AmerGen
An Exelon Company

Clinton Power Station
R. R. 3, Box 228
Clinton, IL 61727

10 CFR 50.73

U-603704
December 3, 2004

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Licensee Event Report 2004-005-00

Enclosed is Licensee Event Report (LER) No. 2004-005-00: Automatic Start of Division 2 Shutdown Service Water Pump Due to Unknown Cause. This report is being submitted in accordance with the requirements of 10CFR50.73.

Should you have any questions concerning this report, please contact Mr. William Iliff, Regulatory Assurance Manager, at (217)-937-2800.

Respectfully,

R. S. Bement
Site Vice President
Clinton Power Station

RSF/blf

Enclosure: Licensee Event Report 2004-005-00

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Clinton Power Station
Office of Nuclear Facility Safety – IEMA Division of Nuclear Safety

IE22

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 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)

| 1. FACILITY NAME | 2. DOCKET NUMBER | 3. PAGE |
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**4. TITLE**

Automatic Start of Division 2 Shutdown Service Water Pump Due to Unknown Cause

| 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 |
| | | | | | | | | | None | 05000 |
| 10 | 06 | 2004 | 2004 | - 005 - | 00 | 12 | 03 | 2004 | FACILITY NAME: None | DOCKET NUMBER: 05000 |

**9. OPERATING MODE**

1

**10. POWER LEVEL**

095

**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) |
|---|---|
| J. C. Wemlinger, Operations Support | (217) 937-3846 |

**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 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

**14. SUPPLEMENTAL REPORT EXPECTED**

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

| 15. EXPECTED SUBMISSION DATE | MONTH | DAY | YEAR |
|---|---|---|---|
| | | | |


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

A control room operator was securing from a flush of the Divisions 2 and 3 Emergency Diesel Generator (EDG) heat exchangers. The operator requested and received a peer check to validate he was operating the correct hand-switch to close the Division 2 EDG heat exchanger essential Shutdown Service Water System (SX) outlet valve. Following the peer check, the operator placed the switch in the closed position, verified the valve was closing by observing the indicator lights, and then proceeded to the Division 3 panel [PL]. Within several seconds of leaving the Division 2 panel, alarms indicated the Division 2 SX pump automatically started unexpectedly. A low-pressure condition in the SX system, most likely caused by closing the non-essential Service Water System (WS) to SX system crosstie valve, resulted in the automatic start of the SX pump; however, a root cause could not be identified. Corrective action includes replacing the hand-switch for the Division 2 crosstie valve, implementing an Operations department policy for protected equipment, installing a protective cover over the hand-switches for the crosstie valves, requiring the involved operators to demonstrate proper peer and self-check behaviors, and coaching the control room supervisor on required oversight and validation that expected behaviors are occurring.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

Unit: 1 Event Date: 10/6/2004 Event Time: 1420 Central Daylight Time

Mode: 1 (POWER OPERATION) Reactor Power: 95 percent

DESCRIPTION OF EVENT

On October 6, 2004, the plant was in Mode 1 with reactor power at 95 percent. A planned maintenance outage was in progress for the Division 1 Emergency Diesel Generator (EDG) [EK]. Several systems were in a protected status due to the EDG outage, including the Divisions 2 and 3 Shutdown Service Water Systems (SX) [BI]. The 'A' and 'B' Plant Service Water System (WS) [KG] pumps [P] were in service, the 'C' Plant Service Water System pump was in standby, and WS System pressure was stable. The Division 1 SX System was out of service, and Divisions 2 and 3 SX System pumps were in standby. (The SX System is the essential service water system, and the WS System is the non-essential service water system.)

Operators were securing from a flush of the Divisions 2 and 3 EDG heat exchangers [HX] for corrosion prevention. At about 1418 hours, a control room operator took the Division 2 SX System test prep switch [HS] to the 'test' position to activate the thermal overload protection in preparation for valve [V] movements. The operator then requested and received a peer check to validate he was operating the correct hand-switch to close the Division 2 EDG heat exchanger SX outlet valve. At about 1420 hours, the operator placed the switch in the closed position. The operator verified the valve was closing by observing the indicator lights [IL], and then proceeded to the Division 3 panel [PL].

Within several seconds of leaving the Division 2 panel, various alarms [ALM] in the Main Control Room indicated the Division 2 SX System pump automatically started unexpectedly. An operator was dispatched to the SX System equipment and verified proper operation of the equipment. In the Main Control Room, operators observed various alarms for the auto-start, including one that indicated a low-pressure condition in the WS System. Actions referenced by the alarm response procedures and the SX System procedure occurred as expected. Initial investigations by operators did not identify a reason for the SX pump start.

A prompt investigation was initiated including identifying the location of workers in the plant and their activities. No plant activity was in progress that could have caused the automatic start of Division 2 SX Pump. Condition report 260905 was initiated to investigate the cause of the automatic start of the pump and to identify corrective action. A troubleshooting team was formed, and a plan was developed to investigate the cause.

The Division 2 SX System remained OPERABLE during and after the event based on the system responding as expected to the valid low-pressure signal.

No automatic or manually initiated safety system responses were necessary to place the plant in a safe and stable condition. No inoperable equipment or components directly affected this event.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* (17)

CAUSE OF EVENT

A root cause could not be identified for the automatic start of the Division 2 SX pump. The cause investigation identified that a low-pressure condition occurred in the SX system, most likely caused by closing the WS system to SX system crosstie valve, and resulted in the automatic start of the SX pump. The cause evaluation included: investigating operator performance; reviewing other plant activities in progress at the time of the event; completing a troubleshooting plan for components, logic, and controls having a potential to cause an automatic start of the Division 2 SX pump; and completing a failure analysis on the hand-switch for the WS system to SX system crosstie valve due to an industry operating experience. No equipment deficiencies were found.

SAFETY ANALYSIS

This event is reportable under the provisions of 10CFR50.73(a)(2)(iv)(A) due to the automatic actuation of the emergency service water system.

There were no actual safety consequences associated with this event. The Division 2 SX pump automatically started as designed on a low-pressure condition in the WS System. While the SX pump was running, the Division 2 SX system was isolated from the WS system and remained operable.

No safety system functional failures occurred during this event.

CORRECTIVE ACTION

The failure analysis of the hand-switch for the WS system to SX system crosstie valve did not identify any definitive flaws or faults that could have resulted in the valve operation; notwithstanding, the hand-switch was replaced with a new switch as a precaution against an intermittent failure.

The flush activity on the Divisions 2 and 3 SX Systems constituted work on protected equipment and should not have occurred during the Division 1 EDG outage. The flush activity was not on the plant work schedule due to its frequent performance and low impact to the Operations crew, and thus was not visible to management during schedule challenges. To correct this issue, the flush activity has been added to the plant work schedule and an Operations department policy has been implemented to clarify actions and restrictions that apply to protected equipment.

The peer and self-checks performed by the operators prior to manipulating the Division 2 EDG heat exchanger SX outlet valve were not performed as expected. The peer checker verified that the panel operator selected the correct switch then turned away before the panel operator took the switch to the closed position. The panel operator noted by indicator lights that the valve was in mid-stroke but did not wait for the valve stroke to complete before leaving the panel. There is a possibility that the panel operator inadvertently operated the hand-switch for the WS system to SX system crosstie valve causing it to actuate the valve. Had the operators completed the peer and self-checks per expectations, positive evidence of what occurred during this event may have been available. To correct this issue, the operators involved in the peer and self-check were required to demonstrate proper peer and self-check behaviors. Additionally, to preclude inadvertent hand-switch operation, a plastic protective cover has been installed over the hand-switches for the WS system to SX system crosstie valves.

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**NARRATIVE** *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

The Control Room Supervisor (CRS) did not oversee the valve manipulation and did not consider its potential effects on the plant because he was busy with other activities, thus the CRS missed the deficient peer and self-checks. To correct this issue, the CRS will be coached on the lessons learned of the event, including required oversight and validation that expected behaviors are occurring. (CR 260905-12)

PREVIOUS OCCURRENCES
None

COMPONENT FAILURE DATA
None