

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-440/93023(DRP)

Docket No. 50-440

License No. NPF-58

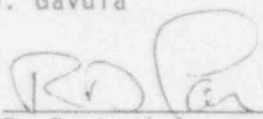
Licensee: Cleveland Electric Illuminating Company  
Post Office Box 5000  
Cleveland, OH 44101

Facility Name: Perry Nuclear Power Plant

Inspection At: Perry Site, Perry, Ohio

Inspection Conducted: December 19, 1993, through January 29, 1994

Inspectors: D. Kosloff  
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Approved By:   
R. D. Lanksbury, Chief  
Reactor Projects Section 3B

2/18/94  
Date

Inspection Summary

Inspection on December 19, 1993 through January 29, 1994 (Report No. 50-440/93023(DRP))

Areas Inspected: Routine unannounced safety inspection by resident inspectors of licensee action on previous inspection findings, licensee event report followup, surveillance observations, maintenance observations, operational safety verification, event followup, cold weather preparations, engineering, plant support, followup of concerns, and self-assessment.

Results: In the 11 areas inspected, two violations and one non-cited violation were identified. One violation involved the failure to follow procedures during maintenance activities. The second violation involved failure to take reactor water conductivity measurements as required by Technical Specifications. The following non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, was identified and reviewed during this inspection period: failures to follow procedures during fire watch patrols. In addition an unresolved item concerning emergency closed cooling system operability and an Inspection Followup Item regarding site access psychological evaluations and "Call for Quality" followup actions were identified.

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

## Plant Operations

The plant was operated at or near full power except as noted below. On December 26, 1993, power was reduced to about 95 percent during response to a feedwater transient. On January 23, 1994, power was reduced to allow closure of the main steam isolation valves for main steam line "C". A power increase began later that day. The plant was at full power on January 28, 1994, when the reactor recirculation pumps automatically down shifted due to a spurious electronic signal. The reactor was manually tripped as required. The plant remained shutdown at the end of the inspection period. Operator control of the plant was good during normal operations and excellent during plant transients. However, a personnel error by non-licensed operators during new fuel inspection caused damage to the lower fuel handling bridge mast.

## Maintenance

The quality of observed maintenance activities was generally good. However, one violation, involving a failure to follow a work procedure, was identified during review of maintenance activities. Another violation, involving personnel errors by a chemistry technician, was identified during review of surveillance activities.

## Engineering

Engineering support of daily plant activities was good. Engineering evaluation of a diesel annunciator power supply failure was thorough. Inadequate attention to detail in revising a surveillance test procedure led to a temporary reduction in plant power. Several events occurred due to weaknesses in the cold weather preparation program. Preparations were behind schedule for the fourth refueling outage.

## Plant Support

The quality of observed activities involving radiation protection, chemistry, and security was generally good. Personnel errors during a surveillance by a chemistry technician caused a Technical Specification violation. The licensee identified a non-cited violation caused by personnel errors during fire watch patrols. Licensee management response to a radiation protection personnel error was prompt and appropriate. Earlier improvements in plant housekeeping were maintained.

## DETAILS

### 1. Persons Contacted

#### Cleveland Electric Illuminating Company

- #@D. Shelton, Senior Vice President - Nuclear
- @R. Stratman, Vice President - Nuclear - Perry
- @K. Pech, Director, Perry Nuclear Assurance Department (PNAD)
- \* @D. Igyarto, General Manager, Perry Nuclear Power Plant (PNPP)
- @+N. Bonner, Director, Perry Nuclear Engineering Department (PNED)
- @R. Schrauder, Director, Perry Nuclear Services Department (PNSD)
- \* D. Poole, Assistant to Plant Manager, PNPP
- \* @M. Bezilla, Operations Manager, PNPP
- @V. Higaki, Manager, Quality Assurance Department, PNAD
- \* @H. Hegrat, Acting Manager, Regulatory Affairs, PNSD
- @V. Concel, Manager, Mechanical Design Section, PNED
- \* @V. Sodd, Manager, Maintenance Section, PNPP
- \* @P. Volza, Manager, Radiation Protection Section, PNPP
- @D. Cobb, Superintendent, Plant Operations, PNPP
- P. Roberts, Manager, Instrument & Control Section, PNPP
- @+F. Von Ahn, Manager, System Engineering Section (SES), PNED
- @W. Coleman, Manager, Engineering Project Support, PNED
- @W. Kanda, Manager, Integrated Scheduling and Controls, PNPP
- \* @J. Wilcox, Superintendent, Maintenance, PNPP
- +R. Gaston, Compliance Engineer, PNSD
- \* K. Donovan, Corrective Action Task Force Lead, PNAD
- \* J. Lausberg, Supervisor, PNAD
- \* W. Dervay, Supervisor, SES, PNED
- +D. Phillips, Motor Operated Valve Lead Engineer, PNED

#### Nuclear Regulatory Commission

- @#J. Martin, Regional Administrator, RIII
- @+H. Miller, Deputy Regional Administrator, RIII
- @ J. Zwolinski, Assistant Director, RIII Reactors, DRP, NRR
- @ J. Hannon, Director, Project Directorate III-3, DRP, NRR
- +G. Grant, Director, DRS, RIII
- @ L. Greger, Chief, DRP Branch 3, RIII
- +G. Wright, Chief, Engineering Branch, RIII
- +R. Lanksbury, Chief, DRP Section 3B, RIII
- +J. Jacobson, Chief, Materials and Processes Section, RIII
- +R. Lickus, Chief, Governmental Affairs, RIII
- +J. Hopkins, Project Manager, NRR
- +C. Gainty, Inspector, RIII
- +J. Guzman, Inspector, RIII
- +W. Pegg, Inspector, RIII
- +M. Huber, Inspector, RIII
- \*@#D. Kosloff, Senior Resident Inspector, Perry
- \*@ A. Vogel, Resident Inspector, Perry

State of Ohio

+J. Vitellas, Public Utilities Commission

- \* Denotes those attending the exit meeting held on January 28, 1994.
- # Denotes those attending the management meeting on January 25, 1994, at Perry.
- + Denotes those attending the management meeting regarding Generic Letter 89-10 on January 19, 1994, at the Region III offices.
- @ Denotes those attending management meeting on December 19, 20, and 21, 1993, at Perry.

2. Licensee Action on Previous Inspection Findings (92701)

(Closed) Inspection Followup Item 50-440/93004-01(DRP): As previously documented in inspection reports 50-440/92026, 50-440/93004, 50-440/93005, and 50-440/93011, the licensee identified that accumulation of debris on the emergency core cooling system (ECCS) suppression pool suction strainers degraded the ability of the residual heat removal system to perform its post accident function. The licensee initiated an incident response team to investigate the repeated accumulation of debris on ECCS strainers and developed corrective actions to prevent recurrence. The licensee reported this condition in licensee event report (LER) 93-011 and a civil penalty was assessed (EA 93-176) for identified violations (50-440/93011-02 and -03). The licensee's corrective actions will be evaluated when the LER and civil penalty violations are reviewed. Therefore, this item is closed.

No deviations or violations were identified.

3. Licensee Event Report (LER) Followup (90712, 92700)

Through review of records, the following LER was reviewed to determine if reportability requirements were fulfilled, immediate corrective actions were accomplished in accordance with technical specifications (TS), and corrective action to prevent recurrence had been established:

(Closed) LER 50-440/93-020-00: Missed hourly fire watches result in Fire Protection Program violations. On November 25 and December 19, 1993, hourly fire watches established as compensatory measures for degraded fire barriers were not performed as required by the Fire Protection Program. Specifically, security personnel in these events were aware that the 574 foot elevation of the control complex required fire watch tour inspections. On both November 25 and December 19, security personnel began the fire watch rounds at the appropriate times, however, during the rounds, the responsible personnel deviated from the normal tour route due to barriers to the normal route. Security personnel inspected the required fire watch tour areas accessible by the normal route but did not access the 574 foot elevation of the control complex through available alternate routes.

## Licensee's Investigation of Root Cause and Corrective Actions

### Root Cause

The licensee determined that the root cause for this event was personnel error due to failure to follow established procedures. The security personnel failed to follow Perry Administrative Procedure (PAP) 1916, "Duties of the Fire Watch," Section 5.6, which defined an hourly fire watch as a "physical walkdown of an area as determined by the Fire Watch list to check for conditions that constitute a fire or Fire Hazard. An hourly Fire Watch shall be performed on a frequency of 60 minutes with a margin of 15 minutes."

### Corrective Actions

Licensee corrective actions to prevent recurrence included counseling of both security personnel involved. Additionally, all personnel performing fire watches were trained on both events, with emphasis on the requirement to adapt to changing situations during implementation of repetitive tasks. The licensee planed to revise PAP-1916 to require completion of a manual log during fire watch tours. Also electronic logging readers, which immediately indicate an area that has been missed, were purchased.

### Inspector Review

The inspectors reviewed licensee documentation of this event and concluded that corrective actions were appropriate. The inspectors observed the new electronic logging readers being used in the plant and verified that the use of the readers had been fully implemented. The inspectors' review of previous LERs identified one LER for missed fire watches that had been established as compensatory measures. Those fire watches were missed due to a personnel injury and the corrective actions did not directly address the cause of this event. Appendix B, Criterion V of 10 CFR Part 50 required that activities affecting quality be prescribed by documented procedures and be accomplished in accordance with those procedures. The security officers failed to follow procedure PAP 1916, "Duties of the Fire Watch," a violation of Criterion V. This violation will not be subject to enforcement action because the licensee's efforts in identifying and correcting the violation met the criteria specified in VII.B of the "General Statement of Policy and Procedure for NRC Enforcement Actions." This item is closed.

One non-cited violation was identified, no other violations or deviations were identified.

#### 4. Surveillance Observations (61726, 92701)

##### a. General Observations

For the surveillance activities listed below, the inspectors verified one or more of the following: testing was performed in

accordance with procedures; test instrumentation was calibrated; limiting conditions for operation were met; removal and restoration of the affected components were properly accomplished; test results conformed with technical specifications, procedure requirements, and were reviewed by personnel other than the individual directing the test; and any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

<u>Surveillance Activity</u>	<u>Title</u>
SVI-R43-T1317	Division I Diesel Generator Monthly Test
SVI-P45-T2001	Emergency Service Water Pump A and Valve Operability Test
SVI-C71-T0039	Main Steam Line Isolation Valve Closure Channel Functional Test

b. Main Steam Line Isolation Valve Closure Channel Functional Test

This test, which involved slow partial closing of main steam isolation valves (MSIVs), was performed on January 23, 1994. A recent change had been made to the test procedure, requiring the valve to be slow closed until a 10 percent closed indication was received. Prior to the change the valve had been slow closed until an indication was received that the valve was 8 percent closed. This change had been made to allow the test to check for a valve failure problem which had been identified with similar MSIVs at other plants. The test also included a requirement to stop the test when the test pushbutton had been held for 31 seconds. This time had not been changed by the recent change to the test. When the test was performed on January 23, 1994, on the "C" outboard MSIV the 10 percent closed indication was not received at 31 seconds. The operating crew stopped the test, declared the "C" outboard MSIV inoperable, reduced reactor power to 78 percent, and closed both MSIVs in the "C" main steam line. The test procedure was reviewed by engineering and it was recognized that the time limit for holding the test pushbutton should have been increased when the test was changed to close the valve 10 percent instead of 8 percent. While the MSIV was being closed it was noted that the 10 percent indication occurred at 32.5 seconds. This value was consistent with the observed time to reach 8 percent closed in past tests and with the calculated time to reach 10 percent closed. The test procedure was revised, the valve was successfully re-tested and declared operable, and power was increased to 100 percent. At the end of the inspection period the licensee was evaluating corrective actions to improve attention to detail by engineers making changes to procedures.

c. Inoperable Reactor Water Conductivity Monitor Sampling

On January 16, 1994, with the plant in Operational Condition 1, the reactor water clean up (RWCU) system was isolated from 5:21 a.m. until 9:20 p.m. With RWCU isolated there was no flow to the continuous recording conductivity monitor, rendering it inoperable. Technical Specification (TS) Surveillance Requirement 4.4.4.c. required, in part, that, when the plant was in Operational Condition 1 and the continuous recording conductivity monitor was inoperable, an in-line conductivity measurement be obtained at least once every 4 hours. Based on the allowed 25 percent grace period, the measurement was required within 5 hours of the previous reading or within 5 hours of declaring the continuous recording conductivity monitor inoperable. On January 16, 1994, a chemistry technician elected to obtain conductivity measurements with the post accident sampling system (PASS). There were two PASS valves available for sampling, P87-F001 and P87-F007. Because another valve, between the reactor piping and P87-F007, was closed, measurements taken using P87-F007 were not representative of reactor water. On January 16, 1994, the chemistry technician obtained measurements using only P87-F007. Therefore, no valid conductivity measurements were obtained.

The continuous recording conductivity monitor was also inoperable from January 18, 1994, until January 21, 1994, with the plant in Operational Condition 1. Initially, representative conductivity measurements were obtained, including one obtained at 10:15 p.m. on January 18, 1994. The next conductivity measurement was due on January 19, 1994, by 3:15 a.m. At 2:00 a.m. on January 19, 1994, a chemistry technician obtained a conductivity measurement using P87-F007, which was still isolated from the reactor piping. The non-representative measurement was identified by the licensee at about 7:00 a.m. during shift turnover for the chemistry technicians. The next representative sample was not taken until 8:48 a.m. This failure to obtain a conductivity measurement and the failure to obtain conductivity measurements on January 16, 1994, are examples of a violation (50-440/93023-01(DRP)) of TS 4.4.4.c. The licensee identified the invalid measurements obtained on January 16, 1994, during its review of the January 18, 1994, measurement error. Licensee corrective actions for other recent personnel errors related to sampling and measurements were not effective in preventing this violation, and corrective actions for this violation had not been established by the end of the inspection period.

One violation was identified. No deviations were identified.

5. Monthly Maintenance Observation (40 CFR 60705, 62703)

Station maintenance activities of safety-related systems and other components listed below were observed and/or reviewed to ascertain that

activities were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and in conformance with technical specifications.

The following items were considered during this review: 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 calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; and radiological and fire prevention controls were implemented.

Work requests were reviewed to determine status of outstanding jobs and to assure that priority was assigned to safety-related equipment maintenance which may affect system performance.

a. Specific Maintenance Activities Observed or Reviewed

New fuel inspection

Division I diesel generator annunciator troubleshoot and repair

Division I diesel generator jacket water leak repair

Area radiation monitor 1D21K0112 power supply repair

Emergency service water sluice gate preventive maintenance

Bus EH1102 voltmeter - check calibration and ERIS point check

Lower fuel handling bridge hoist repairs

b. Emergency Service Water Sluice Gate Maintenance

On January 6, 1994, the inspectors observed maintenance on the emergency service water (ESW) sluice gate, OP45-D004A, in accordance with work order (WO) 93-740. Specifically, the inspectors observed removal of the motor operator and stem from the gate. During observation of the maintenance activity, the inspectors noted that WO job step 030.11, which required that the motor operator be removed from the stem, was not performed. The operator and stem were removed as one unit. In addition, during performance of the maintenance activity, the work supervisor and the mechanics performing the work did not refer to the work order package. The inspectors asked the work supervisor why the motor operator was not removed from the stem as required by the procedure. The supervisor stated that he knew that the procedure required that the motor operator be removed, but, based on experience, the work could be done with the motor operator on the stem. The inspectors were concerned that the work supervisor knew



the requirements of the procedure, but failed to follow them based on past experience without taking steps to revise the procedure prior to performing the work. The inspectors discussed the concern with the maintenance manager. The maintenance manager stated that he was aware of problems with maintenance personnel not following procedures and was addressing the problem through discussions with the maintenance staff and training.

Independent of the inspectors' observations, a licensee quality assurance (QA) inspector also observed work on the ESW sluice gate. The QA inspector also observed that the WO was not being followed and issued Action Request P594001-001 to document the procedure violations. The QA inspector further identified that the operator mounting flange bolts had not been torqued upon reinstallation in October 1991. Condition Report 94-017 was issued to address past operability concerns.

The failure of the maintenance crew to follow WO 93-740 during disassembly of the OP45-D004A ESW sluice gate on January 6, 1994, was a violation of Technical Specification 6.8.1.a which required the implementation of written procedures (50-440/93023-02(DRP)).

c. New Fuel Handling

The inspectors observed new fuel handling and noted that personnel and supervisors were generally familiar with the fuel handling procedures and that activities were well controlled. However, in one case during the unloading of new fuel, maintenance personnel stacked the fuel assembly containers (containing new fuel) four high instead of three high. This personnel error was immediately identified and corrected by licensee personnel. The licensee included this error in its evaluation of fuel handling errors (paragraph 6.d.). During its review of this error, the licensee determined that previous analysis indicated it was acceptable to stack fuel assembly containers four high.

One violation was identified. No deviations were identified.

6. Operational Safety Verification (40500, 60705, 71707, 92701)

The inspectors observed control room operations, reviewed applicable logs, and conducted discussions with control room operators during this inspection period. The inspectors verified the operability of selected emergency systems, reviewed tagout records, and verified tracking of limiting conditions for operation associated with affected components. Tours of the pump houses, control complex, the intermediate, auxiliary, reactor, radwaste, 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 certain pieces of equipment in need of maintenance. The inspectors, by observation and direct interview, verified that the physical security plan was being implemented in accordance with the

station security plan. The inspectors observed plant housekeeping, general plant cleanliness conditions, and verified implementation of radiation protection controls.

a. Plant Transient Caused by Ventilation Malfunction

On December 26, 1993, at 5:55 a.m. the "B" Heater Bay Ventilation Supply Fan tripped on low temperature. Outside air temperature was about 12 degrees Fahrenheit. At about 6:07 a.m. cold air entering the heater bay began to cause feedwater instrumentation malfunctions. The operators responded by taking manual control of feedwater, restoring normal heater bay ventilation, and increasing heating water flow to the heater bay heating coils. At 6:50 a.m. the feedwater instrumentation reacted to the warmer air and caused a feedwater transient. The operators reduced reactor power to 95 percent and stabilized the plant after reactor water level approached the Level 3 reactor trip setpoint. The shift supervisor then directed activation of the Technical Support Center (TSC) to provide technical support in evaluating the transient, the condition of the feedwater system, and the condition of ventilation systems. The inspector responded to the plant and observed activities in the TSC, the plant, and the control room. The inspector concluded that the operators' response to the transient and engineering and maintenance response to the transient was excellent. However, the transient could have been avoided by more thorough preparations for cold weather. The inspectors will review licensee corrective actions during future inspections of cold weather preparations.

b. Division 1 Emergency Diesel Generator Annunciator Failure

During maintenance on the Division 1 Emergency Diesel Generator (EDG) (January 4-7, 1994) the licensee experienced problems with the local annunciators. Spurious local and control room alarms annunciated. Troubleshooting identified a failed annunciator power supply. The licensee did not have a usable spare power supply and it was estimated that it would be several days before a suitable replacement would be available. The licensee evaluated the loss of local alarm annunciators with respect to EDG operability and concluded that the failed annunciators did not make the EDG inoperable. Based on a review of system drawings and field verification the licensee determined that the EDG annunciator circuit did not provide any protective or support function that could affect the ability of the EDG to provide emergency power. The onsite review committee approved compensatory actions to assure that a normally annunciated condition did not affect operability while the EDG was in standby. Compensatory actions included inspection of EDG critical parameters every 2 hours until the annunciators were returned to service. On January 7, 1994, the power supply was reinstalled after repair and modification; however, it failed shortly after the EDG was started for testing. The licensee developed a new

action plan and on January 14 a new power supply was installed and circuit cards in other parts of the annunciator system were replaced based on initial testing and monitoring. When operation of the annunciators appeared normal, local monitoring of EDG parameters was reduced to a frequency of every 4 hours. Following continued satisfactory performance of the annunciators, on January 25, 1994, local monitoring of the EDG was returned to normal. The inspectors concluded that licensee actions were conservative and engineering review of operability considerations was thorough. Use of the Perry Engineering Response Team (PERT) and establishment of an incident response team consisting of senior engineers, operators, and technicians to perform a root cause analysis and develop an action plan contributed to the timely and conservative resolution of the annunciator problems.

c. Enforcement Discretion for Containment Airlocks

On January 28, 1994, with reactor power at 100 percent, the licensee requested that the NRC exercise its discretion not to enforce compliance with two actions contained in Technical Specification (TS) 3.6.1.3, "Primary Containment Air Lock." The first enforcement discretion related to allowing containment entry through the lower air lock with one of the two air lock doors inoperable. This was necessary in order to remove a lock on the containment side of the upper air lock inner door. A license amendment request that would have allowed this action to take place had been submitted earlier but had not yet been approved and issued. The second enforcement discretion related to allowing greater than 24 hours before locking the operable air lock door following the inoperability of the lower air lock outer door. This was requested due to the possibility that the inoperable door might not be able to be opened to allow access to the operable door within the 24 hour period.

The licensee requested enforcement discretion in order to gain access to the primary containment without cooling down to less than 200 degrees Fahrenheit. As compensatory action for containment entry with one inoperable air lock door during Mode 3 operation (HOT SHUTDOWN), the licensee stated that the inoperable door would be closed with its intact seal inflated, and the operable door would be under administrative control with a dedicated individual to ensure prompt closure following door opening. Use of the second requested enforcement discretion was later determined to be unnecessary.

NRC management concluded that the licensee's proposed course of action involved minimal or no safety impact, and the requested enforcement discretion was granted on January 28, 1994, (NOED No. 94-6-002).

d. Damage to Lower Fuel Handling Bridge Mast

On January 18, 1994, during new reactor fuel receipt activities, the lower fuel handling bridge platform main mast was damaged. The damage occurred when the nonlicensed operators moving the bridge failed to raise the mast enough to clear the channel wall between the cask pit and the fuel storage pool. When the mast struck the channel wall it was bent and when the operators attempted to retract it, it jammed before it could be fully retracted. No fuel was being moved in the pool when this occurred.

The event was of concern because there had been previous problems with fuel handling bridge operation. On October 22, 1993, during nonlicensed operator training on the upper fuel handling bridge, the entry ladder, which had not been raised, struck a temporary railing, bending the ladder. On January 1, 1994, while moving the lower fuel handling bridge, a contaminated vacuum cleaner was hit and damaged. The licensee formed an Incident Response Team (IRT) to evaluate the January 18 event and similar past events, assess the root cause, and develop corrective actions to prevent recurrence. Fuel handling activities were stopped until the licensee identified and implemented corrective actions. The IRT determined that several factors contributed to the events, including a lack of supervision, inadequate procedures, and inadequate turnover of responsibilities between the bridge spotter and the bridge driver. Corrective actions implemented included procedure revisions, a requirement for a supervisor to be present on the bridge during bridge movement, operator discussions with the operations manager on the events, and a new field turnover policy. The inspectors concluded that the IRT review was thorough and that the corrective actions were appropriate.

No violations or deviations were identified.

7. Onsite Followup of Events at Operating Power Reactors (40500, 71707, 92701, 93702)

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, and 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 the licensee's investigation identified root causes of equipment malfunctions or personnel errors and the licensee was taking or had taken appropriate corrective actions. Details of the events and licensee corrective actions noted during the inspector's followup are provided below.

a. Loss of Emergency Closed Cooling System Safety Function

On December 30, 1993, at 12:44 p.m. the licensee reported via the Emergency Notification System that a leaking butterfly valve identified on July 2, 1993, had caused a loss of safety function for the emergency closed cooling (ECC) system. Motor operated valve (MOV) OP42-F295A, when closed, allowed leakage greater than 250 gpm from the safety-related ECC to the nonsafety-related nuclear closed cooling system. This occurred because the MOV closing limit switch was improperly set, allowing the valve disc to travel slightly beyond the closed position when the valve was closed with the motor operator. This is an Unresolved Item (50-440/93023-03(DRP)) pending completion of the licensee's evaluation of similar valves and the inspectors' review of that evaluation. The MOV was repaired on July 2, 1993, after the leakage was discovered. However, the significance of the leaking valve was not determined until December 1993.

b. Reactor Water Clean Up (RWCU) System Isolation Signals

On January 16, 1994, with the plant in Operational Condition 1, 100 percent reactor power, at 6:01 a.m. and 6:34 a.m., isolation signals to the reactor water cleanup (RWCU) system occurred. The RWCU system had been isolated previously at 5:21 a.m. due to problems with the auxiliary building ventilation system. The ventilation system problems were caused by frequent tripping of the supply fans due to low inlet temperatures caused by equipment problems combined with cold weather. Loss of cooling to the RWCU valve room caused the differential temperature between the inlet and outlet of the room ventilation to approach the isolation setpoint. In anticipation of an isolation signal, the operators isolated the RWCU system. Subsequently, while monitoring the RWCU valve room temperatures, the isolation signals occurred. The signals occurred when plant operators placed the Read/Set switch for the RWCU valve room differential temperature module (E31N0615A) to the "read" position. The module was reset by going to the "read" position again. Since the RWCU system was already isolated, no valve movement occurred. The licensee informed the NRC Operations Center of this event via the emergency notification system at 9:40 a.m. on January 16, 1994. Condition report 94-031 was initiated to document event occurrence and investigation results.

Subsequent licensee review of this event determined that the event was not reportable because the isolation signal was a spurious signal generated by manipulating the Read/Set switch. In addition, the isolation signal occurred with the RWCU removed from service. The licensee retracted the January 16 event notification on January 31, 1994.

c. Reactor Water Clean Up (RWCU) System Isolation

On January 18, 1994, with the plant in Operational Condition 1, 100 percent reactor power, at 7:37 a.m., a reactor water cleanup (RWCU) system isolation signal occurred. The RWCU system had been isolated previously at 7:36 a.m. due to continuing problems with the auxiliary building ventilation system due to equipment problems and cold weather conditions. Loss of cooling to the RWCU valve room caused the differential temperature between the inlet and outlet of the room ventilation to exceed the 27.5 degrees Fahrenheit setpoint resulting in an isolation signal actuation. Since the RWCU system was isolated, no valve movement occurred. The licensee informed the NRC Operations Center of this event via the emergency notification system at 10:17 a.m. on January 18, 1994. The licensee initiated condition report 94-036 to document event occurrence and investigation results. In addition, LER 94-001 was to be submitted in accordance with 10 CFR 50.73. The inspectors will review that report in a future inspection period.

d. Manual Reactor Trip

On January 28, 1993, at 7:45 p.m., with the reactor at 100 percent power, both recirculation pumps unexpectedly downshifted from fast to slow speed. The resultant flow decrease lowered reactor power to 47 percent and placed the reactor in the potential instability region. No power perturbations or oscillations were observed. Because the reactor had been operating with at a rod line of about 106 percent, the operators recognized that reactor parameters would place the operating point in the instability region of the power-to-flow map as recirculation flow decreased. Therefore, the reactor was manually tripped 53 seconds after the recirculation pumps downshifted. Two control rods were slower than required at the notch 43 position although insertion of all rods to the notch 13 position occurred within the Technical Specification limit. All other safety-related equipment functioned as expected. The inspector on site at the time responded to the control room to observe licensee response and stabilization of the plant. Operator verification of safety equipment status, control of plant stabilization, and control of the undesired response of nonsafety-related plant equipment was excellent.

The licensee informed the NRC Operations Center of this event via the emergency notification system at 9:42 p.m. The cause of the pump downshift was a failed electronic module (C34K618B) in the feedwater flow circuitry for the recirculation pump cavitation interlocks. The module sent false downshift signals to the controls of both pumps. The licensee saved the failed module for further analysis and replaced three similar modules in the interlock circuitry.

8. Cold Weather Preparations (71707, 71714, 92701)

The inspectors reviewed the licensee's implementation of the freeze protection program. This included a review of freeze protection off-normal instruction ONI-R36 and various system operation instructions, including those for emergency service water, condensate storage and transfer, and heat tracing. A walkdown of heat trace control panels and other freeze protection systems to verify proper operation was performed. Also, the inspectors discussed implementation of the freeze protection program with operations and engineering personnel to assess their familiarity with cold weather preparations.

During the walkdown of heat trace control panels, the inspectors noted numerous deficiencies, including numerous "locked in" alarms at various heat trace panels and a circuit breaker in the trip free position for the sodium hypochlorite storage tank. During inspection of heat tracing of condensate storage tank level instrumentation, the inspectors noted that insulation was damaged, improperly installed, or missing. Specifically, insulation was missing from the condensate storage tank level pressure transmitter P11-LT-N020 and was not properly installed on safety-related instrument E22-N055. The inspectors informed the licensee of the deficiencies and work requests were written to correct the problems.

Based on the results of the inspectors' walkdown of the freeze protection system and the occurrence of events caused by cold weather, as documented in paragraphs 6.a., 7.b., and 7.c. of this report, a licensee review of the adequacy of current cold weather preparations is warranted. The inspectors will review corrective actions in response to these events during a future review of the licensee's freeze protection program.

No violations or deviations were identified.

9. Engineering (40500, 71707, 92701)

a. Outage Workscope

The process for determining the scope of work for the refueling outage was reviewed. Several scope review board meetings were attended and records of previous meetings were also reviewed. Work scope additions or deletions were evaluated by the licensee using five categories of scope control criteria, which included: 1) nuclear safety, 2) industrial and radiological safety, 3) ensure or restore system operation, 4) efficiency and reliability, and 5) commitments. In general, the process appeared to be functioning properly; however, in some instances presentations to the scope review board were ineffective. Engineers were sometimes not available to answer board questions, which in several cases resulted in a decision deferral.

Subsequent presentations were better coordinated. These situations indicated that the engineering staff's workload was very heavy.

b. Support of Plant Activities

Engineering personnel provided good support to the plant in response to events as discussed in paragraphs 6.a., 6.b., and 7.d. Engineering support was weak in the preparation of a change to a surveillance test in response to industry events (paragraph 4.b.).

No violations or deviations were identified.

10. Plant Support

Activities in this area were generally performed well. The response of the chemistry section to high reactor water conductivity following the plant trip (paragraph 7.d.) was excellent. However, a chemistry technician's personnel errors during reactor water sampling surveillances caused a Technical Specification violation (paragraph 4.c.). Personnel errors by security personnel resulted in two missed area inspections during fire watch patrols (paragraph 3). On January 26, 1994, the licensee identified that a contract worker with an alarming electronic dosimeter had not taken appropriate actions. The licensee took broad and aggressive actions to prevent recurrence. Housekeeping improvements observed earlier have generally been maintained.

No violations or deviations were identified.

11. Followup of Concerns (71707, 92701)

a. Valve Stem Packing (AMS 93-A-149)

A concern related to the adequacy of stem packing on valve N21-F0592 was reviewed. The concern was whether the packing on the nonsafety-related valve was adequate for the application based on an observed 3/16 inch gap between the packing and the stem. Discussions with a region-based technical inspector indicated that a 3/16 inch gap between the stem and packing was not inordinate because the gap would probably be filled upon packing crush during installation. In addition, the inspectors frequently observed valve N21-F0592 while the plant was operating and no stem packing leakage was identified.

b. Safety Shower Near Battery (AMS 93-A-145)

A concern related to the proximity of a safety shower to the Division 3 Battery was reviewed. The concern was that water from the safety shower might cause a problem with the battery. The inspectors observed that, although there was no safety shower near the Division 3 Battery, there was a self-contained emergency



eyewash station near the battery. The inspectors concluded that the eyewash was not a threat to the battery because it contained a limited amount of eyewash solution and the solution was not pressurized. The eyewash station had a drain hole about 3 feet above the floor and the floor was sloped to a floor drain. The battery was elevated above the floor so that splashing from draining eyewash would not reach electrical connections on the battery. The eyewash station was mounted on a substantial metal column bolted to the concrete floor.

c. Overgreasing of Control Room Ventilation Fan Motor Bearings  
(AMS 93-A-145)

A concern related to overgreasing of control room ventilation fan motor bearings was reviewed. The concern was that the overgreasing would cause premature failure of the fan motors. One of the fan motors had failed on June 8, 1993 (Inspection Report 50-440/93011 and LER 93-013) after 8 years of service. The licensee sent that motor to the manufacturer for failure analysis. The inspectors discussed the motor failure with the manufacturer and licensee engineers. Observed overgreasing of the motor was discussed. The manufacturer did not consider the overgreasing to be a contributor to motor failure. A possible voltage surge was considered to be the cause of the failure. The licensee also sent videotapes of the failed motor to an electric motor rebuilding company. Engineers at that company concluded that the motor had failed due to flexing of the windings which led to insulation failure. There had been seven previous winding failures of fan motors in various ventilation systems, but overgreasing had not been identified as a cause of the failures. The licensee had evaluated the effects of overgreasing and concluded that it would not cause damage to the windings. The licensee was also evaluating changes to maintenance procedures to reduce the amount of grease used on fan motors. Based on existing information, overgreasing of fan motors was not considered a problem. LER 93-013 will remain open until the inspectors review the licensee's root cause analysis.

d. Psychological Evaluation and Call for Quality Actions  
(AMS 93-A-123)

A concern related to a psychological evaluation was reviewed. A psychological evaluation is required to verify that individuals are fit for duty at Perry. An individual was concerned that his psychological evaluation was improper and presented his concerns to the licensee's "Call for Quality" program. The Call for Quality was a program to allow employees to present concerns without using the normal management process and was subsequently replaced with an Ombudsman program. The inspectors reviewed the status of the licensee's evaluation of the individual's concerns. The concern, along with several others, had been transferred to the Ombudsman. Since the licensee's evaluations were not complete

this will remain an Inspection Followup Item (50-440/93023-04(DRP)) until the inspectors review the resolution of transferred concerns, as well as new concerns, by the Ombudsman.

No violations or deviations were identified. One Inspection Followup Item was identified.

12. Evaluation of Licensee Self-Assessment Capability (40500)

a. On-Site Review Committee

During the report period, the inspectors observed on-site review committee meetings to evaluate that organization's effectiveness. For the meeting attended, the inspectors considered the following attributes: the degree of plant management involvement or domination of discussions; if constructive discussion occurred; if the majority of the committee consistently voted the same as the chairperson; if the committee was biased toward operation or safety; and, if the committee used design bases, the Updated Safety Analysis Report, or vendor technical manuals for their determinations in addition to the technical specifications.

In preparation for the meeting, the inspectors reviewed the draft submittals given to the on-site review committee for approval. The committee reviewed compensatory actions for failed Division 1 local annunciators and the restart report for the January 28, 1994, manual reactor trip.

The inspectors observed the following committee meetings:

<u>Meeting No.</u>	<u>Date</u>
94-002	January 7, 1994
94-018	January 29, 1994

For the meetings observed, the inspectors concluded that the function of the on-site review committee was effectively implemented.

b. Independent Assessment Team

The Senior Vice President - Nuclear assembled an Independent Assessment Team (IAT) to evaluate plant activities by questioning plant personnel on those activities and advising plant management. The IAT includes four senior outside consultants and two plant personnel. The inspectors observed several IAT meetings and concluded that the function of the IAT was being effectively implemented.

No violations or deviations were identified.

13. Management Meetings

On December 19, 20, and 21, 1993, Mr. John Martin, Regional Administrator, Region III; Mr. John Zwolinski, Assistant Director, Region III Reactors, Division of Reactor Projects, Nuclear Reactor Regulation; and senior members of their staffs visited the Perry plant. During the visit they toured the facility observing plant conditions and on-going plant operations. They also met with members of the licensee's staff to discuss recent plant performance.

On January 19, 1994, a meeting between members of the licensee's staff and NRC personnel was held in the Region III office to discuss the status of the Perry plant Generic Letter (GL) 89-10 program for motor operated valves (MOV). Topics discussed included the status of the GL 89-10 program, the program completion plan, and the MOV group staffing and structure. Although a detailed assessment of the information provided was not possible, the NRC staff was encouraged by the efforts to communicate and found the meeting to be informative.

On January 25, 1994, a management meeting between Mr. J. B. Martin, Regional Administrator, NRC, Region III; the Senior Resident Inspector; and the Board of Directors of Centerior Service Company was held at the Perry Nuclear Power Plant. The purpose of the meeting was to discuss current performance of the Perry facility and the forthcoming outage. NRC management acknowledged the licensee's efforts and planned activities.

14. Unresolved Items

An Unresolved Item is a matter about which more information is required in order to ascertain whether it is an acceptable item, a violation, or a deviation. An unresolved item disclosed during this inspection is discussed in paragraph 7.a.

15. Inspection Followup Items

An Inspection Followup Item is a matter which has been discussed with the licensee, which will be reviewed further by the inspectors, and which involves some action on the part of the NRC or licensee or both. An inspection followup item disclosed during the inspection was discussed in paragraph 11.d.

16. Items for Which a "Notice of Violation " Will Not Be Issued

During this inspection period, certain licensee activities, as described in paragraph 3.a., appeared to be in violation of NRC requirements. However, the licensee identified the violation and it is not being cited because the criteria specified in Section VII.B of the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy), 10 CFR Part 2, Appendix C were satisfied.

17. Exit Interviews

The inspectors met with the licensee representatives denoted in paragraph 1 throughout the inspection period and on January 28, 1994. The inspectors summarized the scope and results of the inspection and discussed the likely content of the inspection report. The licensee did not indicate that any of the information disclosed during the inspection was proprietary.