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February 15, 2017

GO2-17-047

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. 2016-005-00**

Dear Sir or Madam:

Transmitted herewith is Licensee Event Report No. 2016-005-00 for Columbia Generating Station. This report is submitted pursuant to 10 Code of Federal Regulations (CFR) §50.73(a)(2)(ii)(A) and §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 Ms. D.M. Wolfgramm, Regulatory Compliance Supervisor, at (509) 377-4792.

Executed this 15th day of FEBRUARY, 2017.

Respectfully,

W. G. Hettel
Vice President, Operations

Enclosure: Licensee Event Report 2016-005-00

cc:
NRC Region IV Administrator
NRC NRR Project Manager
NRC Sr. Resident Inspector/988C
CD Sonoda – BPA/1399
WA Horin - Winston & Strawn

**LICENSEE EVENT REPORT (LER)**

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 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.

1. FACILITY NAME

Columbia Generating Station

2. DOCKET NUMBER**05000** 397**3. PAGE**1 **OF** 3**4. TITLE**

Leak in Minimum Flow Line Makes HPCS and Primary Containment Inoperable

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		
12	18	2016	2016	005	00	02	15	2017	FACILITY NAME	DOCKET NUMBER		
										05000		
										05000		
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)									
3			<input type="checkbox"/> 20.2201(b)			<input type="checkbox"/> 20.2203(a)(3)(i)			<input checked="" type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2201(d)			<input type="checkbox"/> 20.2203(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(1)			<input type="checkbox"/> 20.2203(a)(4)			<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
			<input type="checkbox"/> 20.2203(a)(2)(i)			<input type="checkbox"/> 50.36(c)(1)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
10. POWER LEVEL 0			<input type="checkbox"/> 20.2203(a)(2)(ii)			<input type="checkbox"/> 50.36(c)(1)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
			<input type="checkbox"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)			<input type="checkbox"/> 50.46(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> 73.77(a)(1)	
			<input type="checkbox"/> 20.2203(a)(2)(v)			<input type="checkbox"/> 50.73(a)(2)(i)(A)			<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)		<input type="checkbox"/> 73.77(a)(2)(i)	
			<input type="checkbox"/> 20.2203(a)(2)(vi)			<input type="checkbox"/> 50.73(a)(2)(i)(B)			<input type="checkbox"/> 50.73(a)(2)(vii)		<input type="checkbox"/> 73.77(a)(2)(ii)	
						<input type="checkbox"/> 50.73(a)(2)(i)(C)			<input type="checkbox"/> OTHER		Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

Desiree M. Wolfgramm

TELEPHONE NUMBER (Include Area Code)

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

MONTH	DAY	YEAR
04	17	2017

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

On December 18, 2016, during a forced plant outage reported under Licensee Event Report (LER)-2016-004, a leak was identified on the minimum flow line of the High Pressure Core Spray (HPCS) system downstream of the Primary Containment Isolation Valve. HPCS system had been running on minimum flow after being used to maintain Reactor Pressure Vessel water level. The HPCS line leak was identified during a walk down by Operations personnel after the HPCS pump had been secured. Due to the location of the leak downstream of the Primary Containment Isolation Valve, this leak constituted a breach of Primary Containment. Both HPCS and Primary Containment were declared inoperable.

The cause of the leak was determined to be from a gasketed flange in the HPCS minimum flow piping. Corrective actions included replacing the gasket. Further evaluation is ongoing and this report will be supplemented once complete.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER
		YEAR SEQUENTIAL NUMBER REV NO.
Columbia Generating Station	05000- 397	2016 - 005 - 00

NARRATIVE**Plant Conditions**

The plant was in a forced shutdown due to a fault on an off-site transmission line [FK] and at the time of discovery the plant was in Mode 3 at approximately 450 degrees F reactor temperature and 851 psig reactor pressure. The High Pressure Core Spray (HPCS) system [BG] was activated after the scram to support maintaining Reactor Vessel [RPV] inventory instead of Reactor Core Isolation Cooling (RCIC) [BN], which was inoperable after the RCIC pump [P] tripped on over-speed due to an Operator misdiagnosing response of RCIC start sequence. There were no other structures, systems or components that malfunctioned or that were out of service that contributed to this event.

Event Description

On December 18, 2016, during a forced plant outage reported under Licensee Event Report (LER)-2016-004, a leak was identified on the minimum flow line of the HPCS system, on the first flange downstream of a Primary Containment [NH] Isolation Valve [ISV]. The valve isolates the minimum flow line to the Suppression Pool [BT] from the HPCS pump. The HPCS system injected into the vessel for approximately 1 minute and HPCS then remained on minimum flow operation until it was manually shut down by Operations personnel. The HPCS pump was used in place of RCIC after the RCIC pump tripped. The HPCS line leak was identified during a walk down by Operations personnel after the HPCS pump had been secured. Subsequent investigation attributed the leak to deterioration of the upstream gasket [SEAL] for a flow restrictor [OR]. The gasket was missing and presumed swept into the Suppression Pool. Due to the location of this leak downstream of the Primary Containment Isolation Valve, this leak constituted a breach of Primary Containment. Both HPCS and Primary Containment were declared inoperable.

The gasket was replaced and HPCS and Primary Containment were returned to operable status.

This event was reported in Event Notification #52443 in accordance with reporting criteria 10 CFR 50.72(b)(3)(v)(D), Accident Mitigation, for the loss of a single train subsystem in the Emergency Core Cooling System (ECCS) [AB], and 10 CFR 50.72(b)(3)(ii)(A), Degraded Condition, because the Primary Containment integrity was compromised.

Cause

The direct cause of the event was the failure of a gasket in the HPCS minimum flow piping. An evaluation is in progress to determine apparent causes. This report will be updated when the evaluation is completed.

Corrective Actions

Immediate corrective action was to replace the failed gasket to restore operability of HPCS and Primary Containment.

Previous Occurrences

Similar occurrences have not been experienced at the Columbia Generating Station in the last ten years.

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CONTINUATION SHEET**

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Columbia Generating Station	05000- 397	YEAR 2016	SEQUENTIAL NUMBER - 005	REV NO. - 00

NARRATIVE**Assessment of Safety Consequences**

The line leakage did not impact the HPCS system injection function. The HPCS minimum flow line is isolated from the HPCS pump during injection operations to the reactor vessel, hence, this leakage due to the failed gasket would not have impacted the injection function or flow rate. Therefore, this minimum flow line leak was not significant with respect to the ability of the HPCS pump to provide its design rated flow to the reactor vessel in accident conditions.

Estimates of the rate and amount of leakage indicate that the leak would not have prevented HPCS from performing its safety function during the first 24 hours of operation but it would have impacted the ability of the system to perform its 30-day mission time, had the HPCS system been initiated in response to a design basis event, because of the loss of Suppression Pool inventory via leakage or because of flooding of the HPCS room. Therefore, this event is being reported as a condition that could have prevented fulfillment of a safety function for the single train HPCS system to be able to mitigate the consequences of an accident, in accordance with 10 CFR 50.73(a)(2)(v)(D), and constitutes a mitigating system functional failure.

There were no significant actual safety consequences because at the time of the event there was no release of radioactive material. All leakage from the Primary Containment was captured in plant systems within Secondary Containment [JM]. If the leak rate would have increased considerably, the HPCS room flood level switches would have alarmed the Control Room so that other mitigating actions would have been taken to prevent excessive flooding of the room.

The HPCS flow restrictors for the minimum flow line form part of the pressure boundary for the Primary Containment; therefore, the reported leak in an un-isolable location of the line constitutes a breach in Primary Containment. This is being reported in accordance with 10 CFR 50.73(a)(2)(ii)(A) as a condition that seriously degraded a primary safety barrier.

Energy Industry Identification System Information

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