Exelon Generation®

Clinton Power Station
8401 Power Road
Clinton, IL 61727

U-604268
March 16, 2016

10CFR50.73
SRRS 5A.108

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 2015-005-00

Enclosed is Licensee Event Report (LER) 2015-005-00: Containment Ventilation Radiation Monitors Inoperable During Operations with the Potential for Draining the Reactor Vessel. This report is being submitted in accordance with the requirements of 10 CFR 50.73.

There are no regulatory commitments contained in this report.

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

Respectfully,

Theodore R. Stoner
Site Vice President
Clinton Power Station

JLP/cac

Enclosure: Licensee Event Report 2015-005-00

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector - Clinton Power Station
Office of Nuclear Facility Safety – Illinois Emergency Management Agency

IE22
NRR

NRC FORM 366 (11-2015) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018

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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@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 Page 2 for required number of digits/characters for each block)

| 1. FACILITY NAME | 2. DOCKET NUMBER | 3. PAGE |
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| Clinton Power Station, Unit 1 | 05000-461 | 1 OF 4 |

**4. TITLE**

Containment Ventilation Radiation Monitors Inoperable during Operations with the Potential for Draining the Reactor Vessel Activities

| 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 |
| | | | | | | | | | | 05000 |
| 05 | 03 | 2015 | 2015 | - 005 | - 00 | 03 | 16 | 2016 | FACILITY NAME | DOCKET NUMBER 05000 |

| 9. OPERATING MODE | 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)* | | | |
|---|---|---|---|---|
| 5 | ☐ 20.2201(b) | ☐ 20.2203(a)(3)(i) | ☐ 50.73(a)(2)(ii)(A) | ☐ 50.73(a)(2)(viii)(A) |
| | ☐ 20.2201(d) | ☐ 20.2203(a)(3)(ii) | ☐ 50.73(a)(2)(ii)(B) | ☐ 50.73(a)(2)(viii)(B) |
| | ☐ 20.2203(a)(1) | ☐ 20.2203(a)(4) | ☐ 50.73(a)(2)(iii) | ☐ 50.73(a)(2)(ix)(A) |
| | ☐ 20.2203(a)(2)(i) | ☐ 50.36(c)(1)(i)(A) | ☐ 50.73(a)(2)(iv)(A) | ☐ 50.73(a)(2)(x) |
| **10. POWER LEVEL** | ☐ 20.2203(a)(2)(ii) | ☐ 50.36(c)(1)(ii)(A) | ☐ 50.73(a)(2)(v)(A) | ☐ 73.71(a)(4) |
| | ☐ 20.2203(a)(2)(iii) | ☐ 50.36(c)(2) | ☐ 50.73(a)(2)(v)(B) | ☐ 73.71(a)(5) |
| | ☐ 20.2203(a)(2)(iv) | ☐ 50.46(a)(3)(ii) | ☐ 50.73(a)(2)(v)(C) | ☐ 73.77(a)(1) |
| 000 | ☐ 20.2203(a)(2)(v) | ☐ 50.73(a)(2)(i)(A) | ☐ 50.73(a)(2)(v)(D) | ☐ 73.77(a)(2)(i) |
| | ☐ 20.2203(a)(2)(vi) | ☒ 50.73(a)(2)(i)(B) | ☐ 50.73(a)(2)(vii) | ☐ 73.77(a)(2)(ii) |
| | | ☐ 50.73(a)(2)(i)(C) | ☐ OTHER Specify in Abstract below or in NRC Form 366A | |

**12. LICENSEE CONTACT FOR THIS LER**

| LICENSEE CONTACT | TELEPHONE NUMBER *(Include Area Code)* |
|---|---|
| Dale A. Shelton, Regulatory Assurance Manager | 217-937-2800 |

**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 | 15. EXPECTED SUBMISSION DATE | MONTH | DAY | YEAR |
|---|---|---|---|---|
| ☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO | | | | |


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

On May 2, 2015, Clinton Power Station Unit 1 was in Mode 5, with planned maintenance work commencing which removed the containment building ventilation (VR) system and the drywell purge (VQ) system from service. These systems remained out of service until 0940 on May 12, 2015. Between 1858 on May 3, 2015 and 0709 on May 6, 2015, various Operations with the Potential for Draining the Reactor Vessel (OPDRVs) activities were conducted. With the VR and VQ ventilation systems shut down and the system isolated, the radiation monitors located in the ventilation system ducts were not available to perform their isolation function as required by Technical Specification (TS) 3.3.6.1, Primary Containment and Drywell Isolation Instrumentation, and TS 3.3.6.2, Secondary Containment Isolation Instrumentation. The TS Required Actions were not entered causing a condition prohibited by the TS. This condition was identified as a non-cited violation in NRC Inspection Report 2015-003, dated November 6, 2015. The cause of the violation is due to a change in interpretation of an operable duct monitor.

A daily order was issued and procedure OP-CL-108-104-1001, "ITS LCO/ORM OR/ODCM OR Evaluations and Guidance for Safety Function Determination," has been revised to clarify the operability requirements of the monitors when the affected ventilation systems are secured.

NRC FORM 366A (11-2015) U.S. NUCLEAR REGULATORY COMMISSION

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# LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

| 1. FACILITY NAME | 2. DOCKET NUMBER | 3. LER NUMBER | | |
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| | | YEAR | SEQUENTIAL NUMBER | REV NO. |
| Clinton Power Station, Unit 1 | 05000-461 | 2015 | - 005 | - 00 |

**NARRATIVE**

PLANT AND SYSTEM IDENTIFICATION

General Electric – Boiling Water Reactor, 3473 Megawatts Thermal Rated Core Power
Energy Industry Identification System (EIIS) codes are identified in text as [XX].

EVENT IDENTIFICATION

Containment Ventilation Radiation Monitors Inoperable during Operations with the Potential for Draining the Reactor Vessel Activities

A. CONDITION PRIOR TO EVENT:

Unit: 1 Event Date: 05/03/15 Event Time: 1858 hours CDT
Mode: 5 Mode Name: Refueling Reactor Power: 0 percent

B. DESCRIPTION OF EVENT:

For approximately 9½ days, from May 2, 2015, at 2132, through May 12, 2015, at 0940, the station removed the containment building ventilation (VR) system and the drywell purge (VQ) system from service for planned maintenance on the instrument air (IA) system. The ventilation dampers for these systems rely on IA to remain open; therefore, during the IA maintenance, the system dampers were closed and the VR and VQ systems were isolated. The ventilation ducts support the radiation monitoring function for monitoring elevated radiation levels during certain modes of applicability including Operations with the Potential for Draining the Reactor Vessel (OPDRVs). With the two ventilation systems out of service, the radiation monitors located in these systems were isolated from the containment atmosphere with no flow through the ventilation ducts. Therefore, the associated monitors were not able to fulfill their safety function of sending an isolation signal to various components in order to isolate primary and secondary containment in the case of elevated radiation levels in containment due to a reactor vessel drain down event.

Clinton Power Station (CPS) Technical Specification (TS) 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation," requires that the primary containment and drywell isolation instrumentation for each function in Table 3.3.6.1-1 shall be operable. TS 3.3.6.2, "Secondary Containment Isolation Instrumentation," requires that the secondary containment isolation instrumentation for each function in Table 3.3.6.2-1 shall be operable. Both Table 3.3.6.1-1 and Table 3.3.6.2-1 require the containment building fuel transfer pool ventilation plenum radiation-high, the containment building exhaust radiation-high and the containment building continuous containment purge exhaust radiation-high functions to be operable during movement of recently irradiated fuel assemblies as well as during OPDRVs.

For TS 3.3.6.1, Condition D, with one or more required channels inoperable, the required action is to place the channel in trip in 24 Hours. For Condition E, with one or more automatic functions with isolation capability not maintained, the required action is to restore isolation capability within 1 hour. If either of these actions is met, the required action is to suspend movement of irradiated fuel assemblies and initiate action to suspend OPDRVs or isolate the affected penetrations immediately. For the same conditions as those stated above, TS 3.3.6.2 requires within one (1) hour the isolation of associated penetration flow paths or declaring the associated containment isolation dampers inoperable and placing the associated standby gas treatment system in operation or declaring the associated standby gas treatment system inoperable.

Between 1858 on May 3, 2015 and 0709 on May 6, 2015, the station executed three OPDRV windows in excess of 1 hour. During these timeframes, one of the affected penetrations was not isolated, standby gas treatment system was not in service and OPDRVs were not suspended immediately. The station failed to ensure the containment building fuel transfer pool ventilation plenum radiation-high, the containment building

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exhaust radiation-high and the containment building continuous containment purge exhaust radiation-high functions were operable during OPDRVs. With the VR and VQ system ventilation dampers closed, the instrumentation would not be capable of detecting radiation levels in the containment environment and therefore would not be able to fulfill its safety function of sending isolation signals to various components on a high radiation signal. In this event, containment penetration 1MC-169 contains two pipes that are isolated by a high radiation signal should a reactor vessel drain down occur. Since this penetration was not closed or capable of being closed, a condition prohibited by TS occurred. This condition was identified as a non-cited violation in NRC Inspection Report 2015-003, dated November 6, 2015.

C. CAUSE OF EVENT:

An Issue Report (IR) was entered into the station's corrective action program as IR 2619114. The station did not recognize that the radiation monitors were inoperable during the timeframe that the VR and VQ systems were removed from service for maintenance. The station based the operability of the radiation monitor instrumentation on being able to pass its surveillance tests, which consisted of channel checks, channel calibrations and logic functional tests. As such, the operability evaluation did not take into consideration the impact of the ventilation dampers being closed on the monitor's ability to detect elevated radiation levels in containment. The cause of this event is a change in interpretation of an operable duct monitor.

D. SAFETY ANALYSIS:

This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as an operation prohibited by CPS TS 3.3.6.1 and TS 3.3.6.2 due to not taking the required actions within the completion times as specified.

The OPDRV activities described in this report were tracked using the guidance provided by the NRC in Enforcement Guidance Memorandum (EGM) 11-003, Revision 2, "Dispositioning BWR Licensee Non-Compliance with TS Containment Requirements during Operations with a Potential for Draining the Reactor Vessel (OPDRV)." CPS adhered to the NRC plain language meaning of OPDRV activities that could potentially result in draining or siphoning the RPV water level below the top of the fuel. This included evolutions involving aligning and realigning plant systems prior to achieving steady-state water level control, without taking credit for mitigating measures. CPS also met the requirements which specify the minimum makeup flow rate and water inventory. Further, an adequate defense in depth was maintained to minimize the potential for the release of fission products with secondary containment inoperable. Since these measures were implemented, an adequate level of safety was provided during the performance of the OPDRV activities described in this report.

No actual consequences occurred as a result of these conditions. No actual vessel drain down events occurred and the estimated potential leakage rate from the RPV through any of the leakage pathways during this event was very small.

E. CORRECTIVE ACTIONS:

A daily order was issued to require radiation monitors to be declared inoperable when they are isolated from the monitored flow path.

Procedure OP-CL-108-104-1001, "ITS LCO/ORM OR/ODCM OR Evaluations and Guidance for Safety Function Determination," was revised to declare the associated radiation monitors inoperable when they are isolated from the monitored flow path.

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**NARRATIVE**

F. PREVIOUS OCCURRENCES:

None

G. COMPONENT FAILURE DATA:

Not applicable.