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GO2-15-122  
August 20, 2015

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. 2015-005-00**

Dear Sir or Madam:

Transmitted herewith is Licensee Event Report No. 2015-005-00 for Columbia Generating Station. This report is submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(A).

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.

Executed on August 20, 2015

Respectfully,

W. G. Hettel  
Vice President, Operations

Enclosure: Licensee Event Report 2015-005-00

cc: NRC Region IV Administrator  
NRC NRR Project Manager  
NRC Senior 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).

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 infocollections.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.

<b>1. FACILITY NAME</b> Columbia Generating Station	<b>2. DOCKET NUMBER</b> <b>05000 397</b>	<b>3. PAGE</b> <b>1 OF 3</b>
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**4. TITLE**  
Reactor Pressure Vessel Level Indication Switch Failures

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
06	25	2015	2015 - 005 - 00			08	20	2015		<b>05000</b>
									FACILITY NAME	<b>05000</b>

<b>9. OPERATING MODE</b>  2	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>									
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)						
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)						
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)						
<b>10. POWER LEVEL</b>  1.7	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)						
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)						
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)						
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER						
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A							

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME JR Trautvetter, Compliance Supervisor	TELEPHONE NUMBER (Include Area Code) 509-377-4337
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
D	SB	LIS	ITT - Barton Instrument	Y					

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b> MONTH:      DAY:      YEAR:
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**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On June 25, 2015 it was discovered that Columbia Generating Station's (Columbia) Reactor Protection System (RPS) trip logic was unable to generate a full scram on Reactor Pressure Vessel (RPV) low level because RPS 'A' level 3 indicating switches were mechanically bound high off scale. Immediate actions were taken to comply with Technical Specifications, and a half scram was generated on RPS trip system 'A' to restore full scram capability. Corrective actions include aligning Columbia's maintenance procedures with vendor recommendations, establishing preventative maintenance to ensure correct setting of the indicating switches and verification that level switches are on scale prior to entering the mode of applicability.

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

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.

1. FACILITY NAME <b>Columbia Generating Station</b>	2. DOCKET <b>05000 397</b>	6. LER NUMBER			3. PAGE <b>2 OF 3</b>
		YEAR	SEQUENTIAL NUMBER	REV NO.	
		<b>2015</b>	<b>- 005</b>	<b>- 00</b>	

**NARRATIVE**

**Plant Conditions**

At the time of the event the reactor was starting up from a refueling outage and was transitioning from Mode 4 to Mode 2 with pressure increasing from approximately 140 psig to 945 psig. Reactor Pressure Vessel (RPV) level band started at +50 inches to +80 inches and in Mode 4 and decreased incrementally when entering Mode 2 and continued to decrease to approximately +36 inches. There were no structures, systems, or components that were inoperable at the start of the event which contributed to the event.

**Event Description**

On June 25, 2015, at 0952, Columbia Generating Station (Columbia) entered Mode 2 for plant startup. At approximately 2200, during performance of the Shift Operator Rounds, it was identified that Columbia's Reactor Protection System (RPS) [JE] 'A' trip logic was unable to generate a full scram on Reactor Pressure Vessel (RPV) [RPV] low level (level 3) (+13 inches) because level 3 indicating switches [LIS], Main Steam [SB] Level Indicating Switches 24A and 24C (MS-LIS-24A and 24C), were mechanically bound high off scale. The equipment was declared inoperable at 2200 and at 2246 in accordance with Technical Specification (TS) Limiting Condition for Operation (LCO) 3.3.1.1 Required Action, a half scram was generated on RPS trip system 'A' to restore full scram capability.

These instruments are narrow range level indicating switches. The instruments only provide a local indication and do not directly indicate in the main control room. The switches provide an RPV Level 8 (+54 inches) signal for Reactor Core Isolation Cooling System (RCIC) pump logic, and a Level 3 (+13 inches) signal to the Reactor Protection System (RPS) logic and Nuclear Steam Supply Shutoff Group 5 and Group 6 isolation logic, Residual Heat Removal (RHR) [BO] Miscellaneous valves, and RHR Shutdown Cooling valves respectively.

The startup procedure requires that the operability of these indicating switches is verified prior to entering Mode 2, however as the indication is off-scale high during outage conditions due to flood up of the RPV for shutdown cooling, the verification is limited to verifying that the indication is off-scale high. In this event, while entering Mode 2 the level band was set at +50 inches to +80 inches and level was above the off-scale high value of +60 inches. It was during subsequent Shift Operator Rounds, after level had been decreased, that the switches were found to be degraded.

**Cause**

The failed indicators are two ITT Controls – Barton Instrument indicators, Model 288A. The direct cause of the event was that the switches were mechanically bound with the indicator off-scale high against the rubber stop.

The root cause of the event is that the procedure for calibrating the level indicating switches is not in alignment with the vendor manual with respect to setting the mechanical stops. Contributing causes were that there was no established preventative maintenance to ensure the stops were set correctly and there was no verification that the level switch indication was on scale prior to entering Mode 2.

The coincident failure of MS-LIS-24A and -24C resulted in a loss of the safety function for RPS trip on low RPV level (+13 inches), TS 3.3.1.1 Function 4. These level switches provide input to the RPS A1 and A2 channels; their coincident failure would have prevented the RPS 'A' system from initiating a half scram due to low RPV water level, which would have prevented an automatic scram from occurring. This function is required in Modes 1 and 2.

Additionally, failure of MS-LIS-24C resulted in a loss of the safety function for Primary Containment isolation, TS 3.3.6.1.Function 2a. This level switch provides an input to the inboard isolation valve logic which requires two out of two to isolate. With one inboard channel failed, the Primary Containment isolation would not have occurred on low RPV level. This function is required in Modes 1, 2, and 3.

It was also determined that the indicating switches should have been declared inoperable when the instruments were initially over ranged during the refueling outage beginning May 10, 2015 until they were unstuck and calibrated per plant procedures on June 26, 2015. TS 3.3.6.1 Primary Containment Isolation Instrumentation LCO completion times were exceeded during the refueling outage. Required action to isolate the Residual Heat Removal Shutdown Cooling System was not completed as required by TS. This function is required in Modes 3, 4, and 5.

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

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**NARRATIVE**

**Extent of Condition**

Extent of condition was examined for all similar level switches that could be subject to off-scale high conditions during normal operations. Past history for these level switches was examined and there are no issues with similar switches remaining in an off-scale high condition.

**Corrective Actions**

*Immediate Corrective Actions*

In accordance with TS LCO 3.3.1.1 a half scram was generated on RPS trip system 'A' to restore full scram capability. The switches were brought on scale and calibrated per plant procedures. Equipment was declared operable on June 26, 2015 at 0324 and 0429 for MS-LIS-24A and -24C respectively.

*Further Corrective Actions*

Planned corrective actions include revision of procedures to ensure that the stops are set per vendor recommendations during calibration and initial setup and adjustments as required. Revisions will be made to procedures to ensure that the mechanical stops are periodically checked during the channel calibration. Operating procedures will be revised to verify these indicating switches are on scale prior to entering Mode 2.

**Operating Experience & Previous Occurrences**

A previous occurrence was found for MS-LIS-24A and -24B. The failure of these switches occurred in 2005 and did not result in a loss of safety function as the instruments which failed were not redundant and the instruments were not within the same RPS logic channel.

**Event Classification**

The loss of function for RPS trip on low RPV level (+13 inches), TS 3.3.1.1 Function 4 is being reported as a loss of safety function under 50.73(a)(2)(v)(A).

The loss of function for Primary Containment Isolation Instrumentation, TS 3.3.6.1 Function 2a is being reported as a loss of safety function under 50.73(a)(2)(v)(A).

Not declaring the switches inoperable during the refueling outage beginning from RPV flood up beginning May 10, 2015 until they were unstuck and calibrated per plant procedures on June 26, 2015 is being reported as a condition prohibited by TS 3.3.6.1 under 50.73(a)(2)(i)(B).

**Assessment of Safety Consequences**

There were no actual safety consequences of the event. There was no equipment damage, injuries or dose exposure to station personnel. There was no change in plant status or operating condition and there was no actual risk to the public at any time due to this event.

Due to the coincident failure of MS-LIS-24A and -24C, had the RPV experienced low level, the reactor would not have automatically scrammed. The ability to manually scram the reactor was not impacted. There are various automatic actions associated with unplanned RPV level changes and operators would be directed per procedure to manually scram the reactor if the automatic function failed.

In addition, due to the coincident failure, the Group 5 RHR valves would not have received an isolation signal on a low level (+13 inches). The consequence of this is minimal as all of the valves are in a normally closed position.

During the refueling outage, had the RPV experienced low level, the Group 6 RHR Shutdown Cooling valves would not have received an isolation signal. Had this event occurred, operators would be directed per procedure to isolate shutdown cooling and inject water into the vessel if necessary, therefore consequence is minimal.

**Energy Industry Identification System Information**

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