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10 CFR 50.73

February 13, 2008
RA-08-010

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555 - 0001

Oyster Creek Nuclear Generating Station
Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: Licensee Event Report 2007-003-00, Unplanned Manual Reactor Scram Following Trip of Reactor Feed Pump Due to Lowering Condenser Vacuum

Enclosed is Licensee Event Report 2007-003-00, Unplanned Manual Reactor Scram Following Trip of 'A' Reactor Feed Pump Due to Lowering Condenser Vacuum. This event did not affect the health and safety of the public or plant personnel. This event did not result in a safety system functional failure. There are no new regulatory commitments made in this LER submittal.

If any further information or assistance is needed, please contact Richard Milos, Regulatory Assurance at 609-971-4973.

Sincerely,

T.S. Rausch
Vice President, Oyster Creek Nuclear Generating Station

Enclosure: NRC Form 366, LER 2007-003-00

cc: Administrator, USNRC Region I
USNRC Project Manager, Oyster Creek
USNRC Senior Resident Inspector, Oyster Creek
File No. 07049

IE22
NRR

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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Oyster Creek, Unit 1	05000219	1 OF 3

4. TITLE

Unplanned Manual Reactor Scram Following Trip of Reactor Feed Pump Due to Lowering Condenser Vacuum

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	N/A
12	19	2007	2007	- 003 -	00	2	13	2008	FACILITY NAME: N/A	DOCKET NUMBER: N/A

9. OPERATING MODE

N

10. POWER LEVEL

055

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
Richard Milos, Regulatory Assurance Engineer	(609) 971-4973

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR
N/A	N/A	N/A

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

At 1145 on 12/19/2007, an Unplanned Manual Reactor Scram occurred due to critical omission of technical information regarding the minimum Circulating Water (CW) system configuration necessary to maintain the Main Condenser water boxes filled. At the time of the event, the station CW system was being operated in accordance with procedural guidance and available design basis information. Based upon a review of historical documents since 1968, a critical omission of technical information existed regarding the minimum CW system configuration necessary to maintain the Main Condenser water boxes filled. Two corrective actions to prevent recurrence were developed; (1) revise the CW operating procedure to provide minimum system configuration and pressure to maintain the Main Condenser water boxes filled, and (2) revise design basis documentation to provide minimum system configuration and pressure to maintain the Main Condenser water boxes filled. Additional corrective actions were developed including a Technical Human Performance case study to reinforce failed or ineffective barriers.

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NARRATIVE

Plant Condition Prior to Event

Event Date: December 19, 2007 Event Time: 1145
Unit 1 Mode: Power Operation Power Level: 55%

Description of Event
Note: Energy Industry Identification System (EIIS) codes are identified in the following text as [XX].

At 0100 on 12/19/2007, a reactor power reduction to 55% power was commenced to perform planned maintenance on Reactor Recirculation [AD] Pump [P] Motor Generator [MG] sets "A" and "E" and "A" North Main Condenser [SG] water box tube repairs. As reactor power was decreased, thermal dilution gates were opened and Circulating Water [KE] (CW) system was reduced to two-pump operation to maintain discharge water temperature above 50 degrees. The "A" South water box flow was unexpectedly reduced due to the loss of the siphoning effect when the "A" North water box was drained for maintenance and the "A" Main Condenser Discharge Cross Connect valve [V] (60-inch butterfly valve) leaked air past its closed seat. The reduced "A" South water box flow caused a subsequent loss of vacuum in the "A" Main Condenser. At 1145, the reactor was manually scrammed in response to trip of "A" Reactor Feed [SJ] Pump [P] on low suction pressure.

The plant configuration prior to trip of the "A" Reactor Feed Pump:

- Two CW pumps in service (1-2, 1-3)
- 4 Condenser halves in service ("A" South, "B" North, "B" South, "C" South)
- 1 Condenser water box half in Backwash ("C" North)
- "A" North Condenser water box draining evolution

Analysis of Event:

At the time of the event, the station CW system was being operated in accordance with procedural guidance and available design basis information. As reactor power was decreased, thermal dilution gates were opened and CW system was reduced to two-pump operation to maintain discharge water temperature above 50 degrees. Oyster Creek had recent operating experience in a similar two CW pumps and four water boxes configuration during down powers for 1F09 (1/28/2006) and 1M11 (4/28/2007). The CW system design includes three elevated Main Condensers, each with two water boxes. The Main Condensers can be drained for maintenance regardless of intake bay or discharge canal water levels. The elevated feature requires CW pump head to flood the water boxes. Once filled and vented, the outlet of these water boxes is directed to the discharge canal at a lower elevation resulting in a waterfall or siphoning effect. This siphoning effect reduces the amount of CW pump work required to maintain the water boxes flooded. The "A" Main Condenser Discharge Cross Connect valve [V] seat leakage was evaluated. Seat leakage across the closed 60-inch butterfly valve allowed the siphoning effect to be lost in the "A" South water box. However, some minor seat leakage is expected across the 60-inch butterfly valve based upon design. A review of historical motor power monitoring data for the valve actuator did not indicate a degrading trend in valve performance. A Work Order has been created to inspect and repair the valve seats as required. A probabilistic risk assessment per NRC Management Directive 8.3 was performed for this event and determined to be a low risk of core damage.

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NARRATIVE

Cause of Event:

Based upon a review of historical documents since 1968, a critical omission of technical information regarding the minimum CW system configuration necessary to maintain the Main Condenser water boxes filled resulted in the unplanned manual reactor scram.

Contributing to this event was a series of engineering evaluations between 1968 and 1999 that failed to evaluate the adequacy of CW system margin. These technical evaluations were narrowly focused on avoiding circulating pump damage by preventing run out conditions resulting in numerous CW system procedure changes, design modifications, and design bases analyses, which did not provide minimum CW system configuration necessary to maintain the Main Condenser water boxes filled.

One organizational issue was identified associated with a failure to recognize operation of two CW pumps while performing water box maintenance was a first time evolution. Two CW pump configuration has been used previously during cold weather conditions to mitigate icing in the Winter and to mitigate intake-grassing conditions in the Summer. Prior to the 12/19/2007 planned down power, numerous challenges and reviews were performed in preparation for environmental impacts including CW system lineups. However, these planning, preparation, and review activities failed to recognize that the CW system would be placed in a first time evolution when water box maintenance was performed while in a two CW pump configuration.

Corrective Actions:

Two corrective actions to prevent recurrence of this event were developed:

1. Revise CW operating procedures to provide minimum system configuration and pressure to maintain the Main Condenser water boxes filled.
2. Revise design basis documentation to provide minimum system configuration and pressure to maintain the Main Condenser water boxes filled.

Additional corrective actions were developed including a Technical Human Performance case study to reinforce failed or ineffective barriers.

Previous Occurrences

There have been no similar Licensee Event Report events at Oyster Creek in the last three years.

Component Failure Data

N/A