U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-440/89028(DRP)/EA 89-253

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, Unit 1

Inspection At: Perry Site, Perry, Ohio

Inspection Conducted: November 21, 1989 through January 11, 1990

Inspectors: P. L. Hiland

G. F. O'Dwyer

Approved By: M. A. Ring, Chief Reactor Projects Section 3B — Date: 1/11/90

Inspection Summary

Inspection on November 21, 1989 through January 11, 1990 (Report No. 50-440/89028(DRP))

Areas Inspected: Routine, unannounced safety inspection by resident inspectors of licensee action on previous inspection items; monthly surveillance observation; monthly maintenance observations; operational safety verification; onsite followup of events; evaluation of licensee self assessment capability; and monthly plant status meeting.

Results: Of the seven areas inspected, four potential violations were identified in the area of surveillance testing (Paragraph 3.a) and two potential violations were identified in the area of maintenance (Paragraph 4.a). Those six potential violations are planned to be the subject of an Enforcement Conference. The four potential violations identified in the area of surveillance testing concerned inadequate test control (Criterion XI) and inadequate corrective action (Criterion XVI) which resulted in the licensee's failure to declare control rods INOPERABLE after failing to meet scram insertion times when tested, failure to comply with Technical Specification (TS) ACTION statement regarding the proximity of inoperable control rods and the failure to enter TS 3.0.3 due to more than one control rod being untrippable. The two potential violations in the area of maintenance concerned the licensee's failure to adequately control nonconforming material (Criterion XV) which resulted in environmentally unqualified and nonconforming scram pilot valve components being installed in reactor trip systems.

Licensee management was aware of the above potential violations and was addressing long term corrective actions at the close of the inspection period. Short term corrective action included replacement of unqualified scram pilot valves, scram time surveillance testing on an expanded sample, and personnel training. The inspectors considered the licensee's short term corrective actions to be prompt and appropriate with the proper level of management attention.

## DETAILS

1. Persons Contacted

   a. Cleveland Electric Illuminating Company (CEI)

   #L. Phillips, President, C.E.I.
   #A. Kaplan, Vice President, Nuclear Group
   *M. Lyster, General Manager, Perry Plant Operations Department (PPOD)
   #*W. Coleman, Manager, Operations Quality Section (NQAD)
   &*M. Gmyrek, Manager, Operations Section (PPOD)
   &*H. Hegrat, Compliance Engineer (NSD)
   #*S. Kensicki, Director, Perry Plant Technical Department (PPTD)
   #*R. Newkirk, Manager, Licensing and Compliance Section (NSD)
   R. Stratman, Director, Nuclear Engineering Department (NED)
   *D. Takacs, Acting Director, (NQAD)
   *F. Stead, Director, (NSD)

   b. U. S. Nuclear Regulatory Commission

   #C. Paperiello, Deputy Regional Administrator, RIII
   #J. Partlow, Associate Director for Projects, NRR
   #*P. Hiland, Senior Resident Inspector, RIII
   *G. O'Dwyer, Resident Inspector, RIII
   #R. Knop, Chief, DRP Branch 3, RIII
   #J. Zwolinski, Assistant Director Region III Reactors, NRR
   #J. Hannon, Director, PD III-3, NRR
   #T. Colburn, Perry Project Manager, NRR

   #Denotes those attending the management meeting held on December 5, 1989.

   *Denotes those attending the exit meeting held on January 3, 1990.

   &Denotes those attending the exit meeting held on January 11, 1990.

2. Licensee Action on Previous Inspection Findings (92701)

   a. (Open) Open Item (440/89022-21(DRP)): Design Change Packages. As detailed in Section 3.6.4.1 of the Perry Diagnostic Evaluation Team (DET) Report dated May 1989, the licensee had not established a long term implementation schedule to reduce the number of outstanding design change packages (DCPs).

   The licensee responded to this item in letter PY-CEI/NRR-1043L, Section 2.1.6.10, dated July 29, 1989. That response stated that a DCP review committee had been created and that priorities had been established. Further, results from that effort would be factored into their five year plan.

During this report period, the inspectors discussed the current status of the licensee's progress on this item with the Manager - Nuclear Engineering Department. As part of this discussion, the inspectors reviewed the draft charter of the established DCP review committee. The inspectors noted that the DCP review committee was comprised of nine managers from the engineering, technical, and operations departments. The inspectors noted that the membership on the DCP review committee was adequate to perform the assigned task. The established priorities for use by the DCP committee were well defined and covered a wide range of design change requests.

The inspectors reviewed the initial/draft five year engineering plan. That plan had progressed to the point of establishing the goal of completing 106 DCPs during cycle II. At the time of this review, the licensee identified about one-half of those 106 DCPs were ready to work. The remainder were scheduled to complete planning in the Spring of 1990. The balance of proposed design changes were still under review and the "final" schedule for those items had not yet been incorporated into the engineering five year plan. The licensee stated that once efforts were completed on planning the cycle II design change work, cycle III and IV planning would be incorporated.

This item will remain open pending the inspectors review of the licensee's completed five year planning effort and review of selected DCPs.

No violations or deviations were identified.

3. Monthly Surveillance Observation (61726)

For the below listed surveillance activities 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 and procedure requirements and were reviewed by personnel other than the individual directing the test; and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel. Exceptions are noted in the following paragraphs.

| Surveillance Test No. | Activity |
|---|---|
| SVI-C11-T0225A, Revision 2 | "Rod Pattern Controller System High Power Setpoint Channel A Calibration for 1C11-N054C" |
| SVI-M51-T0321-B, Revision 6 | "Hydrogen Analyzer Calibration" |
| SVI-C11-T1006 | "Scram Timing" |

a. Details

During the performance of Surveillance Instruction (SVI)-C11-T1006, Revision 2, "Control Rod Maximum Scram Insertion Time," on November 25, 1989, the licensee identified two control rods that failed to meet their scram time acceptance criteria. The surveillance test was being performed to meet the requirements of Technical Specification 4.1.3.2.c. That Technical Specification required that 10 percent (18) of the control rods be tested to verify their maximum scram insertion times were within Technical Specification limits at least once per 120 days of power operation.

The first scram time test failure occurred when Control Rod 34-47 was tested and failed to insert at 1:37 p.m. on November 25. A second attempt to test Control Rod 34-47 was made at 1:40 p.m. and the control rod inserted but failed to meet the required acceptance criteria. At 1:56 p.m. a third attempt to scram time test Control Rod 34-47 was made with acceptable results. At 2:04 p.m. a fourth attempt to scram time test Control Rod 34-47 was made with acceptable results. Based on the test results from the third and fourth scram time tests performed on Control Rod 34-47, the shift supervisor and personnel performing the testing considered Control Rod 34-47 to be OPERABLE and continued with the surveillance test.

The second scram time test failure occurred when Control Rod 34-51 was tested at 2:13 p.m. and failed to insert. A second attempt to scram time test Control Rod 34-51 was performed at 2:33 p.m. and it again failed to insert. At 2:39 p.m., Control Rod 34-51 was declared INOPERABLE due to being untrippable. At the time Control Rod 34-51 was declared INOPERABLE, Control Rod 34-47 (an adjacent rod) was considered an OPERABLE control rod; therefore, the plant operators followed Technical Specification 3.1.3.1 ACTION statement a.1 and 2 by verifying separation from other inoperable control rods, hydraulically disarming Control Rod 34-51, and initiating action to verify adequate shutdown margin existed. At 6:15 p.m. after analysis indicated an inadequate shutdown margin, Control Rod 34-51 was fully inserted.

After further review of actions taken in response to the first test failure that had occurred while testing Control Rod 34-47, that control rod was declared inoperable at 9:30 p.m. Control Rod 34-47 was fully inserted at 10:08 p.m.

The licensee concluded that the most likely cause for the two test failures discussed above was due to failure of the scram pilot valve to adequately perform its function when the associated scram solenoids were deenergized. As immediate corrective action, the licensee replaced the scram pilot valves on Control Rod 34-47 and 34-51. Both control rods were successfully scram time tested and subsequently declared OPERABLE at about 5:15 a.m. on November 26, 1989. The licensee initiated Condition Report (CR) 89-404 which

documented the scram time test failures of Control Rods 34-47 and 34-51, documented the immediate corrective action taken, and provided for future documentation of the root-cause failure mechanism.

Additional actions taken by the licensee included expanding the population of control rods scram time tested. Initially, 18 (10 percent) control rods had been selected for testing. After reviewing the test failures associated with Control Rods 34-47 and 34-51, the licensee noted that these two control rods were part of a larger population that had been reworked during the 1989 refueling outage. The licensee performed scram time testing on an additional 55 control rods to verify that a generic failure mechanism had not been introduced during the refueling maintenance effort. The inspectors witnessed portions of that test performance and reviewed all test results. All 55 "expanded scope" control rods tested met the Technical Specification acceptance criteria which initially indicated a generic failure mechanism had not been introduced; however, during the root cause investigation as to the failure mechanism for the scram pilot valves associated with Control Rods 34-47 and 34-51, a potentially generic failure mechanism was identified and is discussed further in paragraph 4 of this report.

The inspectors noted that the inclusion of Control Rods 34-47 and 34-51 into the original 10 percent test population of November 25 was based on corrective action to previous scram time test failures that had occurred on July 30, 1989. Licensee Condition Report (CR) 89-301 documented scram time test failures on Control Rods 34-47 and 34-51 during required surveillance testing performed after the 1989 refueling outage. As documented in CR 89-301, Control Rods 34-47 and 34-51 failed to meet the Technical Specification acceptance criteria for maximum scram insertion times when tested on July 30, 1989, during the performance of Surveillance Instruction (SVI)-C11-T1006. Following those test failures, the licensee's immediate corrective action was to reperform the scram time test surveillance. The second scram time test on Control Rods 34-47 and 34-51 performed on July 30 met the Technical Specification acceptance criteria and both control rods were considered OPERABLE and the initial test failures were attributed to "sticky scram valves." The followup investigation which was approved on October 11, 1989, required that Control Rods 34-47 and 34-51 be included in the next sample of control rods tested in accordance with Technical Specifications. As noted above, Control Rods 34-47 and 34-51 were subsequently tested on November 25, 1989.

b. Conclusions

10 CFR 50, Appendix B, Criterion XI, "Test Control," required in part that test results shall be documented and evaluated to assure that test requirements have been satisfied. Contrary to that requirement, the licensee failed to adequately evaluate test results following the performance of scram time testing on July 30 and November 25, 1989, in that: (a) following the failure of Control Rods 34-47 and 34-51 to meet the required maximum scram insertion

time when tested on July 30, the licensee declared the two control rods OPERABLE based on a successful second-attempt test without adequately evaluating the first test failure or without performance of any corrective maintenance; (b) following the failure on two occasions of Control Rod 34-47 to meet its required maximum scram insertion time on November 25, the licensee considered Control Rod 34-47 to be OPERABLE based on a "successful" third and fourth test without adequately evaluating the first and second test failures or without performance of any corrective maintenance. The above two examples of the licensee's failure to adequately evaluate test results is considered an apparent violation of 10 CFR 50, Appendix B, Criterion XI (50-440/89028-01(DRP)).

10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," required in part that in cases of significant conditions adverse to quality, corrective action measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Contrary to that requirement, the corrective action taken after Control Rods 34-47 and 34-51 failed to meet their scram time acceptance criteria on July 30, 1989, was inadequate in that the cause of the condition was not determined and actions did not preclude repetition. As a result, when Control Rod 34-47 was scram time tested on November 25, 1989, as corrective action to the July 30 test failure, that control rod was considered an OPERABLE component after two successive test failures even though those failures exhibited similar, if not identical, characteristics of the July 30 test failures. The licensee's failure to identify the cause for the failure of Control Rod 34-47 to meet its maximum scram insertion time on July 30, and November 25, 1989, is considered an apparent violation of 10 CFR 50, Appendix B, Criterion XVI (50-440/89028-02(DRP)).

Technical Specification 3.1.3.1, ACTION statement a.1.a required the licensee to verify within one hour that the inoperable control rod, if withdrawn, was separated from all other control rods by at least two control cells. Contrary to that requirement, at 2:39 p.m. on November 25, 1989, Control Rod 34-51 was declared inoperable and remained withdrawn until 6:15 p.m. Control Rod 34-47 (adjacent rod to 34-51) was subsequently declared inoperable based on test failures that had occurred about 1:40 p.m. on November 25. Control Rod 34-47 was inserted at 10:08 p.m. Therefore, from 3:39 p.m. until 10:08 p.m. the licensee operated in apparent violation of Technical Specification 3.1.3.1, Action a.1.a, with two adjacent, withdrawn, inoperable control rods (50-440/89028-03(DRP)).

Technical Specification 3.1.3.1 does not have an associated Action statement for more than one inoperable control rod due to being untrippable; therefore, with more than one inoperable control rod due to being untrippable, Technical Specification 3.0.3 required that action be initiated within one hour to place the unit in an OPERATIONAL CONDITION in which the Technical Specification does not

apply. Contrary to that requirement, the licensee operated in OPERATIONAL CONDITION 1 between 2:39 p.m. and 6:15 p.m. on November 25, 1989, with more than one inoperable control rod due to being untrippable in apparent violation (50-440/89028-04(DRP)) of Technical Specification 3.0.3.

Four apparent violations were identified that were to be the subject of an Enforcement Conference scheduled for January 18, 1990.

4. Monthly Maintenance Observation (62703)

Station maintenance activities of safety related systems and components listed below were observed/reviewed to ascertain that they 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; radiological controls were implemented; and, fire prevention controls were implemented.

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

The following specific maintenance activities were observed/reviewed:

a. Details

As discussed above in paragraph 3, the licensee replaced scram pilot valves for Control Rods 34-47 and 34-51 following scram time test failures observed on November 25, 1989. The inspectors observed portions of those maintenance activities as discussed below.

The scram pilot air solenoid valve pack (1C11-F139) for control rod (CR) 34-47 was disassembled on November 27, 1989, in accordance with Work Order 89-7191. The seating surface of the disc holder sub-assembly should have been viton as stated in the environmental qualification (EQ) packages for these valves and should have been black, flat and hard. The seating surface was red and appeared soft, "chewed-up", rough and deformed. On November 28, 1989, upon the inspector's request, maintenance personnel placed the disc

holder sub-assembly in its design position which was on the "B" solenoid orifice and held the valve so that the orifice pointed at the floor. Gravity should have caused the disc holder sub-assembly to fall off of the orifice but it did not. The seating surface apparently deformed, assumed the shape of the orifice and stuck to the orifice. This was repeated twice and the disc holder sub-assembly did not fall off as it should have.

On November 28, the scram solenoid pilot air valve pack (1C11-F139) for CR 34-51 was disassembled. The seating surface on its disc holder sub-assembly was also red vice black and although the seating surface was flat the vendor (ASCO) representative stated that it was glazed in a manner that he had not seen on other seating surfaces. Furthermore, the surface on the opposite side of the disc holder sub-assembly was tacky as evidenced by the fact that the stem was stuck to it and then was removed and restuck several times. At the close of the inspection period the licensee was awaiting the results of laboratory analysis to determine root cause of failures, identity of seating materials and foreign material.

After identification that the disc holder sub-assembly seating material was not made of the EQ required "viton" material, the licensee, through discussions with the scram pilot valve manufacturer (ASCO), recognized that the two scram pilot valves associated with Control Rods 34-47 and 34-51 had been part of a 1985 recall. The recall was due to the potential for the disc holder assemblies having urethane seating material and not the required viton material.

In response to the 1985 recall, the licensee had initiated Nonconformance Report (NR) OPQC-1516, dated June 7, 1985. That report documented the licensee's corrective action after being informed that 34 scram pilot valves had been identified as potentially nonconforming. Twenty-two of the 34 suspect components were returned to the supplier, General Electric. Objective evidence to support this fact was noted by the inspectors to be contained in the NR closure package. The remaining twelve of the 34 suspect components were thought to have been reworked during the construction phase. The basis for that conclusion was a memorandum attached to NR OPQC-1516 from the General Electric Site Manager that stated the twelve remaining scram pilot valves had been reworked.

Since the two scram pilot valves which had been installed on Control Rods 34-47 and 34-51 were found to contain urethane seat material, the licensee assumed that the remaining ten pilot valves that had not been returned to the vendor in response to the 1985 recall were potentially nonconforming components. The licensee reviewed maintenance records and performed a field walkdown of all 177 control rod scram pilot valves. The licensee identified an additional five suspect pilot valves installed in the plant. The remaining five pilot valves were accounted for through review of maintenance records.

For the five pilot valves found to be installed, the licensee replaced them with qualified spares and they were sent to an offsite laboratory for analysis. The results of that analysis were to be provided in a supplemental report to Licensee Event Report 50-440/89030.

b. Conclusions

10 CFR 50, Appendix B, Criterion XV, "Nonconforming Materials, Parts, or Components," required in part that measures shall be established to control components which do not conform to requirements in order to prevent their inadvertent use or installation. Failure of the licensee to control nonconforming components resulted in the installation and use of scram pilot valves that did not meet the requirements of their associated environmental qualification package and is an apparent violation (50-440/89028-05(DRP)) of 10 CFR 50, Appendix B, Criterion XV.

10 CFR 50.49 required in part that electrical equipment important to safety be qualified by testing and/or analysis. The scram pilot valve assemblies were identified in the licensee's EQ list as equipment number 1C11D0001. The licensee qualified the scram pilot valve by testing with viton seat material on the disc holder assembly and had not performed a qualification test with urethane seat material. Therefore, from the time of their installation during the 1989 refueling outage until their replacement in November, 1989, the licensee operated with installed scram pilot valves that had not been tested and/or analyzed in apparent violation of 10 CFR 50.49 (50-440/89028-06(DRP)). In addition, the inspectors noted that the apparent violation of EQ requirements imposed by 10 CFR 50.49 was the direct result of the apparent violation of Appendix B, Criterion XV discussed above.

Two apparent violations were identified that were to be the subject of a January 18, 1990, Enforcement Conference.

5. Operational Safety Verification (71707)

a. General

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 tag-out records and verified tracking of Limiting Conditions for Operation associated with affected components. Tours of the intermediate, auxiliary, reactor, 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/cleanliness conditions and verified implementation of radiation protection controls.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under technical specifications, 10 CFR, and administrative procedures.

b. Details

(1) On December 6, 1989, while operating at 100 percent reactor power, plant operators identified steam issuing from containment drain lines. Investigation identified the source to be a stuck open relief valve in the reactor water cleanup (RWCU) system. The licensee believed the most likely cause for the initial opening of the relief valve was a pressure transient due to an unexpected RWCU system isolation that had occurred earlier that day (see details for that event in paragraph 6.b.(1) below).

The licensee was able to gag shut the stuck open relief valve. The necessary overpressure protection for the RWCU system was still available from a second relief valve installed in the same piping run. The inspectors noted that the licensee had consulted the system designer (General Electric) to assure adequate overpressure protection was still available with the gagged relief valve.

(2) On December 6, 1989, a radioactive liquid spill of about 4,000 gallons occurred in the radwaste building. The cause of the spill was a failed level sensor in a settling tank that was indicating available volume when in fact the tank was full. When plant operators commenced pumping water to the settling tank, the overflow was directed to the floor drain system and eventually backed up through the drain system and onto the floors. Plant operators suspended processing operations after identification of the drain system overflow. The inspectors toured the affected area of the radwaste building following cleanup activities and noted that no standing water was present. The licensee initiated Condition Report (CR) 89-418 to document this event and to provide the documentation of corrective actions taken to prevent recurrence.

(3) On December 7, 1989, while operating at 100 percent reactor power, a loop-seal was lost on the offgas system "A" dryer skid. The initial indications to plant operators that a loop-seal had been lost were "alert" alarms received in the

control room on the gaseous, iodine, and particulate radiation monitors for the offgas building ventilation exhaust. Plant operators refilled the "A" dryer skid loop seal which restored normal system flow and reduced radiation levels. The licensee initiated Condition Report (CR) 89-417 to document this event occurrence and to provide documentation of corrective action taken. The peak total body dose rate during this event was 3.5 mrem per year which was well below the Technical Specification limit of 500 mrem per year.

During this report period, several additional loop-seal failures occurred in the offgas system. The details of those failures are discussed below in paragraph 6.b.(5)(6)(7). For each of those events, the inspectors noted that increased gaseous effluent releases were maintained below Technical Specification limits. A more detailed review of the licensee's dose assessments for recent offgas loop-seal failures was being performed by a Region III specialist inspector and will be documented in Inspection Report 50-440/89029.

(4) On December 22, 1989, the licensee experienced a valid test failure of the Division-1 emergency diesel engine. The required surveillance test was being performed due to a failure of the Division-3 emergency diesel discussed below in paragraph 6.b.(4). The licensee initiated Condition Report (CR) 89-433 to document this event and to provide documentation of the corrective action taken. Division-1 emergency diesel was returned to service on December 23, 1989, following maintenance. The cause for the test failure was a failed relay in the voltage regulator that was replaced. The inspectors will review the required Special Report due to this valid test failure in a subsequent inspection report.

No Violations or Deviations were identified.

6. Onsite Followup of Events at Operating Power 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) Reactor Water Cleanup Isolation

On December 6, 1989, while operating at 100 percent reactor power, the licensee experienced an unexpected isolation of the reactor water cleanup (RWCU) system. The isolation occurred during the performance of routine plant surveillance rounds when recording temperatures in the leak detection system. The apparent cause for the isolation was a small change in the plant ventilation system lineup allowing the differential temperature sensed for the RWCU pump room to exceed the trip setpoint of 23 degrees F. After verification that an actual system leak was not present, plant operators adjusted auxiliary building ventilation to reduce the RWCU pump room differential temperature.

Since the RWCU pump room differential temperature had been averaging about 20 degrees F, the licensee had been evaluating possible plant modifications. Subsequent to this event, a plant modification was implemented during this report period which reduced the ambient differential temperature to about 10 degrees F. The licensee notified the NRC Operations Center of this event via the ENS at about 1:00 p.m. on December 6, 1989.

(2) Reactor Water Cleanup Isolation

On December 8, 1989, while operation at 100 percent reactor power, the licensee experienced an unexpected isolation of the reactor water cleanup (RWCU) system. The isolation occurred due to a sensed high differential flow during system startup following a planned maintenance activity. The apparent cause for the sensed high differential flow was the flow elements for the return paths being below their cutoff setpoint resulting in a generated signal based on suction flow only. At the time of attempted system restoration a RWCU system relief valve had been stuck open and the system was momentarily secured in an attempt to gag that relief valve shut. Subsequent to this event, that RWCU relief valve (G33-F504) was successfully gagged shut. The licensee reported this event to the NRC Operations Center via the ENS at about 11:45 p.m. on December 8, 1989.

(3) Reactor Water Cleanup Isolation

On December 15, 1989, while operating at 100 percent reactor power, the licensee experienced an unexpected isolation of the reactor water cleanup (RWCU) system. The system had isolated on high RWCU pump room temperature due to a loss of normal auxiliary building ventilation. The loss of auxiliary building ventilation was caused by a sensed low temperature in the supply plenum due to a buildup of snow (caused by severe winter

weather). After verification of proper system isolation, plant operators restored the auxiliary building ventilation and returned the RWCU system to service. The licensee informed the NRC Operations Center of this event via the ENS at about 7:50 p.m. on December 15, 1989.

(4) Loss of Division-3 Battery

On December 22, 1989, while operating at 100 percent reactor power, the licensee experienced a loss of the Division-3 battery when the inservice battery was found to have an electrolyte temperature of 69 degrees F which was below the Technical Specification limit of 72 degrees F. The cause for the low battery temperature was a blown fuse in the battery room ventilation system heaters. Since the affected Division-3 battery was the only available support system for Division-3 120 Volt DC, the licensee declared the high pressure core spray (HPCS) system and the Division-3 emergency diesel inoperable. The licensee replaced the blown fuses for the battery room ventilation heaters and the battery electrolyte temperature was restored to normal about 16 hours after initial discovery. Division-3 components were then declared operable. One anomaly occurred while performing required emergency diesel testing following the discovered inoperability of Division-3. When first tested, the Division-1 emergency diesel failed to function properly. The licensee complied with the appropriate Technical Specification Action statements associated with both Division-3 and Division-1 emergency diesels inoperable.

The Division-1 emergency diesel was returned to an operable status, following corrective maintenance, about 19 hours after its initial test failure. The inspectors will review the licensee's root cause determination for the Division-1 emergency diesel test failure during the review of the required Licensee Event Report for this event. The licensee reported this event to the NRC Operations Center via the ENS at about 2:00 p.m. on December 22, 1989.

(5) Loss of Offgas Dryer Skid "A" Loop-Seal

At about 2:00 p.m. on December 28, 1989, while the plant was at 100 percent reactor power, alert alarms were received in the control room on the gaseous, particulate, and iodine radiation monitors for the offgas building ventilation exhaust ducting (not a release point) and the licensee entered Off-Normal Instruction ONI-D17, "High Radiation Levels Within Plant." Operators noted about a four standard cubic feet per minute (scfm) decrease in offgas system process flow. About the same time the "C" offgas dryer (which is located on the "A" offgas dryer skid) went into its regeneration mode. Plant operators began filling the loop-seals, starting with the "A" dryer skid loop seal whereupon offgas process flow increased back to

normal and radiation levels started leveling off and decreasing. Radiation monitors for the offgas vent pipe (a release point) indicated increased radiation levels but no alert alarm levels were reached. Chemistry personnel indicated that the grab samples that were taken at the release point did not indicate any levels above normal. Chemistry estimated that the total body dose rate had peaked at about 1.2 mrem/year (Technical Specification limit is 500 mrem/year) and the whole body dose was less than one tenth of one per cent of the Technical Specification limit. It was not necessary to evacuate any personnel from any buildings. The licensee exited ONI-D17 at 5:50 p.m. Control room operators responded rapidly and correctly in accordance with their off-normal instructions.

At the close of this inspection period, licensee personnel were still investigating the root cause of the loss of this loop-seal.

(6) Loss of Offgas Dryer Skid "B" Loop-Seal

At about 5:50 p.m. on December 29, 1989, while the plant was at 100 percent reactor power, the "B" offgas dryer was beginning its regenerative cycle when the control room received an indication that the regenerative blower had tripped on high current. The auxiliary operator that was sent to investigate reported that the regenerative blower suction valve (1N64F1690B) was closed when it should have been open and that there was the smell of overheated insulation. Since the regenerative flowpath is essentially a closed loop, the blower probably pressurized the piping up to its suction valve to about 14 pounds per square inch (psi) and the blower then failed whereupon the pressurized air then rushed back through the blower and the "B" dryer chiller and blew out the "B" dryer chiller loop seal. The auxiliary operator opened, as directed, the blower suction valve via a manual switch and (unknown to operations personnel at the time) this allowed the air purge valve (1N64F1694B) to open which normally allows excess air in the regenerative loop to be routed back to the offgas process flow. However, since the blower had failed, offgas process flow apparently entered the regenerative flowpath and went out the empty "B" dryer chiller loop-seal into the turbine power complex. After about 10 seconds the auxiliary operator placed the control switch back in the "auto" position and the blower suction valve and air purge valve closed which stopped additional offgas process flow from escaping into the turbine power complex. About 15 minutes later "alert" alarms were received on "offgas building ventilation exhaust" radiation monitors for gaseous, iodine and particulate. Plant operators entered their off-normal instruction ONI-D17, "High Radiation Levels Within Plant." The peak levels reached were: for "gaseous" - 140 counts per minute (cpm) (alert setpoint - 150), for "iodine" - 10,000 cpm (alert setpoint - 3,000) and for "particulate" - 20,000 cpm (alert setpoint - 15,000). The

radiation monitors for the offgas vent pipe (a release point) did not indicate an increase in activity. Operators secured the regeneration process manually. The inspectors noted the releases were below Technical Specification limits. The licensee notified the State and three local counties in accordance with separate agreements and notified the NRC in accordance with 10 CFR 50.72(b)(2)(vi), "notification to other government agencies has been or will be made." At the conclusion of this report period, the licensee was troubleshooting the valve controller logic for the offgas dryer regeneration process.

(7) Partial Loss of Offgas Holdup Pipe Loop-Seal

At about 8:05 a.m. on January 1, 1990, control room operators noticed increases on the gaseous, iodine and particulate radiation monitors for the turbine building/heater bay vent (a release point). Control room operators entered ONI-D17 due to unexplained changes in plant radiation monitors. A plant operator found the offgas holdup pipe loop-seal level at about 2 feet instead of its normal 7 to 8 feet. The loop-seal was refilled and radiation levels began to level off and come down. No "alert" levels were reached on any radiation monitors and releases were well below Technical Specification limits. The licensee notified the State and local counties and the NRC in accordance with 10 CFR 50.72(b)(2)(vi). The licensee believed that the low level in the holdup pipe loop seal allowed offgas process flow to bubble through the loop seal and out into the Turbine building. The drain valve for the loop seal was found to have been leaking and lowering the level by 2 feet per hour. The licensee was also refilling it frequently. At the close of this report period, the licensee was considering replacing the drain valve with a new design.

A Region III radiation protection specialist reviewed licensee calculations for events which involved offgas loop-seal problems. The results of that review will be documented in Inspection Report 50-440/89029.

No Violations or Deviations were identified.

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

During this report period, the inspectors observed the function of the licensee's offsite review committee to evaluate the depth of review by that organization of overall plant performance. The inspectors observed the Nuclear Safety Review Committee meeting Number 65 conducted on December 13, 1989.

In preparation for the subject meeting observation, the inspectors reviewed the meeting agenda and discussion topic handouts. Items reviewed included the subcommittee reports prepared by the Audit and

Quality Assurance Subcommittee; the Operations and Maintenance Subcommittee; the Radiological, Environmental, and Chemistry Subcommittee; and the Engineering Subcommittee. The inspectors noted that those subcommittee reports contained current items of interest for the offsite review committee. The inspectors noted by observing the offsite committee meeting held on December 13 that subcommittee reports were presented in a clear manner with opportunity for the committee members to address specific areas of interest or concern.

In addition to the subcommittee reports, the inspectors observed the offsite review committee discussion of proposed changes to the Perry Technical Specifications. The inspectors noted that the offsite committee was provided sufficient information to act on those proposed changes.

The inspectors noted that the offsite committee meeting conducted on December 13 was well formatted with the required quorum of committee members in attendance. In general, the planned agenda was followed with an appropriate level of review. The inspectors concluded that the depth of review for the overall plant performance as discussed at the December 13 meeting was adequate.

Further evaluation of the licensee's self-assessment capabilities will be documented in a subsequent routine inspection report.

No Violations or Deviations were identified.

8. Plant Status Meetings (30702)

NRC management met with CEI management on December 5, 1989, at NRC headquarters in Bethesda, Maryland. Personnel attending that meeting are designated by (#) in paragraph 1 of this report. The purpose of the meeting was to review the recent performance of Perry Unit 1.

Licensee management discussed actions taken in response to scram pilot valve failures that occurred on November 25, 1989. The licensee then presented selected plant performance indicators for the months of October/November 1989. A presentation on the licensee's quarterly assessment program was provided by the licensee's QA representative. In addition, a brief description of planned actions to control the population of Zebra Mussels in the Perry service water systems was provided.

NRC management acknowledged the licensee's plans and current plant status.

9. Exit Interviews (30703)

The inspectors met with the licensee representatives denoted in Paragraph 1 throughout the inspection period and on January 3, 1990. The inspector 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 could be considered proprietary in nature. The inspectors met with the licensee representatives denoted in Paragraph 1 on January 11, 1990, to discuss the status of the six apparent violations which will be the subject of the January 18, 1990, Enforcement Conference.