ENERGY NORTHWEST

Alex L. Javorik
Columbia Generating Station
P.O. Box 968, PE04
Richland, WA 99352-0968
Ph. 509.377.8555 | F. 509.377.4150
aljavorik@energy-northwest.com

March 10, 2014
GO2-14-034

10 CFR 50.73

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

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397**
LICENSEE EVENT REPORT NO. 2014-001-00

Dear Sir or Madam:

Transmitted herewith is Licensee Event Report No. 2014-001-00 for Columbia Generating Station. This report is submitted pursuant to 10 CFR 50.73(a)(2)(v)(C), and 10 CFR 50.73(a)(2)(v)(D).

There are no commitments being made to the NRC by this letter. If you have any questions or require additional information, please contact Mr. J.R. Trautvetter, Regulatory Compliance Supervisor, at (509) 377-4337.

Respectfully,

for Alex Javorik

A. L. Javorik
Vice President, Engineering

Attachment: Licensee Event Report 2014-001-00

cc: NRC Region IV Administrator
NRC NRR Project Manager
NRC Senior Resident Inspector/988C
AJ Rapacz – BPA/1399
WA Horin – Winston & Strawn

IE22
NRR

NRC FORM 366 (01-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES 01/31//2017

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
Columbia Generating Station	05000 397	1 OF 5

4. TITLE

Secondary Containment Pressure Exceeded

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
01	09	2014	2014	- 001 -	00	03	10	2014	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	☐ 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)
10. POWER LEVEL	☐ 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)
100	☐ 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)
Desirée Wolfgramm, Senior Licensing Engineer	509-377-4792

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		04	30	2014

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

On January 9, 2014 at 1743 and 1834 hours secondary containment was declared inoperable during repositioning of the dampers. These two events had durations of 3 and 2 minutes respectively. Control Room operators took manual control of the Reactor Building Exhaust Air flow system to restore secondary containment in the first event, and the controller restored pressure automatically in the second.

On January 15, 2014 at 0907 hours and February 17, 2014 at 0304 hours secondary containment was declared inoperable during repositioning of the dampers and during high winds respectively. These two events had durations of 6 and 2 minutes respectively. The system controller automatically restored secondary containment differential pressure in both events.

In each of these events secondary containment vacuum was not maintained greater than or equal to 0.25 inches of vacuum water gauge as required by Technical Specification 3.6.4.1. While Technical Specification limits were exceeded, the resulting pressure excursion was bounded by analytical results, and thus there were no safety consequences for this event. The cause(s) for the event is currently under investigation. A supplemental LER is planned for when testing and investigation is completed. Corrective actions will be developed based upon the cause(s).

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Columbia Generating Station	05000 397	2014	- 001	- 00	2 OF 5

NARRATIVE

Plant Conditions

Event 1: January 9, 2014 at 1743 hours
Event 2: January 9, 2014 at 1834 hours
Event 3: January 15, 2014 at 0907 hours
Event 4: February 17, 2014 at 0304 hours

At the time of all events, the plant was operating in Mode 1 at 100% power. There were no structures, systems, or components that were inoperable at the start of any of the events that contributed to the events.

Event Description

Events 1 & 2 –

On January 9, 2014 at 1743 and 1834 hours secondary containment vacuum was not maintained while Reactor Building Outside Air (ROA) heating coil face and bypass dampers were repositioning due to outside ambient temperature fluctuation past the set point. These dampers and heating coil allow for outside air to be heated as it enters the system. These two events had durations of 3 and 2 minutes respectively. In Event 1 control room operators took manual control of the Reactor Building Exhaust Air (REA) flow in-service differential pressure controller (DPIC) (REA-DPIC-1A) to restore secondary containment vacuum to greater than 0.25 inches of vacuum water gauge. In Event 2 the REA in-service controller (REA-DPIC-1A) automatically restored secondary containment vacuum to greater than 0.25 inches water gauge (inwg).

Event 3 –

On January 15, 2014 at 0907 hours secondary containment vacuum was not maintained while the ROA heating coil face and bypass dampers were repositioning due to outside ambient temperature fluctuation past the set point. This event had duration of 6 minutes. In this event the REA in-service controller (REA-DPIC-1A) automatically restored secondary containment vacuum to greater than 0.25 inwg.

Event 4 –

On February 17, 2014 at 0304 hours secondary containment vacuum was not maintained during a period of high winds. This event had duration of 2 minutes. In this event the REA in-service controller (REA-DPIC-1B) automatically restored secondary containment vacuum to greater than 0.25 inwg.

In each event described above, because Reactor Building [NG] vacuum decreased below 0.25 inches of water gauge, secondary containment was logged as inoperable in the surveillance log and Technical Specification 3.6.4.1 Action A was entered.

NARRATIVE

Extent of Condition

This condition of Reactor Building vacuum momentarily dropping below the prescribed limit is specific to the Reactor Building Heating Ventilation and Air Cooling (HVAC) [VA] and Standby Gas Treatment (SGT) [BH] systems, and their capability to establish and maintain secondary containment vacuum. No other systems were affected as a result of this condition.

During an extent of condition review performed to determine past operability, it was determined that there were multiple instances where secondary containment vacuum was less than the TS required value of 0.25 inwg. In these instances secondary containment vacuum went below the TS required value of 0.25 inwg and went unnoticed by operators as the annunciator alarm comes in at 0.0 inwg. This alarm value has been identified as incorrect to alert operators to secondary containment vacuum below the TS required value of 0.25 inwg and the condition has been documented in the corrective action process to be aligned with the TS value of 0.25 inwg. In each of these events the REA in-service controller automatically restored secondary containment vacuum to greater than 0.25 inwg.

Immediate Corrective Action

In Event 1 Operators took manual control of the REA differential pressure (dP) controller [PDC] and quickly adjusted REA flow to restore secondary containment vacuum to greater than 0.25 inwg.

In Events 2, 3, and 4 the REA flow in-service controller automatically restored secondary containment vacuum to greater than 0.25 inwg.

Cause

In accordance with NUREG-1022 Revision 3 Section 2.3 these four events are being reported together as these have all occurred in the 60 day LER reporting period and appear to have similar cause(s) for each event. Events 1 & 2 were reported together as they were related and occurred within an hour of each other. Events 3 and 4 were reported under individual ENS notifications.

Secondary vacuum dropping below the TS required value of 0.25 inwg happened in four separate events in this LER reporting period. All four of these events were similar in that an external weather related event, three temperature related transients and one wind related transient, occurred that required the exhaust ventilation fan to adjust its flow to maintain a vacuum above the TS required value of 0.25 inwg. To fully understand the cause of these events an apparent cause analysis has been initiated to determine causal factors.

At this time there are five possible causal factors that are being considered, with a possibility of a combination of two or more of these factors. Actions are currently being taken to confirm or refute each of these possible causal factors. These actions include, but are not limited to, verifying set-points on the two differential pressure controllers, design and calculation review, equipment inspection, and testing of the ventilation system, gathering operating data from each train while in-service. This testing will perform an equipment inspection of both trains of the ROA/REA system, verify the setpoints for each of the differential pressure controllers, and determine the system response of both of the independent systems reaction to weather related transients.

NARRATIVE

Once testing is completed the system response will be compared to the system design to validate the response and corrective actions will be developed based upon the causal factors. A supplement to this LER will be submitted once causal factors and corrective actions have been established.

Operating Experience & Previous Occurrences

A loss of the ability to maintain secondary containment vacuum greater than required has occurred and was reported at Columbia Generating Station (Columbia) three times in the past two years.

On August 25, 2013, reported under LER 2013-007-00, secondary containment was declared inoperable during a sudden thunderstorm when secondary containment vacuum was not maintained greater than or equal to 0.25 inwg.

On July 24, 2012, reported under LER 2012-003-00, secondary containment vacuum was not maintained due to an inadvertent trip of one set of the redundant Reactor Building HVAC fans [FAN], during ongoing maintenance on the SGT system.

On December 10, 2011, reported under LER 2011-004-00, secondary containment vacuum was not maintained and the cause was determined to be ice buildup and subsequent release on exterior equipment supplying the Reactor Building HVAC system.

The first Operating Experience (OE) event is similar in cause as the four events reported in this LER. Due to the single occurrence and the extreme weather conditions at the time, multiple causal factors were not considered. A corrective action which could have prevented recurrence of this event, to alert operations to a potential issue with secondary containment before the Technical Specification, LCO 3.6.4.1.A, for secondary containment vacuum is reached, was in progress at the time of the four events reported in this LER.

The last two OE events have associated corrective actions, and the causes are not applicable to the current cause of weather related secondary containment vacuum changes, nor would corrective actions from these past two events prevented occurrence of these four events reported in this LER.

As discussed in the Reactor Oversight Process working group public meeting held on January 15, 2014 the industry has experienced an increase in reports of safety system functional failures (SSFF) in where there is not a true loss of safety function, but momentary conditions in which Technical Specification operability criteria are not satisfied. Specifically temporary losses of secondary containment vacuum have increased in the industry. The four events described in this LER fall into this increase in number of reports.

Further Corrective Actions

Corrective actions will be submitted with a supplement to this LER once testing and determination of cause is completed.

Assessment of Safety Consequences

This event resulted in an unplanned entry into LCO 3.6.4.1.A. Secondary containment vacuum was less than

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Columbia Generating Station	05000 397	2014 -	001	- 00	5 OF 5

NARRATIVE

0.25 inwg for between 2 and 6 minutes. While the actual vacuum was beyond the range allowed by Technical Specifications, the Reactor Building HVAC system is designed to, among other things; maintain the reactor building during normal operating at a negative pressure with respect to atmosphere to minimize the release of airborne radioactive material. During emergency operation, the SGT system maintains the reactor building at a negative pressure. During each of the events described in this LER at least one train of SGT was in standby condition and available to restore the reactor building to a vacuum above the TS required value of 0.25 inwg.

An engineering safety function analysis was performed which demonstrated that the ability for SGT to achieve secondary containment vacuum to above 0.25 inwg, credited in the accident response analysis, could have been attained using either of the two available trains of the SGT system at the time of each of the events, thus there were no potential safety consequences. There was no actual safety consequence associated with this event since no event involving radiological hazards were experienced during the event.

NEI 99-02 allows the licensee to perform an engineering analysis to determine if the event is reportable as a SSFF performance indicator occurrence. The engineering analysis has shown that these events did not result in a SSFF; therefore this event does not affect the NRC Regulatory Oversight Process Indicators.

Energy Industry Identification System (EIIS) Information

Energy Industry Identification System (EIIS) Information codes from IEEE Standards 805-1984 and 803-1983 are represented in brackets as [XX] and [XXX] throughout the body of the narrative.