

June 14, 2000

Mr. John K. Wood
Vice President - Nuclear
FirstEnergy Nuclear Operating Company
P. O. Box 97, A200
Perry, OH 44081

SUBJECT: PERRY INSPECTION REPORT 50-440/2000003(DRP)

Dear Mr. Wood:

On May 20, 2000, the NRC completed an inspection at your Perry Nuclear Power Plant, Unit 1 reactor facility. The enclosed report presents the results of that inspection. The results of this inspection were discussed on May 24, 2000, with Mr. W. Kanda and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas the inspection consisted of a review of specific procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC identified one issue of very low risk significance (Green). No violations of NRC requirements were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the ADAMS Public Library component on the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (The Public Electronic Reading Room.)

Sincerely,

/RA/

Thomas J. Kozak, Chief
Reactor Projects Branch 4

Docket No. 50-440
License No. NPF-58

Enclosure: Inspection Report 50-440/2000003(DRP)

See Attached Distribution

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cc w/encl: B. Saunders, President - FENOC
G. Dunn, Manager, Regulatory Affairs
R. Schrauder, Director, Nuclear
Engineering Department
W. Kanda, General Manager
Nuclear Power Plant Department
N. Bonner, Director, Nuclear
Maintenance Department
H. Bergendahl, Director
Nuclear Services Department
State Liaison Officer, State of Ohio
R. Owen, Ohio Department of Health
C. Glazer, State of Ohio Public
Utilities Commission

ADAMS Distribution:

WES

DVP1 (Project Mgr.)

J. Caldwell, RIII w/encl

B. Clayton, RIII w/encl

SRI Perry w/encl

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-440
License No: NPF-58

Report No: 50-440/2000-003(DRP)

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Perry Nuclear Power Plant, Unit 1

Location: P.O. Box 97 A200
Perry, OH 44081

Dates: April 2 through May 20, 2000

Inspectors: C. Lipa, Senior Resident Inspector
R. Vogt-Lowell, Resident Inspector

Approved by: Thomas J. Kozak, Chief
Reactor Projects Branch 4
Division of Reactor Projects

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
<ul style="list-style-type: none">● Initiating Events● Mitigating Systems● Barrier Integrity● Emergency Preparedness	<ul style="list-style-type: none">● Occupational● Public	<ul style="list-style-type: none">● Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner, which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.

SUMMARY OF FINDINGS

Perry Nuclear Power Plant, Unit 1 NRC Inspection Report 50-440/2000-003(DRP)

The report covers a seven week period of resident inspection. The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process in Inspection Manual Chapter 0609.

Cornerstone: Barrier Integrity

- Green. The licensee identified that both trains of the annulus exhaust gas treatment system were inoperable at the same time. The licensee entered Technical Specification 3.0.3. The condition was restored within approximately four hours. This issue was determined to have very low risk significance because the system inoperability has minimal impact on large early release frequency (LERF) (Section 1R13.1).

Report Details

Summary of Plant Status: The plant began this inspection period with Unit 1 at 100 percent power. Weekly power reductions to 90 percent to perform weekly control rod surveillance testing continued throughout this inspection period. On April 13, plant operators reduced reactor power to approximately 65 percent for a full core fuel defect localization test. On April 16, two defects were identified and suppressed and power was returned to 100 percent on April 18. A power reduction to approximately 70 percent was commenced on April 21 for a control rod sequence exchange. The plant was returned to 100 percent power on April 23.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

.1 Partial Walkdown Inspections

a. Inspection Scope (71111.04)

The inspectors selected the following systems for a walkdown:

- During planned maintenance on the Division 1 emergency diesel generator (GMI-0156, “Operability Test and Maintenance of Diesel Generator Testable Rupture Disc” and SVI-R48-T2100, “Operability Test of 1R48-D014A Testable Rupture Disc”), the inspectors walked down 13.8 kV bus L10, 4,160 V bus EH-12, and the Division 2 and 3 emergency diesel generators.
- During a planned high pressure core spray (HPCS) system outage, the inspectors walked down the emergency closed cooling system, which the licensee had protected to manage the increase in plant risk as a result of the HPCS system work.
- During planned surveillance testing on standby liquid control system train B (SVI-C41-T2001B, “Standby Liquid Control B Pump and Valve Operability Test”), the inspectors walked down standby liquid control system train A.

b. Issues and Findings

There were no findings identified during this inspection.

.2 Complete Walkdown Inspection of Reactor Core Isolation Cooling (RCIC) System

a. Inspection Scope (71111.04)

During a planned HPCS system outage, the inspectors walked down the RCIC system, which the licensee had protected to manage the increase in plant risk as a result of the HPCS system work. The following documents were reviewed to determine if the system

lineup was correct: a) SOI-E51, "Reactor Core Isolation Cooling System;" b) VLI-E51, "Reactor Core Isolation Cooling System (Unit 1);" and c) ELI-R42, "DC Systems: Batteries, Chargers, and Switchboards." Outstanding maintenance work orders were reviewed to determine if existing deficiencies would affect the ability of the RCIC system to perform its function. They checked that valves were positioned correctly and did not exhibit leakage that would impact the valve's function; electrical power was available as required; major system components were correctly labeled, lubricated, cooled, and ventilated; hangers and supports were correctly installed and functional; essential support systems were operational; and, ancillary equipment or debris did not interfere with system performance.

b. Issues and Findings

There were no findings identified during this inspection.

1R05 Fire Protection

a. Inspection Scope (71111.05)

The inspectors walked down approximately 12 fire protection areas, including emergency diesel rooms, switch gear rooms, battery rooms, the fuel handling building, emergency core cooling system pump and valve rooms, and the control room.

b. Issues and Findings

There were no findings identified during this inspection.

1R11 Licensed Operator Requalification

a. Inspection Scope (71111.11)

As part of licensed operator continuing training, the inspectors observed training provided to licensed senior reactor operators and reactor operators. The training consisted of classroom presentation of lesson plan OTC-4000-000-03, "Licensed Operator Special Topics: Perry 5% Thermal Power Uprate," followed by simulator scenarios for normal and faulted conditions starting from 105 percent power.

b. Issues and Findings

There were no findings identified during this inspection.

1R12 Maintenance Rule Implementation

a. Inspection Scope (71111.12)

The inspectors reviewed the licensee's implementation of the maintenance rule requirements, including a review of scoping, goal setting, and performance monitoring, short term and long term corrective actions, and current equipment performance status for the following items:

- Vacuum breaker 1M17F0020 closure failure on the containment vacuum relief system as described in Condition Report 00-0044.
- Degraded pump discharge vacuum relief valves for emergency service water (ESW) system trains A and B as described in Condition Reports 00-1398 and 99-3115.

b. Issues and Findings

There were no findings identified during this inspection.

1R13 Maintenance Risk Assessments and Emergent Work Control

.1 Emergent Work Associated with Annulus Exhaust Gas Treatment System (AEGTS)

a. Inspection Scope (71111.13)

On March 15, 2000, the licensee identified that both trains of AEGTS were inoperable at the same time. Plant operators appropriately entered Technical Specification (TS) 3.0.3. The inspectors reviewed the emergent work on the "A" train and the risk significance of the condition.

b. Issues and Findings

The licensee planned an AEGTS train B outage for routine charcoal sampling and the train was isolated and unavailable. The operators appropriately entered TS 3.6.4.3, Condition A, which allows continued plant operation for seven days with one AEGTS train inoperable. While the B train was out of service, control room operators conducted a routine monthly surveillance test on train A which consisted of monitoring system parameters during a 10-hour continuous run. During the test, operators identified that AEGTS train A air flow rates were greater than the test acceptance criteria. The operating crew declared the A train inoperable and appropriately entered TS 3.0.3 as directed by TS 3.6.4.3, Condition D. Engineering and maintenance personnel adjusted the A train vortex damper until satisfactory air flow results were obtained. Upon successful testing of train A, the operators exited TS 3.0.3 before plant operators were required to initiate a plant shutdown.

Based on a review of Inspection Manual Chapter 0609 and consultation with the Region III Senior Risk Analyst, the risk significance of this condition was determined to be minimal (Green) because the system inoperability has minimal impact on large early

release frequency (LERF). This issue is in the licensee's corrective action program as CRs 00-1471 and 00-1473.

.2 Review of Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope (71111.13)

The inspectors followed the guidance of IP 71111.13 and reviewed the licensee's risk management during planned and emergent work:

- Prior to a planned outage of the HPCS system, the inspectors reviewed the licensee's risk assessment and plans to protect other plant equipment and systems.
- Prior to the planned installation and injection of a sealant injection clamp on a coupling leak on the inboard seal supply line to the "B" Control Rod Drive pump, the inspectors reviewed the operations evolution order (OEO) written to shift from the "B" to the "A" pump. The written contingency plans developed in support of the activities and included as part of the formal work order were also reviewed. The inspectors attended the pre-job brief with plant operations and the leak repair vendor and ascertained their awareness and understanding of the OEO, the contingency plans, and the operational risk associated with reliance on the single remaining "A" control rod drive pump during the actual leak repair.
- Prior to planned work on the ESW system sluice gates, the inspectors reviewed the licensee's plans to treat the activity as an Infrequently Performed Test/Evolution and the contingency plans in place to manage plant risk during the evolution.

b. Issues and Findings

There were no findings identified during this inspection.

1R14 Personnel Performance During Nonroutine Plant Evolutions and Events

a. Inspection Scope (71111.14)

The inspectors observed licensee performance during the following nonroutine evolutions:

- Fuel defect localization testing on April 13 - April 16 during which two additional leaks were found and suppressed, which brought the total number of minor fuel defects to four this cycle.
- During a power ascension on April 16, the licensee intentionally entered the increased awareness region of the power to flow map, as covered by Integrated Operating Instruction, IOI-3. The inspectors checked that appropriate additional controls were implemented as required by the licensee's administrative procedures governing operating in this region.

- Also during the power ascension on April 16, plant operators entered TS 3.2.2, Condition A, and Off-Normal Instruction, ONI-C51, "Unplanned Change in Reactor Power or Reactivity," when the minimum critical power ratio (MCPR) indicated higher than the operating limits. The inspectors reviewed the actions taken to restore MCPR within operating limits, which was accomplished within TS-allowed time limits.

b. Issues and Findings

There were no findings identified during this inspection.

1R15 Operability Evaluations

a. Inspection Scope (71111.15)

The inspectors reviewed the following operability evaluations:

- ESW system vacuum breaker failed to close during testing as documented in CRs 99-3115 and 00-1398.
- NRC identified cracks on Unit 2 Division 3 battery terminals as documented in CR 00-1246.
- RCIC system failed to reach reference values during surveillance test as documented in CR 00-0644.
- HPCS system pump failed to meet its surveillance test performance requirements for differential pressure at rated flow as documented in CR 00-1445.

b. Issues and Findings

There were no findings identified during this inspection.

1R16 Operator Work-Arounds

a. Inspection Scope (71111.16)

The inspectors reviewed CR 00-1276 which documented an interference issue that prevented use of the manual hand crank to operate ESW system valve 1P45F0160.

b. Issues and Findings

There were no findings identified during this inspection.

1R17 Permanent Plant Modifications

a. Inspection Scope (71111.17)

The inspectors reviewed the modification packages, the associated calculations, safety evaluations, post-modification testing results, and the impact on plant operations during the implementation of the following modifications while the plant was online:

- Simple Modification Request Form (SMRF) 99-5018 and Design Change Package 99-5048 which modified the entrance to radiologically restricted area (RRA) of plant. This changed the old Unit 2 side of the switchgear rooms. The inspectors reviewed the impact of the interim configuration and final modification on the safety-related switchgear and battery ventilation systems in the area.
- SMRF #00-5013 and Work Order 00-2369, "Install Seals on ESW Sluice Gates," which modified the ESW system sluice gates to provide a seal to prevent leakage.
- SMRF #98-05005 and Work Order 98-000737, "Control Circuitry Modification for Hydrogen Mixing Compressor 1M51C0001A," which modified the circuitry inside motor control center EF1B08 to ensure availability of sufficient voltage to initiate operation of Hydrogen Mixing Compressor A during worst case analyzed degraded voltage conditions.

b. Issues and Findings

There were no findings identified during this inspection.

1R19 Post-Maintenance Testing

a. Inspection Scope (71111.19)

The inspectors reviewed the following post-maintenance test activities:

- PTI-E22-P0011, "HPCS Diesel Generator Slow Speed Start for Post-Maintenance Inspections," which was used during post-maintenance testing following Division 3 emergency diesel generator work.
- PTI-GEN-P0011, "Test Balancing (Air)," which was used for balancing the safety-related ventilation system for switchgear and battery rooms, following changes as a result of modification to RRA entrance.
- Post-maintenance testing of valve 1G61F0170, containment floor drain outboard isolation valve, which was conducted in accordance with PMI-0030, "Maintenance of Limitorque Valve Operators."

b. Issues and Findings

There were no findings identified during this inspection.

1R22 Surveillance Testing

a. Inspection Scope (71111.22)

The inspectors reviewed the surveillance activities listed below to verify requirements were met and were consistent with applicable sections of the TS and USAR:

- SVI-E22-T1192, "HPCS Logic System Functional Test"
- SVI-E31-T1405-B, "MSL High Flow Channel B Response Time for 1E31-N686B, 1E31-N687B, 1E31-688B, and 1E31-689B"
- SVI-E22-T2001, "HPCS Pump and Valve Operability Test"
- SVI-C41-T2001B, "Standby Liquid Control B Pump and Valve Operability Test"
- SVI-R48-T2100, "Operability Test of 1R48-D014A Testable Rupture Disc"

b. Issues and Findings

There were no findings identified during this inspection.

Emergency Preparedness

1EP1 Exercise Evaluation

.1 Observation of Routine Training Drill

a. Inspection Scope (71114.06)

The inspectors evaluated the licensee's conduct and subsequent critique of a routine emergency plan training drill on April 12, 2000.

b. Issues and Findings

The licensee identified one example where classification of a simulated event was not timely and entered this into their corrective action program as CR 00-1528.

4. **OTHER ACTIVITIES**

4OA2 Performance Indicator Verification

Cornerstone: Initiating Events

a. Inspection Scope (71151)

The inspectors reviewed operator logs, licensee event reports, and licensee power histories for 1998 and 1999 to verify the following performance indicators:

- Unplanned scrams
- Scrams with loss of normal heat removal
- Unplanned power changes

b. Issues and Findings

There were no findings identified during this inspection.

4OA3 Event Follow-up (71153)

Cornerstone: Mitigating Systems

(Closed) LER 440/2000-003-00: Battery Age Determination Results in TS Violation of Surveillance Requirements. This issue was discussed in Inspection Report 440/99015 and dispositioned as a non-cited violation (50-440/99015-01(DRP)). This LER is closed.

4OA5 Management Meetings

The inspectors presented the inspection results to Mr. W. Kanda, Plant Manager, and other members of licensee management at the exit meeting held on May 24, 2000. The licensee acknowledged the findings presented. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Wood, Vice President, Nuclear
H. Bergendahl, Director, Nuclear Services Department
B. Boles, Manager, Plant Engineering
N. Bonner, Director, Nuclear Maintenance Department
S. Davis, Superintendent, Plant Operations
G. Dunn, Manager, Regulatory Affairs
D. Gudger, Supervisor, Compliance
W. Kanda, General Manager, Nuclear Power Plant Department
T. Lentz, Manager, Design Engineering
T. Rausch, Operations Manager
S. Sanford, Senior Compliance Engineer
R. Schrauder, Director, Nuclear Engineering Department
J. Sears, Manager, Radiation Protection

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None.

Closed

440/2000-003-00	LER	Battery Age Determination Results in TS Violation of Surveillance Requirements (4OA3)
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Discussed

None.

LIST OF ACRONYMS USED

AEGTS	Annulus Exhaust Gas Treatment System
CFR	Code of Federal Regulations
CR	Condition Report
DRP	Division of Reactor Projects
ESW	Emergency Service Water
HPCS	High Pressure Core Spray
IP	Inspection Procedure
IR	Inspection Report
LER	Licensee Event Report
LOOP	Loss of Offsite Power
MCPR	Minimum Critical Power Ratio
MSL	Main Steam Line
NRC	Nuclear Regulatory Commission
PERR	Public Electronic Reading Room
RCIC	Reactor Core Isolation Cooling
RRA	Radiologically Restricted Area
SE	Safety Evaluation
SMRF	Simple Modification Request Form
SOI	System Operating Instruction
SR	Surveillance Requirements
SVI	Surveillance Instruction
TS	Technical Specification
US	Unit Supervisor
USAR	Updated Safety Analysis Report
WO	Work Order