

U. S. NUCLEAR REGULATORY COMMISSION

REGION III.

Report No. 50-440/93015(DRP)

EA 93-176

Docket No. 50-440

License No. NPF-58

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

Meeting Conducted: July 20, 1993

Meeting Location: Region III Office
799 Roosevelt Road
Glen Ellyn, IL 60137

Type of Meeting: Enforcement Conference

Inspection Conducted: Perry Nuclear Power Plant
May 1 through June 23, 1993

Inspectors: D. Kosloff
A. Vogel

Approved By:

Jay A. Hopkins for
R.D. Lanksbury, Chief
Reactor Projects Section 3B

7-23-93

Date

Meeting Summary

Enforcement Conference on July 20, 1993 (Report No. 50-440/93015(DRP))

Areas Discussed: Two apparent violations identified during the inspection were discussed along with the corrective actions taken or planned by the licensee. The apparent violations involved the failure to adequately identify and correct conditions in the drywell, containment, and suppression pool to preclude fouling and deformation of emergency core cooling system strainers; and the failure to have an adequate procedure to test the "B" residual heat removal pump.

DETAILS

1. Persons Present at the Enforcement Conference

Centerior Service Company

D. Shelton, Senior Vice President - Nuclear
R. Stratman, Vice President - Nuclear, Perry
D. Igyarto, Plant Manager, Perry Nuclear Power Plant (PNPP)
R. Schrauder, Director, Perry Nuclear Support Department
K. Donovan, Manager, Licensing and Compliance Section, PNPP
N. Bonner, Director, Perry Nuclear Engineering Department
H. Hegrat, Supervisor, Compliance Unit, PNPP
D. Cobb, Superintendent of Plant Operations, PNPP
K. Phyfer, Public Affairs

U. S. Nuclear Regulatory Commission

J. Martin, Regional Administrator, Region III
E. Greenman, Director, Division of Reactor Projects, Region III
J. Hannon, Director, Project Directorate III-3, Nuclear Reactor Regulation (NRR)
L. Greger, Chief, Reactor Projects Branch 3, Region III
B. Berson, Regional Counsel, Region III
R. Lanksbury, Chief, Reactor Projects Section 3B, Region III
F. Jablonski, Chief, Maintenance and Outage Section, Region III
D. Kosloff, Senior Resident Inspector, Region III
J. Hopkins, Project Engineer, Region III
R. Stransky, Project Manager, NRR
J. Hickman, Strainer Project Manager, NRR
M. Bielby, BWR Examiner, Region III
P. Pelke, Enforcement Specialist, Region III
E. Duncan, Reactor Engineer, Region III

2. Enforcement Conference

An enforcement conference was held in the NRC Region III Office on July 20, 1993. This conference was conducted as a result of the findings of an inspection conducted from May 1 through June 23, 1993, in which two apparent violations of NRC regulations were identified. Inspection findings were documented in inspection report (IR) 50-440/93011(DRP), dated July 12, 1993.

The purpose of this conference was to discuss the violations, root causes, contributing factors, and the licensee's corrective actions. During the enforcement conference, the licensee discussed the two apparent violations. The licensee's presentation covered the event investigation, safety significance, causes, and corrective actions.

In addition to the factual information documented in IR 50-440/93011(DRP), the licensee's presentation indicated that fouling problems had been identified during pre-operational testing.

In addition to the corrective actions documented in IR 50-440/93011(DRP), the licensee's presentation indicated that the following additional corrective action had been taken:

- Specific individuals were counselled.
- A site-wide memorandum which addressed the importance of plant cleanliness was issued.
- The reporting process for items dropped into the suppression was reaffirmed.
- Signs were posted to increase personnel awareness of the importance of suppression pool cleanliness.
- Containment cleanliness conditions were evaluated by BWR-6 peers.
- The plant startup instruction was revised to require a containment and drywell inspection by the shift supervisor prior to startup.
- The repetitive task for the installation and removal of the drywell and containment ventilation system roughing filters was revised.

In addition to the corrective actions documented in IR 50-440/93011(DRP), the licensee's presentation indicated that the following additional corrective action were planned or under consideration:

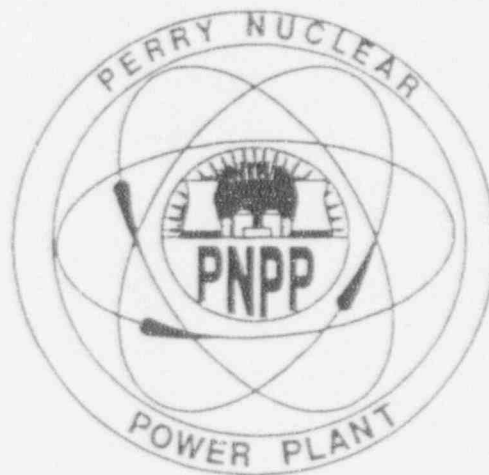
- An emergency operating procedure for the monitoring and backflushing of ECCS strainers.
- Improvements to residual heat removal instrumentation and the addition of remote indication.
- Suppression pool cover enhancements for use during outages.
- Improved use of strippable coating in the containment and drywell.
- Submarine use for suppression pool inspection and cleaning.
- Improved work practices.
- Improvements to the suppression pool cleanup system.
- An evaluation of suppression pool thermal stratification effects.
- Personnel training to the improved cleanliness requirements.
- An audit of the incident response team's corrective actions.
- A review of the pre-operational test program for lessons learned.
- A review of the Operating Experience Review program's effectiveness.

A copy of the licensee and NRC presentation is attached to this report.

Attachments: As stated

Perry Nuclear Power Plant

ECCS Suction Strainer Fouling Event



Presentation to
U.S. Nuclear Regulatory Commission
July 20, 1993



PERRY NUCLEAR POWER PLANT

STRAINER FOULING



PERRY NUCLEAR POWER PLANT

Donald C. Shelton - Sr. Vice President, Nuclear

Robert A. Stratman - Vice President, Perry

David P. Igyarto - General Manager, Perry Nuclear
Power Plant Department

Robert W. Schrauder - Director, Perry Nuclear
Support Department

Neal L. Bonner - Director, Perry Nuclear
Engineering Department

Kevin P. Donovan - Manager, Licensing and
Compliance Section

Donald K. Cobb - Superintendent of Plant
Operations

Henry L. Hegrat - Supervisor, Compliance Unit

STRAINER FOULING



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Sequence of Events

Strainer Cleanliness History

- Fouling problems identified during pre-operational testing
- Strainers flushed of "soft crud" during RFO1 (1989)
- Strainers not inspected or cleaned in RFO2 (1990)

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Sequence of Events

Refueling Outage 3 - May 1992

- Significant strainer fouling identified on videotape
- Not identified as challenge to operability
- Strainer deformation overlooked
- Strainer cleaning deferred to after startup

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Sequence of Events

Mid-cycle Outage - January 1993

- Cleaned containment side of pool
- Strainers cleaned
- RHR A and B strainers damaged
- Strainers replaced with original design
- Review of past OPERABILITY initiated

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Sequence of Events

Service Water Outage - March 1993

- RHR B strainer again damaged
- OPERABILITY review completed
- RHR B 72-hour test performed
 - Inadequate work order
 - Identified high fouling rate
- Operations Manager formed Incident Response Team
- Strainers replaced with new design
- Drywell, containment, and suppression pool cleaned

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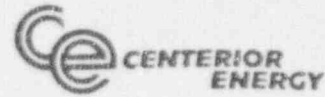


PERRY NUCLEAR POWER PLANT

Causes

- Personnel Performance Deficiencies
- Program Deficiencies
- Design Deficiencies

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PERRY NUCLEAR POWER PLANT

Causes

Personnel Performance Deficiencies

- Communications
- Housekeeping practices
- Inspection practices
- Sensitivity to cleanliness effects on OPERABILITY
- Compliance with written requirements
- Questioning attitude
- Management involvement

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Causes

Program Deficiencies

- Housekeeping procedural requirements
- Insufficient detail in repetitive task
- Surveillance instructions fail to address strainer performance
- Operating instructions did not monitor RHR pump suction pressure
- No formal program in place to detect presence of fibrous material in suppression pool

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PERRY NUCLEAR POWER PLANT

Causes

Design Deficiencies

- Design for drywell and containment cooling systems included installed roughing filters
- Marginal strainer design
- Original design did not address need for backflush

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Corrective Actions

Actions Taken - Personnel

- Specific individuals counselled
- Site-wide memorandum addressed importance of plant cleanliness
- Reaffirmed reporting process for items dropped into suppression pool
- Signs posted to increase personnel awareness
- Personnel accompanied by management on Containment housekeeping tours
- Containment cleanliness conditions evaluated by BWR-6 peers

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Corrective Actions

Actions Taken - Housekeeping

- Administrative procedures strengthened with respect to cleanliness requirements
- Improved inspection standards and surveillance techniques implemented prior to reactor startups
- Startup instruction requires containment/drywell inspection by shift supervisor
- Repetitive task to include inspection of drywell and horizontal vents
- Repetitive tasks for installation/removal of roughing filters revised

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Corrective Actions

Actions Taken - Operations and Surveillance

- Technical Specification
surveillance improvements
 - Monitoring of pump suction pressures
 - Comparing performance data
against pre-established criteria
 - Development of corrective
actions based on surveillance
performance data
 - Visual inspection of applicable
suction strainers

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Corrective Actions

Actions Taken - Operations and Surveillance

- Plant Equipment Rounds now include strainer inspection following operation
- Nuclear Engineering Instruction revised to control fibrous and plastic material in containment
- Plant chemistry control program revised to provide indication of corrosion product buildup and presence of fibrous material in the suppression pool

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Corrective Actions

Actions Taken - Design

- Roughing filters removed
- Strainers redesigned
- Capability for backflush incorporated into operating instructions

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Corrective Actions

Additional Actions Planned or Under Consideration

- EOP for monitoring and backflush of strainers
- Improvements to instrumentation
- Enhanced pool covers
- Improved use of strippable coating
- Use of submarine for inspection and cleaning
- Improved work practices

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Corrective Actions

Additional Actions Planned or Under Consideration

- Improvements to pool cleanup system
- Evaluation of suppression pool thermal stratification effects
- Ongoing personnel training to cleanliness requirements
- Audit of IRT corrective actions
- Review of Pre-operational Test Program for lessons learned
- Review of Operating Experience Review program effectiveness

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PERRY NUCLEAR POWER PLANT

Personnel Performance Enhancements

NSRC Subcommittee Analysis

- Commissioned by VP - Nuclear, Perry
- Performed by off-site members
- Evaluation performed through document review, personnel interviews
- Four root causes identified
 - Lack of shared visions and values
 - Inappropriate standards and expectations
 - Insufficient supervisory/management skills
 - Ineffective communications

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PERRY NUCLEAR POWER PLANT

Personnel Performance Enhancements

Management Team Action Plan to Address NSRC Report

- Being developed by VP, Directors, Managers
- Directs focus on mission, vision, values
- Stresses communication of expectations, visibility of management
- Includes assessment of supervisory skills
- Takes advantage of industry knowledge, practices

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PERRY NUCLEAR POWER PLANT

Personnel Performance Enhancements

Implementation of "STAR" Program

- Promotes "Stop, Think, Act, Review"
- Improves personnel performance through self-checking
- Site personnel indoctrinated with formal training
- Follow-up training through interactive video underway
- Next phase incorporates job-specific aspects

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Personnel Performance Enhancements

Management Involvement Initiatives

- Management by walking around
- Backshift tour program

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Personnel Performance Enhancements

Organizational Changes

- Infusion of proven talent, new perspectives
- Additional exchanges of nuclear station personnel planned

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Personnel Performance Enhancements

*Focus on Cultural/Philosophical
Improvements*

- Questioning attitude
- Accountability
- Communication
- Personnel development
- Coordination and teamwork

U.S. NRC REGION III

PERRY

ENFORCEMENT CONFERENCE

July 20, 1993

10:00 A.M. (CDT)

EA 93-176

REPORT NUMBER 50-440/93011

REGION III OFFICE

799 ROOSEVELT ROAD, BUILDING 4

GLEN ELLYN, ILLINOIS

CHRONOLOGY OF SUPPRESSION POOL (SP)
STRAINER FOULING

- 4/15/93 Unsuccessful run of RHR B performed.
- 4/16/93 Confirmatory Action Letter 93-007 issued.
- 4/17/93 24-hour RHR B run performed,
strainer deformation noted.
- 4/19/93 Licensee determined strainers may not meet
design requirements.
- 5/19/93 RHR B testing performed,
debris on RHR B strainer observed.
- 5/25/93 All ECCS systems tested with new strainers.
RI identified drywell/containment debris.
- 5/26/93 All ECCS strainers declared operable.
- 5/27/93 RIs reinspected drywell.
- 5/31/93 RIs reinspected containment.
- 6/2/93 Plant restarted.

CHRONOLOGY OF SUPPRESSION POOL (SP)
STRAINER FOULING

- 7/17/89 Poor SP cleanliness identified.
- 5/22/92 Strainer fouling and debris in SP videotaped.
- 7/31/92 WR initiated to clean RHR strainers post outage.
- 9/3/92 Licensee decided strainer cleaning should be performed in an outage and deferred cleaning.
- 1/8/93 Forced outage commenced due to leaking fuel.
- 1/16/93- RHR strainer deformation noted. NRs
1/19/93 initiated and strainers cleaned and
dispositioned temporary use-as-is.
- 1/22/93 RI noted strainer NR.
- 2/12/93 During SP cleaning strainer cracks noted;
strainers replaced.
- 3/11/93 Plant restarted.
- 3/26/93 Forced outage commenced for SW pipe
break.
- 4/14/93 Strainer fouling identified.

PERRY ENFORCEMENT CONFERENCE

Agenda

July 20, 1993

INTRODUCTION AND OPENING REMARKS:

Edward G. Greenman, Director, Division of Reactor Projects

NRC OVERVIEW:

Edward G. Greenman, Director, Division of Reactor Projects

CHRONOLOGY OF EVENTS:

Don Kosloff, Senior Resident Inspector, Perry

SUMMARY OF APPARENT VIOLATIONS:

Don Kosloff, Senior Resident Inspector, Perry

LICENSEE PRESENTATION AND DISCUSSION:

Cleveland Electric Illuminating Company

NRC FOLLOWUP QUESTIONS

CLOSING REMARKS:

John Martin, Region III Administrator

APPARENT VIOLATION

- I. 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, requires, in part, that measures be established to assure that conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action shall be documented and reported to appropriate levels of management.

CONTRARY TO THE ABOVE

- A. On July 17, 1989, and May 22, 1992, following the identification of debris in the suppression pool, and on May 22, 1992, following observation of debris on the RHR "A" and "B" strainers (a significant condition adverse to quality) the licensee failed to promptly identify the cause for the poor cleanliness of the suppression pool and strainer fouling and failed to take adequate corrective action to prevent repetition by cleaning the suppression pool. The strainer deformation and fouling was not documented and reported to the appropriate levels of management.
- B. Subsequent to the identification on January 16, 1993, of strainer deformation and in February 1993 of the strainer fouling phenomenon (significant conditions adverse to quality) the licensee failed to identify the presence of fibrous material in the suppression pool as the cause of the condition and failed to take adequate corrective action to prevent repetition by removing the fibrous material from the suppression pool, drywell, and containment. This resulted in the recurrence of the RHR "B" strainer fouling and deformation identified on April 14, 1993.

The apparent violations discussed in this enforcement conference are subject to further review and may be subject to change prior to any resulting enforcement action.

- C. Prior to May 25, 1993, the licensee failed to take adequate corrective action to prevent repetition of fouling of the ECCS suppression pool suction strainers (a significant condition adverse to quality) in that additional debris was not identified or removed in the drywell and in the containment rattle space.

The apparent violations discussed in this enforcement conference are subject to further review and may be subject to change prior to any resulting enforcement action.

APPARENT VIOLATION

- II. 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures and Drawings requires in part that activities affecting quality be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstance. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

CONTRARY TO THE ABOVE

On April 15, 1993, Work Order (WO) 930011944, for an activity affecting quality, was not appropriate to the circumstances in that it did not specify appropriate suction pressure values or what action to take upon the receipt of abnormal values.

The apparent violations discussed in this enforcement conference are subject to further review and may be subject to change prior to any resulting enforcement action.