systems, including attendant alarms, instrumentation, and controls.
- Maintenance of quality records and reports.

During the inspection period the plant operated at near full power until a manual scram due to loss of condenser vacuum on July 14, 1989. The plant was restarted on July 24 and synchronized to the grid on July 26. It again operated at near full power until July 31 when the reactor was manually scrammed due to increasing reactor vessel level during another loss of condenser vacuum event. The plant was restarted on August 6 and synchronized to the grid on August 8. The plant operated at near full power for the remainder of the inspection period.

- a. On July 24, 1989, the licensee determined that they had entered OPERATIONAL CONDITION 2 (Startup) with the "B" train of Low Pressure Coolant Injection (LPCI) inoperable. The train was inoperable due to the "B" Residual Heat Removal (RHR) System being lired up in the Shutdown Cooling Mode which would have prevented automatic initiation of the LPCI mode of that RHR train.

The operators had been performing Operating Procedure CPS No. 3001.01, "Approach to Critical," in preparation for pulling control rods. Substep 8.1.3 of the procedure required that and RHR loops be removed from Shutdown Cooling and placed in the Standby Mode. Substep 8.1.8 required that the Mode Switch be placed in STARTUP/STANDBY, which placed the plant in OPERATIONAL CONDITION 2. Several substeps were being conducted in parallel during the startup. The Line Assistant Shift Supervisor (LASS) discussed the possibility of entering OPERATIONAL CONDITION 2 while still in Shutdown Cooling Mode with the Shift Supervisor. They stated that they believed that it would be allowed by Technical Specifications because a footnote to the APPLICABILITY section of Technical Specification 3.5.1 stated that one LPCI subsystem of the RHR System could be aligned in the Shutdown Cooling Mode when reactor vessel pressure was less than the LPCI cut-in permissive setpoint. However, the licensee later determined that the footnote applied only to OPERATIONAL CONDITION 3, not 2. The LASS also stated that he noted that step 8.1, "Rod Withdrawal Preparation," of CPS No. 3001.01 was not prefixed by an asterisk (*) which indicated that the substeps did not have to be performed in sequential order.

The event was not considered safety significant because the other two trains of LPCI were OPERABLE and the "B" train of LPCI was restored to standby within about an hour of entering OPERATIONAL CONDITION 2 and before the reactor was made critical and heatup began. The licensee intended to report the event as an LER. Corrective actions will be reviewed when the LER is issued.

Entry into OPERATIONAL CONDITION 2 without meeting the conditions of Technical Specification Limiting Condition for Operation 3.5.1 is considered an example of a violation (461/89026-01a) of Technical Specification 3.0.4. This event demonstrated inadequate control of Technical Specification requirements during entry into new OPERATIONAL CONDITIONS. The licensee had experienced several previous violations of Technical Specifications during changes in OPERATIONAL CONDITIONS. Examples discussed in past Inspection Reports included 461/87031-07, 461/87032-01, 461/88009-02, 461/88030-05, 461/89008-03, and 461/89018-02. The licensee's corrective actions for these violations has apparently not been completely effective.

- b. On July 24, 1989, the licensee determined that they had entered OPERATIONAL CONDITION 2 (Startup) without meeting the conditions of Technical Specification Limiting Condition for Operation (LCO) 3.3.7.5 which required that the Acoustic Monitors for Safety/Relief Valves be OPERABLE.

On May 25, 1989, the acoustic monitor for safety valve F051G was declared inoperable. Notations in the Technical Specifications allowed the thermocouple on the safety valve discharge line to serve as a backup for the acoustic monitor. This provision was being used by the licensee to meet the LCO. On July 16, 1989,

the chart recorder for safety valve thermocouples was turned off. At the time, the plant was in OPERATIONAL CONDITION 4 and the LCO did not apply. Before the plant was placed in OPERATIONAL CONDITION 2 on July 24, most of the chart recorders in the Control Room were started but the one for safety valve thermocouples was not. Control Room tours by the Reactor Operators and Senior Reactor Operators failed to notice that the chart was not running until about five hours after the plant entered OPERATIONAL CONDITION 2. With the chart recorder secured, there was no safety valve thermocouple indication or annunciation available to backup the inoperable acoustic monitor. The licensee's investigation determined that there were no administrative measures in place to insure applicable chart recorders were operating prior to entering new OPERATIONAL CONDITIONS.

The event was not considered safety significant because the plant was near atmospheric pressure and the safety valves would not be expected to open. The deenergized recorder was discovered by the Shift Technical Advisor as he checked for evidence of safety valve weeping shortly after Reactor Coolant System pressure started to increase. The licensee intended to report the event as an LER. The licensee's proposed corrective actions for this event were discussed with the inspectors and their adequacy will be reviewed with the LER.

Entry into OPERATIONAL CONDITION 2 without meeting the conditions of LCO 3.3.7.5 is considered an example of a violation (461/89026-01b) of Technical Specification 3.0.4. As discussed in Paragraph 5.a of this report, corrective actions to previous similar violations were apparently not completely effective in preventing recurrence.

- c. On August 9, 1989, upon shifting Reactor Recirculation Pumps to fast speed, the Operators received an alarm indicating greater than .1 gpm leakage past the upper seal. Normal upper seal leakage is about .0065 gpm (50 ounces/hour). The licensee briefed the NRC Project Manager on the indications later the same day. The vendor's manual indicated that an alarm could be expected during transients such as shifting pump speed or increasing reactor pressure, but in this case the alarm did not clear. The licensee closely monitored other pump parameters and noted no abnormalities. The licensee also closely monitored containment parameters to verify that the seal leakage was not excessive. No measurable increase in the leak rate of reactor coolant into the containment was detected. There were no instruments to directly measure the seal leakoff rate from the upper seal. The licensee was continuing to evaluate the parameters. The inspectors determined that the licensee's actions in response to the alarm were reasonable.

One violation with two examples was identified.

6. Monthly Maintenance Observation (62703)

Selected portions of the plant maintenance activities on safety-related systems and other components were observed or reviewed to ascertain that the activities were performed in accordance with approved procedures, regulatory guides, industry codes and standards, and that the performance of the activities conformed to the Technical Specifications. The inspection included activities associated with preventive or corrective maintenance of electrical, instrumentation and control, and mechanical equipment and systems. The following items were considered during these inspections: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibration was performed prior to returning the components or systems to service; parts and materials that were used were properly certified; and appropriate fire prevention, radiological, and housekeeping conditions were maintained.

The inspectors observed/reviewed the following work activities:

<u>Maintenance Work Procedure No.</u>	<u>Activity</u>
D14081	RCIC/RHR Steam Line Flow Instrument Troubleshooting
D14184	Condenser Boot Seal Replacement
D14289	Rebuild Feedwater Heater Reliefs
D14310	Repair SLC "B" Pump

No violations or deviations were identified.

7. Monthly Surveillance Observation (61726)

An inspection of inservice and testing activities was performed to ascertain that the activities were accomplished in accordance with applicable regulatory guides, industry codes and standards, and in conformance with regulatory requirements.

Items which were considered during the inspection included whether adequate procedures were used to perform the testing, test instrumentation was calibrated, test results conformed with Technical Specifications and procedural requirements, and tests were performed within the required time limits. The inspectors determined that the test results were reviewed by someone other than the personnel involved with the performance of the test, and that any deficiencies identified during the testing were reviewed and resolved by appropriate management personnel.

The inspectors observed/reviewed the following activities:

<u>Surveillance/Test Procedure No.</u>	<u>Activity</u>
CPS No. 9337.81	Fire Detection Channel Functional Test
CPS No. 9431.12	APRM Channel Calibration
CPS No. 9861.02	Local Leak Rate Testing of VR Valves

No violations or deviations were identified.

8. Onsite Followup of Events at Operating Reactors (93702)

a. General

The inspectors performed onsite followup activities for events which occurred during the inspection period. Followup inspection included one or more of the following: reviews of operating logs, procedures, condition reports; direct observation of licensee actions; and interviews of licensee personnel. For each event, the inspectors reviewed one or more of the following: the sequence of actions; the functioning of safety systems required by plant conditions; licensee actions to verify consistency with plant procedures and license conditions; and verification of the nature of the event. Additionally, in some cases, the inspectors verified that licensee investigation had identified root causes of equipment malfunctions and/or personnel errors and were taking or had taken appropriate corrective actions. Details of the events and licensee corrective actions noted during the inspectors' followup are provided in paragraph b. below.

b. Details

(1) Manual Scram Due To Loss Of Condenser Vacuum

On July 14, 1989, at approximately 8:00 a.m., while in OPERATIONAL CONDITION 1 (Run) at 100% power, the licensee experienced a loss of Main Condenser vacuum. Control Room Operators performed a manual scram from about 39% power when efforts to restore vacuum were unsuccessful. The inspectors observed Control Room activities from the time the manual scram was initiated until after the plant was stabilized in OPERATIONAL CONDITION 3 (Hot Standby).

The inspectors noted that the licensed Reactor Operators were prompt in identifying the decreasing vacuum transient and took appropriate actions by reducing reactor recirculation flow in order to maintain adequate vacuum. When vacuum continued to decrease to about 23" Hg., the Senior Reactor Operator directed that a manual scram be

initiated by placing the Mode Switch in SHUTDOWN. Immediately following the manual scram, the inspectors observed Control Room activities and noted that the on-shift crew was responding to the transient in accordance with procedures and communication was formal with clear direction being provided by the Senior Reactor Operator. The plant was initially stabilized in Hot Shutdown with a condenser vacuum of about 15" Hg.

About two and one-half hours after the start of the transient, condenser vacuum rapidly dropped to zero. In response to the total loss of vacuum, the Senior Reactor Operator directed that the Main Steam Isolation Valves be closed and pressure/level control be established with the Reactor Core Isolation Cooling System. Initial pressure control was accomplished by opening a Safety Relief Valve and utilizing the Suppression Pool as a heat sink. Although some difficulty was experienced in control of reactor pressure and level during the evolutions, the inspectors noted that the on-shift crew anticipated and discussed each evolution performed as the plant was stabilized in Hot Shutdown.

The licensee reported the event to the NRC via the ENS within one hour after the scram. A followup written report (LER 89-029-00) was submitted on August 9, 1989.

The cause of the loss of vacuum was determined to be a failure of the rubber expansion joint located between the "A" Low Pressure Turbine and the Main Condenser. The joint experienced a tear approximately 60 inches long. The licensee reported that the expansion joint failed due to age, overtightening of attachment nuts in the expansion joint clamping assembly, and steam exposure due to a previous failure of the cover plate over the affected portion of the joint. The rubber expansion joints on both the Low Pressure Turbines were replaced with thicker material and repairs were made to the cover plates as necessary. The reactor was restarted on July 24, 1989.

(2) Reactor Protection System (RPS) Trip and Engineered Safety Feature (ESF) Actuation

On July 15, 1989, at approximately 7:40 p.m., while in OPERATIONAL CONDITION 3 (Hot Shutdown), the licensee experienced an unexpected RPS trip and ESF actuation. While placing the Residual Heat Removal (RHR) System in the Shutdown Cooling Mode, reactor water level decreased about 38 inches resulting in a "Level 3" RPS trip and auto-isolation of the RHR Shutdown Cooling Valves and other Containment Isolation groups.

At the time of event occurrence, the licensee was preparing to enter OPERATIONAL CONDITION 4 (Cold Shutdown). In preparation for continuing with the planned evolution,

plant operators were flushing the RHR-"A" piping in accordance with Operating Procedure CPS No. 3312.01, "Residual Heat Removal (RHR)," section 8.1.14.3. That procedure section provided instructions to flush the RHR-A piping via two flushing water supply valves 1E12-F063A and 1E12-F020. Due to leakage past the 1E12-F063A valve an existing caution tag [Tag Out No. 88-643] was hung on 1E12-F063A that informed the operators that Flushing Water (CY) supply valve, 1CY045, was danger tagged shut to prevent overpressurizing the CY System due to leakage past 1E12-F063A. The plant operators performing the flushing evolution received permission to temporarily lift the danger tag and open 1CY045 to perform the flush. Upon completion of that portion of the flush, the operators shut and retagged 1CY045. The procedure then directed the operators to flush another portion of the RHR system through 1E12-F020. This portion of the system is also supplied flushing water from 1CY045 but the caution tag informing the operator that 1CY045 was shut had apparently fallen off the valve. Upon opening the RHR Piping Drain Valve to the Radwaste system, 1E12-F072A, and opening 1E12-F020, that portion of RHR-A piping was drained instead of flushed since the CY Supply Valve was closed. When the operators thought that the flush was complete, they mistakenly closed 1E12-F020 before closing 1E12-F072A which further contributed to system draining. Thus when the RHR Shutdown Cooling Isolation Valves were opened, reactor coolant drained from the vessel to fill the drained portion of the RHR system.

Plant operators responded to the event by restoring reactor vessel water level with the Reactor Core Isolation Cooling System. OPERATIONAL CONDITION 4 (Cold Shutdown) was entered at 3:20 a.m. on July 16, 1989. The licensee reported the event to the NRC via the ENS about one hour after the ESF actuation. The licensee followed up with a written report by issuing LER 89-030-00 on August 14, 1989.

The licensee attributed the cause of the event to failure to promptly repair the seat leakage on valve 1E12-F063A. Repairs to the valve had been planned for the first refueling outage but had been postponed due to other emergent work. Also contributing to the event were the missing caution tag on 1E12-F020 and the operator isolating the flush and drain valves in the wrong order. Although the procedure being used listed the valve manipulations in the correct order, the substeps were not marked with an asterisk (*) which would have indicated that they had to be performed in the specified order.

(3) Oil Spill Requiring Notification of Outside Agencies

On July 20, 1989, the licensee reported to the NRC via the ENS that notification to other government agencies had been made concerning a spill of oil into Clinton Lake. The

spill occurred as contractor technicians were performing repairs on the spare Main Power Transformer. About 200 gallons of transformer oil (Exxon Univolt N61) was spilled, a few gallons of which reached the lake via the storm drain system due to heavy rains. The licensee took prompt action to contain and clean up the spill and made timely notifications to the Illinois Emergency Services and Disaster Agency, Illinois Environmental Protection Agency, and National Response Center.

Notification to the NRC was completed well within the four hour time limit allowed by 10 CFR 72. The inspectors noted that the licensee had failed to make the ENS notification on a previous similar occasion as discussed in Inspection Report 50-461/88021, Paragraph 8.b.(4). A violation was issued as a result of that event. Corrective actions taken as a result of that event were apparently effective in preventing recurrence.

(4) Manual Scram due to Loss of Reactor Vessel Level Control

On July 31, 1989, the licensee reported to the NRC via the ENS that they had initiated a manual scram from about 27% power due to increasing reactor vessel level. The plant had been operating at 100% and the licensee was attempting to restore level in Reheater Drain Tank 1B after completing repairs to its Emergency Drain Valve. During the evolution, the operators noted condenser vacuum starting to decrease. They rapidly reduced reactor power in an attempt to stop the loss of vacuum. At about 27% power the operators attempted to shift from two to one Turbine Driven Feedwater Pumps. Due to a mismanipulation of the Turbine Speed Control System while securing one of the Turbines, reactor level started to increase toward the Level 8 Reactor Trip setpoint. The Reactor Operator manually tripped the reactor by placing the Mode Switch in SHUTDOWN before the automatic trip setpoint was reached.

The licensee's investigation determined that the root cause of the loss of vacuum was failure of the bellows on 6B Feedwater Heater Relief Valves 1DV032A and 1DV032B. The relief valves had lifted while trying to establish level in the Reheater Drain Tank due to a broken yoke on the Normal Drain Valve and failure of the Emergency Drain Valve Controller. The licensee established an action plan for repairs which they discussed with the acting NRC Resident Inspector and Regional Management. The inspectors verified that the details of the NRC's understanding of the action plan were adequately communicated to Operating personnel. All repairs were completed and the reactor was restarted on August 6, 1989. The licensee intended to issue an LER to provide the followup written report of the event.

(5) ESF Actuation of Group 1 Containment Isolation Due to High Main Steamline Flow

On August 7, 1989, the licensee reported to the NRC via the ENS that they had experienced two Group 1 (Main Steam) Containment Isolations due to high steamline flow signals while warming up the main steam lines. The isolations were believed to be caused when condensed water that had collected in the isolated steamlines was blown past the steam flow detectors as the lines were warmed with steam. Although the operators expected that the isolations might occur and had attempted to warm the lines slowly, they were unsuccessful in avoiding the isolations.

Since the isolations were not listed as expected or preplanned in the procedure being used, the ESF actuations were considered unexpected and were therefore reportable. The licensee was still determining corrective actions and intended to issue a written LER after their investigation. The Project Manager attended the critique of the event and determined that the licensee's evaluation of the cause and safety significance was reasonable.

No violations or deviations were identified.

9. Exit Meetings (30703)

The inspectors met with licensee representatives (denoted in Paragraph 1) throughout the inspection and at the conclusion of the inspection on August 17, 1989. The inspectors summarized the scope and findings of the inspection activities. The licensee acknowledged the inspection 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 documents/processes as proprietary.

The inspectors attended exit meetings held between regional/headquarters based inspectors and the licensee as follows:

<u>Inspector</u>	<u>Date</u>
G. Pirtle	July 28, 1989